

MARITIME REPORTER AND ENGINEERING NEWS



World Shipbuilding

Ship construction levels in leading yards worldwide

Cruise Vessels

Large and Small

US Navy Ship Procurement

Latest budget additions, changes and deletions

Tug, Towboat

and offshore support vessels

US Flag Oceangoing Fleet

Inland Waterways

Offshore Drilling Rigs

US Navy Fleet

June 1991

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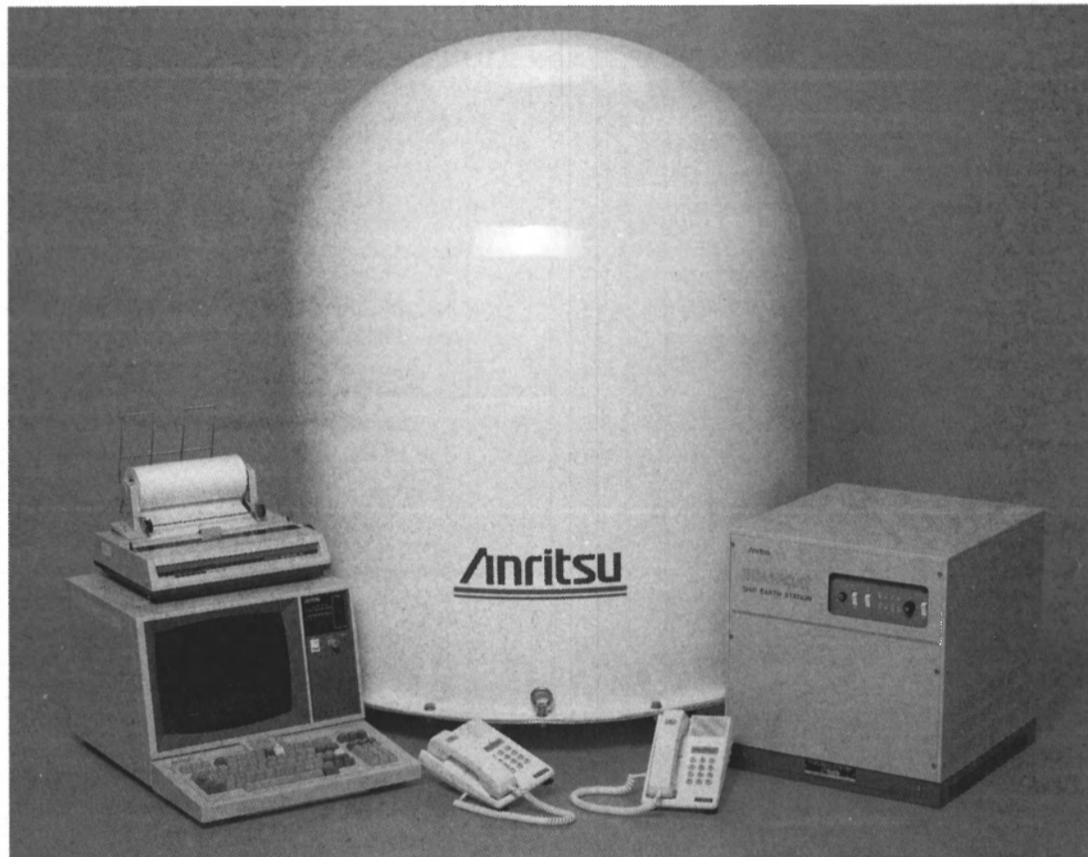
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1991 World Yearbook

The 1991 World Yearbook Edition incorporates in-depth articles and extensive statistics compiled and authored by MARITIME REPORTER, as well as reknowned industry professionals, which focus on the year's most noteworthy events and their impact on future operations and vessel construction in both the brown and blue water sectors of the marine industry. This year's issue is one of the most comprehensive to date, with tables and reports on the U.S. inland waterways, offshore rig construction, and domestic and international vessel construction. Additionally, feature articles focus on the latest developments in the changing U.S. Navy market.

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Maritime Reporter/Engineering News

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Combining talents to produce the top of the line boat are...

Andy Overstreet - Engineering/Design

Beginning at the computer, Andy Overstreet of the design/engineering department creates drawings from which tapes are generated and fed to the cut-out operation.

Richard Lowery - Cut Out

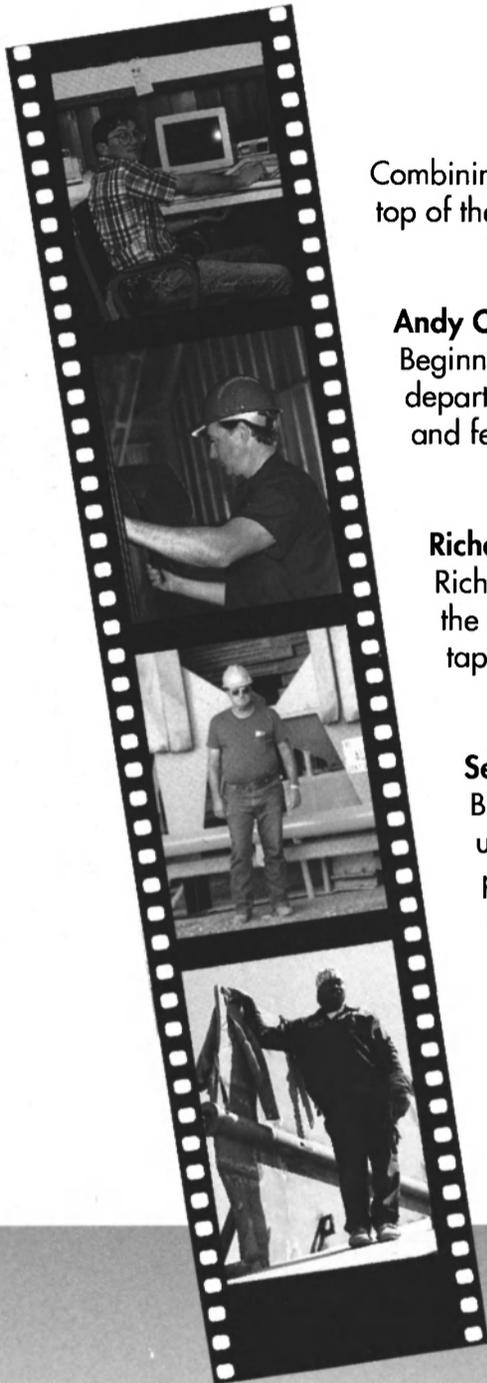
Richard Lowery manages the burning process which precisely cuts out the entire vessel using the direct feed of the computer generated tapes into the ESAB plasma shape cutter.

Sergian "Blackie" Truxillo - Blast/Coating

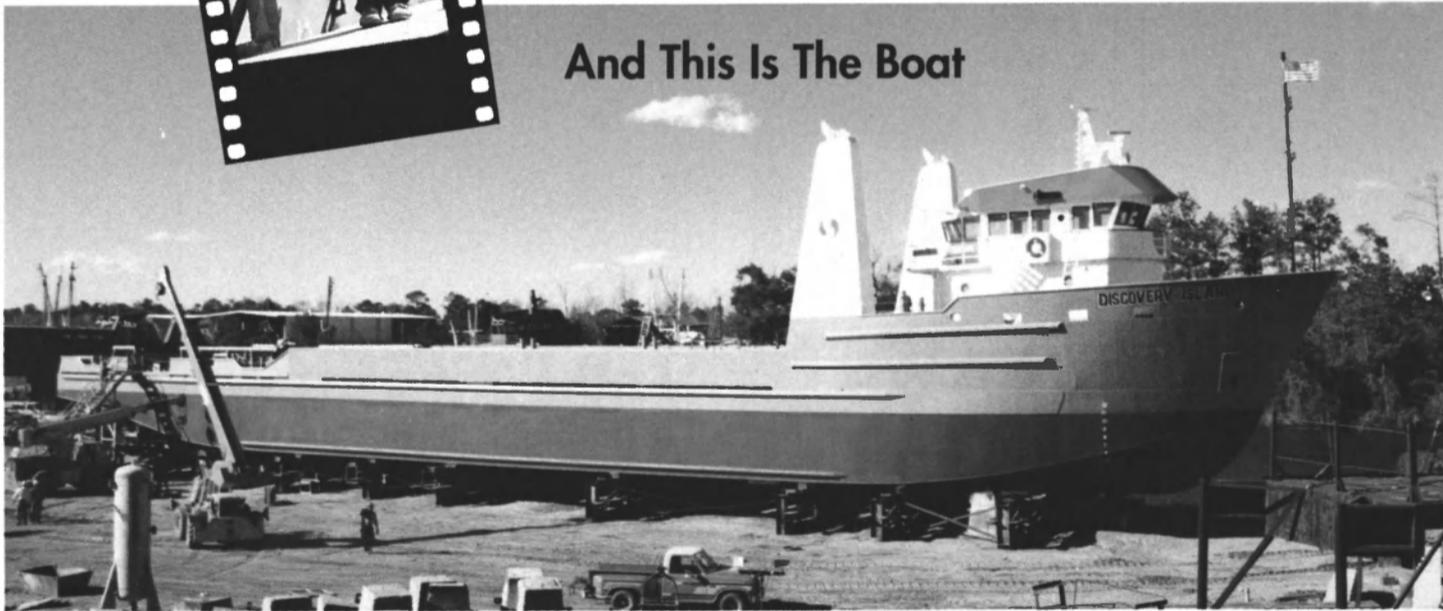
Blasting all the steel to bare metal is Sergian "Blackie" Truxillo using the wheelabrator process. The ensuing coating applied at this phase provides both inside and outside protection of the hull from corrosion.

Eugene "Hike" Carson - Fitting

It all comes together here where assembly and fitting take place under the direction of Eugene "Hike" Carson giving the vessel its fair lines and shape.



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Analysis & Technology Wins Over \$14 Million In New Contracts

Analysis & Technology, Inc. (A&T), North Stonington, Conn., which specializes in professional and technical services for submarines and antisubmarine warfare (ASW) and in training programs for Fortune 500 clients, won over \$14.6 million in contracts and subcontracts during March 1991. **A.T. Mollegen Jr.**, president and CEO, announced recently. The company's total contractual backlog stood at approximately \$295 million at the end of March, or slightly below a \$307.1 million total on March 31, 1990.

The U.S. Coast Guard Maintenance & Logistics Command, Governors Island, N.Y., has awarded three contracts to Ross-McNatt Naval Architects, a division of A&T's Research business unit. The total ceiling value of the three contracts is \$3 million for the base year and one option year. Ross-McNatt will perform naval architectural and engineering services for alteration and repair packages for Coast Guard craft based in the Miami, New Orleans, and Cleveland areas.

Textron Marine Awarded Navy Contract With \$300 Million Potential

A U.S. Navy contract totaling \$138.9 million has been awarded to Textron Marine Systems (TMS) in New Orleans, La., for the production of all 12 Landing Craft, Air Cushion (LCAC) vehicles and related equipment. The contract also contains options for government FY 92 procurement of up to 12 additional craft plus centrally procured items and spares. If all contract options are exercised, the contract value will be in excess of \$300 million, bringing the TMS business backlog to a level in excess of 3/4 billion dollars.

"The LCACs continue to perform well beyond contract requirements. The craft, which rides on a cushion of air, can operate independently of water depth and underwater obstacles. Seventeen of the 88-foot-long LCACs were deployed to the Persian Gulf," TMS president **John J. Kelly** said. "The LCACs were transported from the United States to the Gulf area in amphibious support ships."

"The award of this LCAC contract with its options, together with other government programs, will result in stabilized employment with moderate growth at Textron Marine Systems over the next five years," Mr. Kelly added.

Textron Marine Systems has delivered 22 LCACs to the Navy, three are currently in test and 20 are in production.

A U.S. leader since 1961 in the design and construction of advanced

technology air cushion vehicles and surface effect ships, Textron Marine Systems, Division of Textron Inc., serves both military and commercial interests and maintains a significant commitment to independent research and development of air cushion vehicles.

For free literature on Textron Marine Systems,
Circle 14 on Reader Service Card

Lou Rota Appointed Robertson-Shipmate Dealer Representative

Lou Rota has been appointed dealer sales representative for Robertson-Shipmate, according to an announcement by **Larry Anderson**, president. Mr. Rota's respon-

sibilities include support for the Robertson-Shipmate dealer network which sells the company's full line of marine electronics.

Prior to joining Robertson-Shipmate, Mr. Rota served as a senior associate with the International Marina Institute, Wickford, R.I. Before that, he was with Racal-Milgo, a computer company in Sunrise, Fla.



CDI Marine Awarded Three Navy Contracts

CDI Marine Company, Jacksonville, Fla., was the recipient of three design service contracts awarded during the first quarter of 1991 by the Department of the Navy. These contracts cover the next three years and are worth \$37.5 million.

In January a contract was signed with Naval Sea Systems Command Detachment, PERA (CV), for naval architecture, marine engineering, material and on-site liaison support to improve habitability conditions on West Coast aircraft carriers in support of the Phased Renovation and Repair Program (PRRP). Also, in February, a contract was signed with the Boston Detachment of

Puget Sound Naval Shipyard (formerly SupShips Boston) to provide marine engineering, design, and other technical services in support of modernization, conversion, repair or overhaul for amphibious class ships.

In March, CDI Marine signed a contract with Puget Sound Naval Shipyard (PSNSY) to perform naval architecture, marine/mechanical en-

gineering, electrical/electronic engineering, combat system engineering and technical services, as well as preparation and modification of technical data required for the conversion, overhaul, alteration and repair of naval surface ships and submarines.

Petrobras To Sign Contract Worth \$500 Million For Two Semisubmersibles

Petrobras, Brazil's state-owned oil company, is to sign a major fabrication contract for two deepwater semisubmersible production platforms with Far East-Levingston Shipbuilding (FELS) in Singapore and the Tenenge yard in Brazil.

The \$500 million contract to the Fels-Tenenge consortium is likely to be followed by a second order, Petrobras president **Alfeu de Melo Valenca** said. Mr. Valenca said Petrobras had overcome many of its recent financial problems and would be investing some \$10-12 billion over the next five years in its Brazilian offshore projects.

The two semisubmersibles are for the first phase of the Marlim oil field development. Each vessel is expected to be able to handle around 100,000 bpd.

Both of the vessels are based on the highly successful GVA 4500 design, with Petrobras responsible for the layout of the topside process plant. Each platform will have some 16 producers and 10 water injection wells. The water depth on the Marlim field is around 1,000 meters.

The Tenenge fabrication yard said it was actively bidding for North Sea fabrication work from BP and Chevron. The company said it had put in a bid on both the Alba field jacket and topside packages to be built at its Aratu yard.

McDermott Names New Chief Financial Officer

Robert E. Howson, chairman of the board and chief executive officer of McDermott International, Inc., recently announced that **Brook A. Hattox** has been named senior vice president, finance, and chief financial officer of the company.

Mr. Hattox will be responsible for formulating financial policies, planning and executing financial programs, and monitoring and reporting financial results. He will direct controller, tax, treasury, risk management and audit functions for the company.

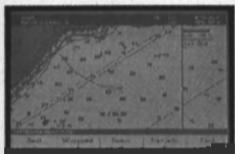
Mr. Howson also announced that **John A. Lynott** has been named executive vice president, corporate, and will be responsible for strategic planning, management of McDermott's investment portfolio, economics, and financing to support the development of major projects.

MARINER'S GUIDE TO GPS

No question about it: GPS lets you fix your position more precisely than any other technology.

Unfortunately, the way most GPS systems fit your needs has been considerably less precise. That's because most companies only give you one model to choose from.

But at Trimble, we've always thought your navigation system should fit your bridge, your work and your lifestyle. That's why we offer GPS in eight very different systems. Here's how to decide which one's right for you:



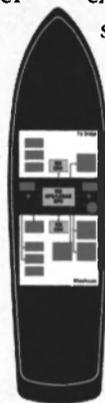
Charting If you want the ultimate in high-tech navigation, our *NavGraphic II™* is the most sophisticated GPS receiver commercially available. Integrating CD-ROM, LORAN, GPS, and micro-computer technologies, it plots a moving image of your boat right on a real NOAA chart. It's the most direct navigation device ever developed.



Ease of Use If you don't need charting, but like the way graphics simplify navigation, the

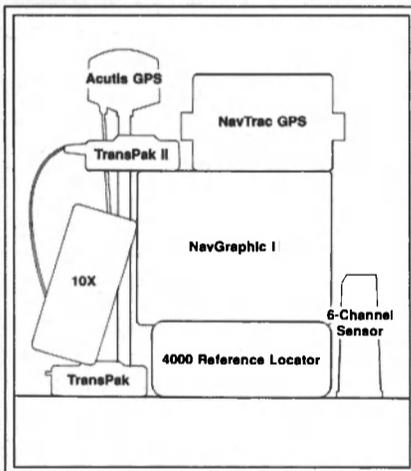
NavTrac™ GPS gives you a high-resolution screen in a smaller, more economical package. Its unique steering display shows you a perspective view of your boat's progress. And makes navigation as easy as driving down a road.

Portability If you've got more than one boat, or if your travels will take you over land or into the air, then you need a system you can carry. The *TransPak™* puts a complete three-channel GPS receiver and antenna into a package the size of a pair of binoculars. Splash-proof, mud-proof, shock-proof, this rugged little unit will go anywhere you do. And our new *TransPak II™* gives you the same portability with more waypoint storage and an I/O port.



Interfacing Both the NavGraphic and the NavTrac have extensive interfacing capability, but if you need a rugged system to act as the coordinating link of a fully-integrated nav station, the *10X™* is the perfect choice—especially in large installations where distributing control is important. The 10X processing unit can handle two control heads, one for the nav station and one on deck.

GPS Sensors If you've already got a navigation system you're familiar with, you can upgrade to GPS in one quick step. Our *Acutis™* GPS is a complete 3-channel receiver and antenna integrated into a ruggedized module that's mounted just like an antenna. If your LORAN, chart-plotter, or radar accepts NMEA-0183, GPS is as easy as connecting a cable.



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Boats & Barges

SOLAS Testing Completed On Willard Marine RIB

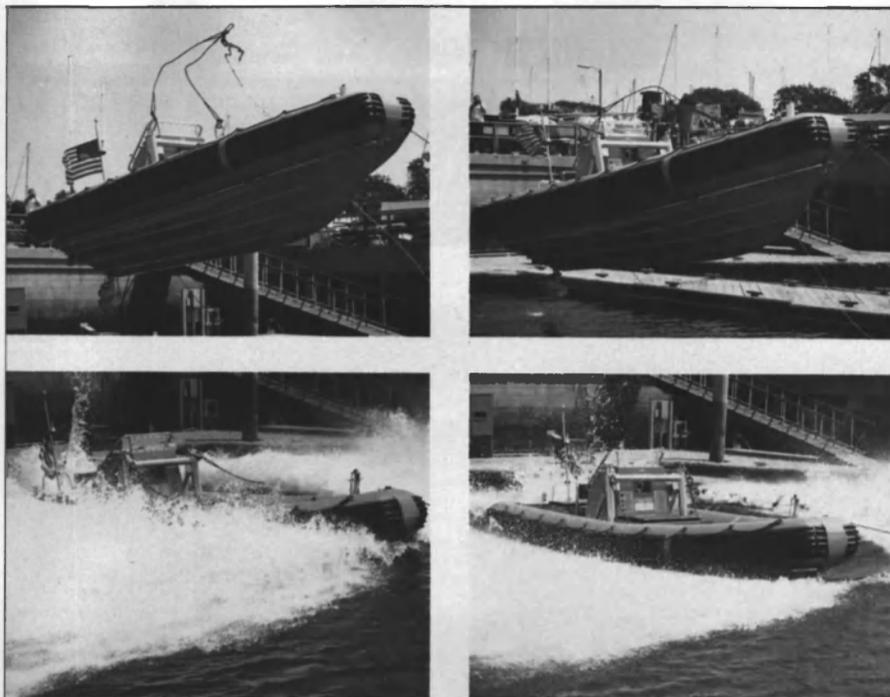
22-Foot Rescue Boat Awaits USCG Approval

Willard Marine, Inc., Anaheim, Calif., recently completed U.S. Coast Guard-supervised testing of its 22-foot Rigid Inflatable Boat (RIB). According to Willard Marine, this RIB, reportedly the first by a U.S. manufacturer, was built and tested as per SOLAS (safety of Life at Sea) Chapter III, 74/83 Amendments, and USCG Interim Guidelines. The testing was successful and the RIB is currently in the process of being approved by USCG as meeting 74/83 requirements. After July 1, 1991, certain large U.S. ships are required to carry SOLAS-approved rescue boats.

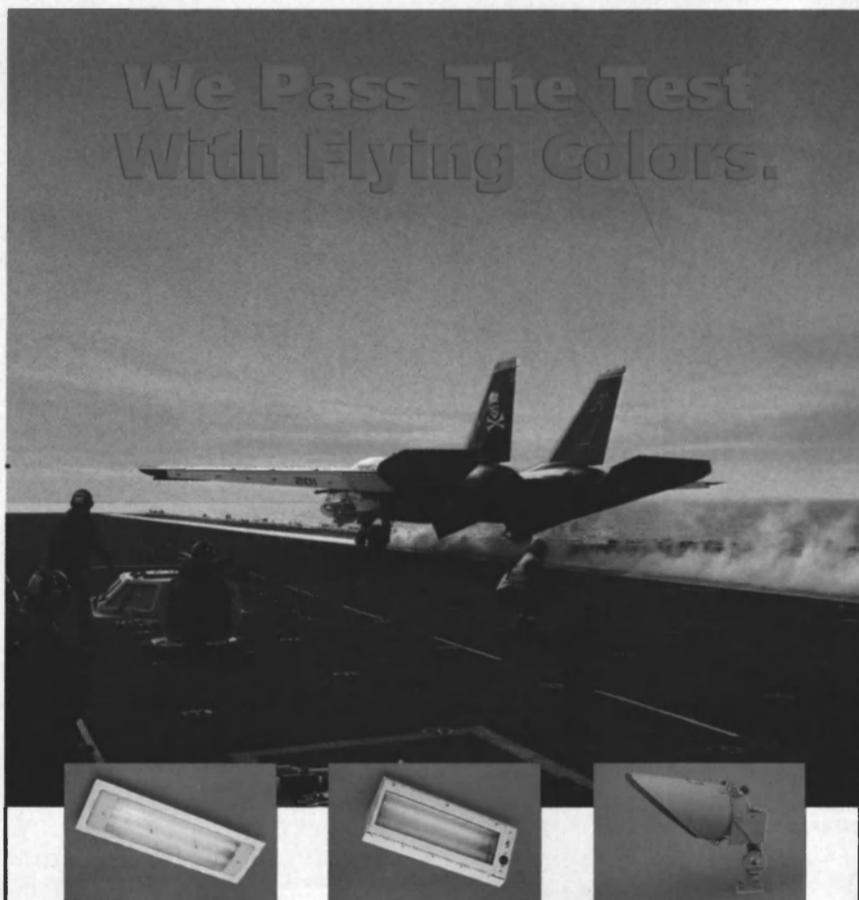
The testing program culminated

a year and one-half of effort by Willard Marine encompassing the design, engineering and drawing phase; the prototype construction and in-process testing by an independent laboratory accredited by the Coast Guard; and the operational testing which involved personnel from the Survival Systems Branch, U.S. Coast Guard Headquarters, Washington, D.C. The engineering drawings package required pre-approval by the Coast Guard before construction of the prototype boat.

One of the more significant tests of the prototype included a flooded stability test where the boat demonstrated positive stability and buoy-



The drop test of the Willard Marine prototype rescue boat in a fully loaded condition and suspended 10 feet above the water. The boat was released so that it fell freely into the water to verify that it would not sustain operational damage.



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ancy when fully flooded. An impact test was also conducted, which required the completed prototype to be loaded with weights equal to the number of persons approved for the rescue boat, and hung by its single point release mechanism. The boat was then pulled laterally to a position so that when released, it struck a concrete vertical surface at a velocity of 11.5 feet per second without sustaining damage effecting its operation.

To obtain USCG approval to SOLAS 74/83 of its 22-foot rescue boat, Willard Marine has invested in excess of \$200,000 in engineering, prototype construction and testing, independent laboratory costs, and the production of comprehensive training, operations, and maintenance manuals. The company is now beginning the same SOLAS process for its 18-foot RIB.

Willard Marine is currently producing a run of its 22-foot SOLAS rescue boats for use by the U.S. Navy auxiliary fleet oilers under construction at Avondale Industries, New Orleans, La.

In business for over 30 years, Willard Marine is a designer and builder of fiberglass RIBs and other boats from 18 to over 60 feet in size for commercial and military markets.

For free literature detailing the 22-foot SOLAS rescue boat from Willard Marine and its other RIB designs,

Circle 60 on Reader Service Card

3,000-HP Tug Under Construction At Tri-Star Marine

Tri-Star Marine, Inc., Seattle, Wash., is readying a 3,000-horsepower tugboat for delivery this month to Anderson Tug & Barge of Seward, Alaska.

The 86-foot Gale Wind will act as both a harbor ship-handling tug, as well as a long haul towboat. The first tug built by Tri-Star Marine, the Gale Wind has a beam of 32 feet, draft of 12 feet and is powered by two 1,500-hp Caterpillar 3512 DITA diesel engines with Reintjes WAE 760 marine gears, with a reduction ratio of 5.75:1, and Nautican 90-inch four-blade skewed propellers. Other equipment on board includes two Detroit Diesel generator engines, one 4-71 model and one 3-71 model, two Lima generators, one 50-kw and one 42-kw, Mathers AD12 four station engine controls, Hough Marine steering controls and a National model 4204 tow winch.

The yard is also constructing two 124-foot crab/tender vessels concurrently with the Gale Wind.

With 60 employees, Tri-Star Marine, founded about four years ago, is a full service yard, performing ship construction, repair, conversion and drydocking work on vessels 200 feet and under. The fishing industry accounts for about 80 percent of its workload.

For free literature detailing the shipyard services of Tri-Star Marine,

Circle 62 on Reader Service Card

AMFELS Wins Contract For Drill Barge Work

AMFELS, Inc., Houston, Texas, has been awarded a contract to modify and upgrade two drilling barges from Atlantic Pacific Marine Corporation (APMC) of Houma, La.

Extensive modification work began last month on the two drilling

barges, Rig 11 and Rig 14, at AMFELS' yards in Brownsville, Texas.

The work will include the addition of two longitudinal sponsons and the construction of a cantilever drilling structure over the stern of each of the drilling barges.

AMFELS will also upgrade the bilge and ballast piping system and apply a new tank coating system on both drilling barges.

AMFELS' engineering staff in Houston and Brownsville is han-

dling all the engineering design.

Both drill barges will be redelivered to their owners by the end of this year for operations in Lake Maracaibo, Venezuela.

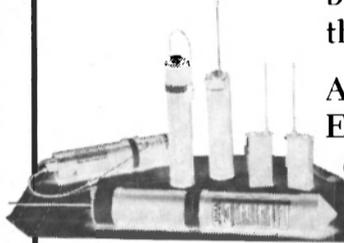
AMPC, a subsidiary of Maersk Inc., operates 12 drilling and workover rigs in the U.S. Gulf of Mexico.

For free literature on the rig repair services of AMFELS,

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For over three decades our best has kept you ready for the worst.

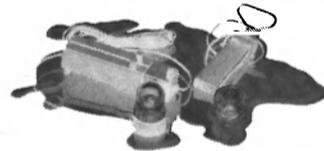
Accidents do happen, but you can plan for emergencies with proven ACR equipment. When it comes to safety, survival and security, ACR is the recognized leader. It's been that way for more than 30 years.



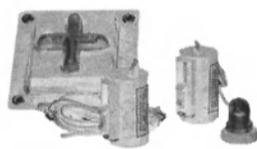
ACR leads the way in Emergency Position Indicating Radio Beacons (EPIRBs). Our latest, the RLB-23,

Category I, 406 MHz EPIRB, signals COSPAS/SARSAT low-orbit satellites and directs Search and Rescue forces precisely to the emergency. ACR Class A EPIRBs continue to be an industry standard.

Our powerful Sun Strobe Marker light sets industry standards with 4-million candle power brightness. Our full range of marker, strobe and signal lights meet the toughest requirements.



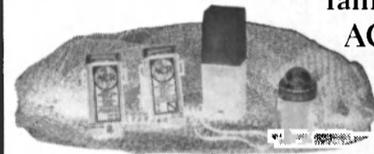
ACR is also the leader in personal rescue lights and marshalling lights.



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make an underwater version for divers. For family emergencies, ACR Strobolite is an inexpensive strobe that's ideal for boat, car, camper or backpack.



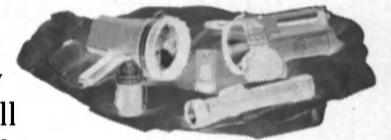
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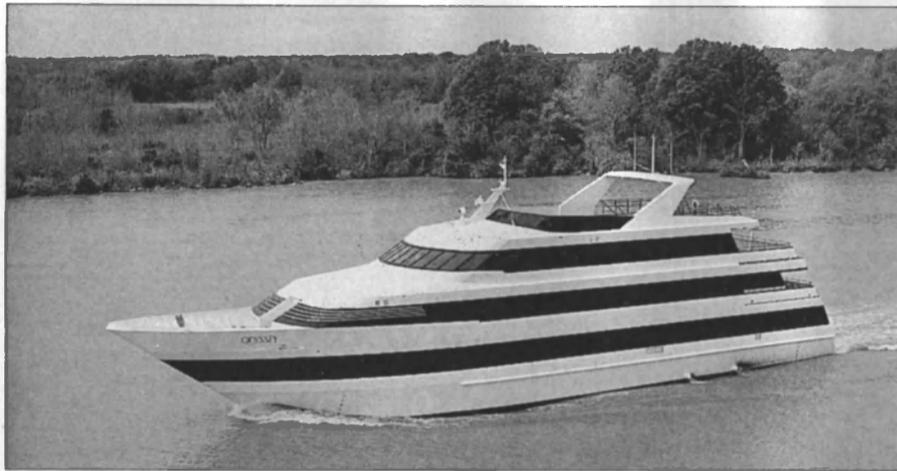
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Boats & Barges



The 800-passenger dinner/cruise boat Odyssey, built by Service Marine Industries, Inc., has styling reminiscent of a private yacht.

Service Marine Christens 800-Passenger 'Odyssey'

Service Marine Industries, Inc., recently christened the firm's eighth dinner/cruise boat, the 800-passenger Odyssey. The vessel was sponsored by Mr. and Mrs. **Jim Miller** of Chicago, owners of Service Marine. The boat was christened by Ms. **Brandy Gros**, daughter of Mr. and Mrs. **Wilbert Gros**. Mr. Gros is one of the company's shipbuilders.

Tom Hensley, president of Service Marine, said that the Odyssey is by far the most glamorous of the megayacht-style dinner boats designed by the company. The 175-foot long by 37-foot wide boat will carry her 800 passengers on three

"whisper" quiet decks.

Odyssey Cruises will operate the M/V Odyssey from the Navy Pier in Chicago. The managing partners, **Mike Higgins** and **Roy Sanders**, plan to offer a true yachting experience with specially prepared food served at the guests' tables. There will be live entertainment and music provided for the passengers' enjoyment.

For the passengers' comfort, the engine room has been made as quiet and vibration free as possible by use of special engine mounts and sound isolation panels. Windows are heavily tinted to block out unwanted heat,

and sized to provide excellent scenic views.

The Louisiana Machinery Company supplied the main engines and generators for the Odyssey. The boat is powered by two Caterpillar 3408 DITA engines, rated at 470 bhp each at 1,800 rpm. The two generators are Caterpillar 3406T marine gensets with 250 kw generators. The boat is equipped with a 240-hp Schottel bowthruster direct driven by Caterpillar 3208T, 250 hp

at 2,800 rpm. Marine gears are ZF model BW-161 at a ratio of 4:1. Bird-Johnson supplied the 48-inch by 46-inch propellers.

Harris Refrigeration supplied and installed the 73-tons of air conditioning and Frank L. Beier Electronics supplied and installed the ship's electronics package.

For free literature detailing the boatbuilding services of Service Marine Industries,

Circle 80 on Reader Service Card

20-Page Guide Offered On Rolla Propellers

Rolla SP Propellers S.A., Balerna, Switzerland, a leader in the design and production of some of the world's widest selection of advanced technology and high performance propellers, is offering a 20-page general guide to its fast propellers.

Divided into 15 sections, the guide details several key recent company developments.

One event is the 1,039-mile victory obtained by **Howard Arneson** on the Mississippi River in a 32-foot catamaran. The boat was powered by a single 1,325-hp GE T-58 turbine and one of Arneson's ASD-8 drives with a Rolla stainless steel racing propeller. Mr. Arneson set a new record of 12 hours, 40 minutes and 50 seconds.

A second event detailed in the guide is the technical success of the REXPSC90-91 Series. According to Rolla, these propellers almost double the advantage of going from conventional to surface piercing technology.

Thirdly, exhaustive testing of Rolla's latest family of investment cast surface piercing propellers has

ended at the Technische Universität Berlin, and the results of the testing will be presented by **John Rose** of Rolla USA, together with Prof. Kruppa of Berlin at the FAST 91 conference at Trondheim, Norway. The title of the presentation will be "Surface Piercing Propellers—Methodical Propeller Series Model Test Results."

For a free copy of the guide from Rolla,

Circle 85 on Reader Service Card

LPG Carrier Orders Continue On Rise

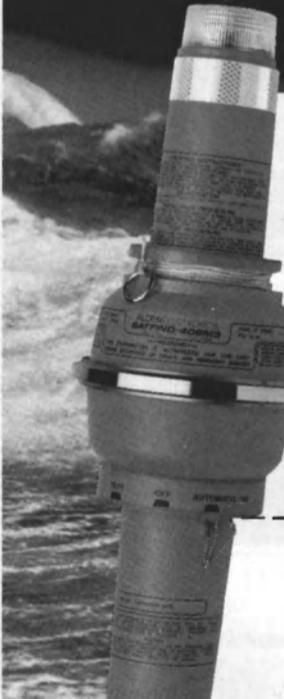
Over the last four years, there has been a substantial rise in the number of liquefied petroleum gas (LPG) carriers on order, according to Clarkson Research Studies of the U.K.

According to Clarkson's Gas Carrier Register, as of the 1st of this year, 99 LPG carriers were on order worldwide, compared with 80 a year earlier and 44 in 1989.

An analysis of the order book indicates that a substantial rise in deliveries of LPG carriers will take place this year and in 1993.

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For the name of your local Alden Marine Electronics dealer and a free brochure, call 1-508-366-8851 or send the coupon to Alden Electronics, 54 Washington St., Westborough, MA 01581.

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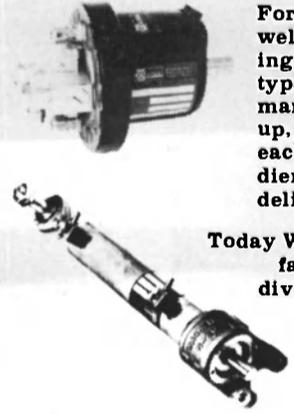
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Maritime Reporter/Engineering News

Boats & Barges



The barge ST44, built by Zidell Marine, will be used for transporting grain on the Columbia River system.

Zidell Marine Launches Second Barge Since Reopening Portland, Oregon, Facility

Zidell Marine Corporation recently launched its second barge since reopening its facility in Portland, Ore. The ST44, a 273-foot by 42-foot by 16-1/2-foot grain barge, built for Shaver Transportation, will be used for transporting grain on the Columbia River system.

Currently under construction at Zidell Marine Corporation is a 302-foot by 76-foot by 20-foot deck cargo barge, with launching anticipated

late this month. This will be the largest barge ever built by Zidell at their Moody Street facility.

In addition, materials have been purchased and engineering is in the final stages for construction of a petroleum tank barge.

For free literature on the facilities and capabilities of Zidell Marine,

Circle 56 on Reader Service Card

Nichols Brothers Convert Crabber To Automated Scalloper For Arctic Alaska

The M/V Arctic Rose, the North Pacific's first automated scalloper, was recently hard at work off the Aleutians testing out machinery developed by the Norwegians and installed by Nichols Brothers Boat Builders, Inc., at the firm's Whidbey Island, Wash., yard. Nichols Brothers converted the former crabber to the 195-foot Arctic Rose for the Arctic Rose Fisheries.

The conversion project was engi-

neered by Jensen Maritime Consultants of Seattle for the owners, Arctic Alaska, Inc., and Seahawker Fisheries of Seattle.

Nichols' work, among other things, included installation of generators, processing equipment, three new decks, and a 19-foot section to the stern. The converted vessel measures 195 feet by 38 feet by 22 feet.

The Arctic Rose will be able to



The 195-foot Arctic Rose, the first fully automated scallop dredger in the North Pacific, is now fishing off the Aleutians after being converted by Nichols Brothers Boat Builders.

dredge between eight to 10 tons of product a day with two steel-framed, five-foot chain bags handled by cranes on the stern.

Nichols Brothers has built a number of fishing vessels in the yard's 52-year history, and has experienced a rise in its conversion and repair work for Northwest fisheries in the last two years. The firm, which operates a building yard in

Freeland and a fitting-out dock in Langley, last year also established operations in Portland, Oregon, at Nichols Marine Ways near St. John's Bridge on the north bank of the Willamette River.

For free literature on the facilities and capabilities of Nichols Brothers Boat Builders,

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Circle 234 on Reader Service Card

HMS Marine Hardware Announces New Products —Literature Available

HMS Marine Hardware, Inc., Valley Stream, N.Y., now has shock-qualified lavatory and emergency equipment for U.S. Navy shipboard applications.

To maintain commercial price

levels for shock-qualified products, HMS Marine Hardware has utilized standard commercial products with modification-as-necessary to achieve shock resistant capability.

HMS Marine Hardware also offers shock-test program-management for concerns wishing to have their products shock qualified.

Kick-out louvers provide compartment ventilation needs while also

providing a means-of-escape in the event of the compartment door becoming jammed or blocked.

HMS Marine Hardware has developed kick-out louvers for flush panel doors of 1-3/8-inch through 2-inch thickness, intended for either retrofitting existing doors or installation into new doors. Either way, these louvers provide life-saving escape routes.

For further information and a free color brochure from HMS Marine Hardware,

Circle 82 on Reader Service Card

DLI Awarded Machine Condition Monitoring Contract By MSC

The Military Sealift Command (MSC) in Washington, D.C. has awarded DLI Engineering Corporation of Bainbridge Island, Wash., the first phase of an \$11.6 million cost-plus-fixed-fee, five-year contract to furnish computerized machinery condition monitoring systems to the MSC fleet. When fully installed the systems, which will include expert system software, will increase the fleet's operational readiness and reduce overall vessel maintenance and repair costs.

According to Robert B. Grant DLI program manager, the MSC contract requirements include portable vibration data collectors for periodic monitoring of shipboard machinery plus expert system software which will make automatic diagnosis of shipboard machinery problems. DLI developed vibration data collectors and expert system software will be installed throughout the MSC fleet of steam turbine and diesel engine-powered ships totaling approximately 106 vessels worldwide.

Navy Awards Avondale \$110.9 Million Coastal Minehunter Contract

Avondale Industries, Inc. recently announced the award of a \$110.9 million U.S. Navy contract for the construction of two Coastal Minehunters (MHC). The contract is a fixed-price-incentive award subject to escalation based on selected material and labor indices. The current backlog of Avondale work related to the Coastal Minehunter program (including this award) is \$235.2 million.

The award of this contract represents the third award of this class of vessel to Avondale. Work will be performed in Gulfport, Miss., and is scheduled for delivery in November 1994 and February 1995. Construction of these vessels will be based on glass reinforced plastic construction technology. MHC-class ships are used to provide coastal and harbor mine countermeasure capabilities.

Avondale Industries, Inc., headquartered in New Orleans, La., is one of the nation's leading marine fabricators. In addition to its shipbuilding operations, the company specializes in boat and LCAC construction and is a major repair contractor for commercial and Navy ships. It is also involved in the modular construction of plants and components for a variety of land-based industries.

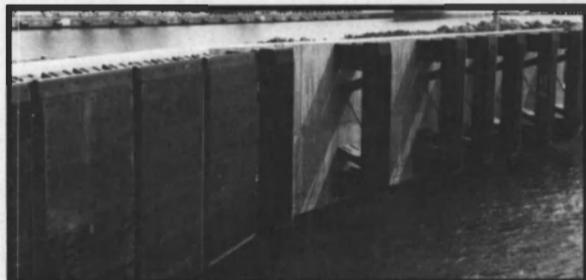
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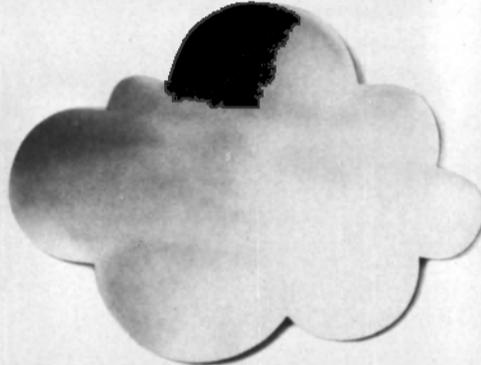
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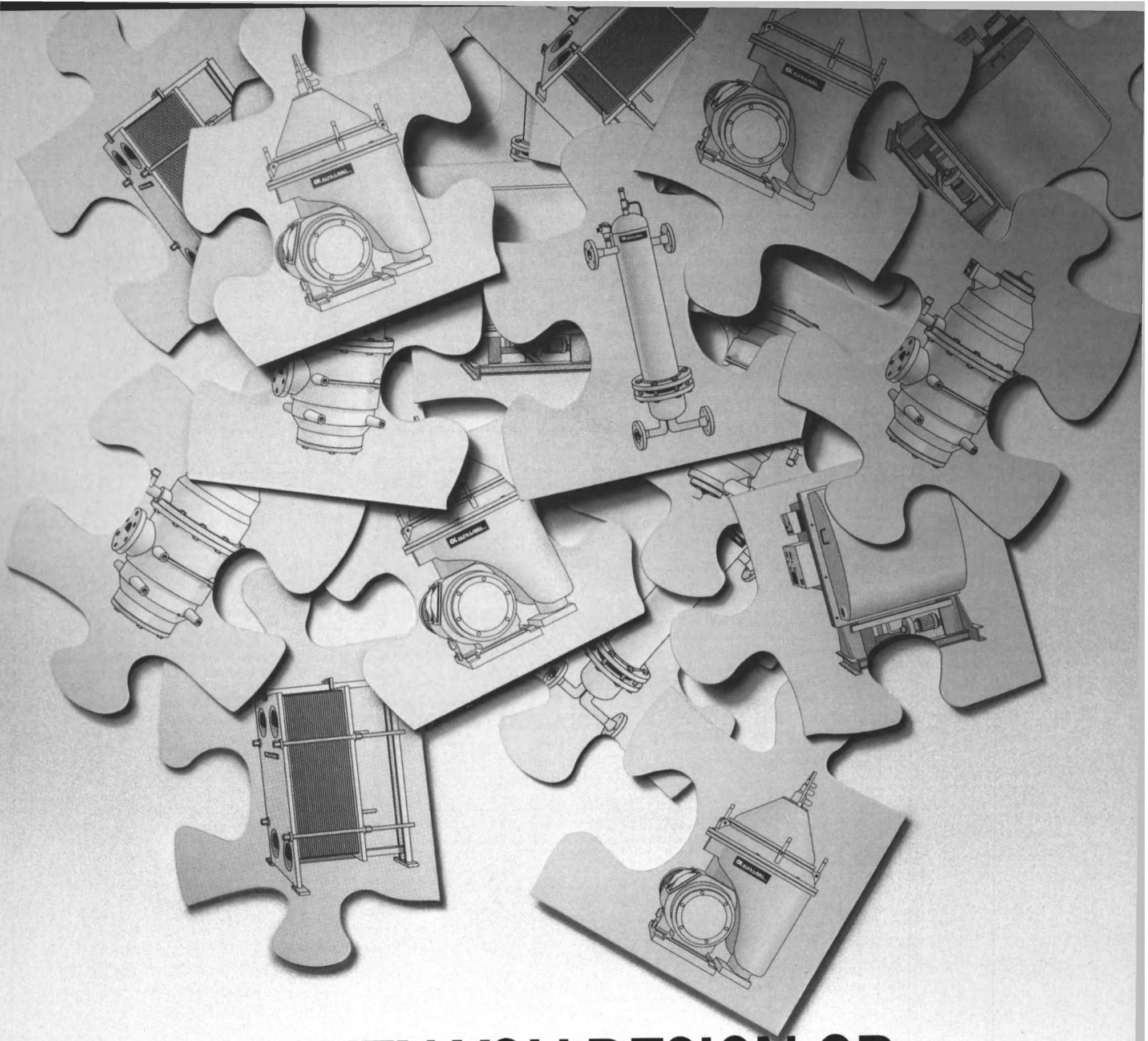
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Barge Industry Urges President Bush To Sell More Grain To Soviets

Citing both humanitarian and economic reasons, the nation's barge and towing industry has urged President **Bush** to immediately grant the Soviet Union's recent request for

\$1.5 billion in new credit guarantees to purchase U.S. grain.

"It would allow the Soviet Union to purchase \$1.5 billion in desperately needed U.S. wheat, corn, and soybeans at a time when the people of that troubled nation urgently need the basic foodstuffs America can provide. According to the Soviet's own news reports, people will go hungry—even starve—without this

additional and immediate assistance," said **Joe Farrell**, president of the American Waterways Operators, in an April 19 letter to President Bush.

The American Waterways Operators is the national trade association of the inland and coastal barge and towing industry—an industry that transports almost 60 percent of U.S. export grain.

The barge and towing industry transports 15 percent of the nation's freight on the inland and coastal waterways, moves 30 percent of U.S. petroleum and petroleum products, and one-fourth of all the coal in the U.S., in addition to its heavy grain-carrying capacity.

The Soviet's request would more than double their U.S. grain purchases through the Department of Agriculture's Commodity Credit Corporation.



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Circle 378 on Reader Service Card

MagneTek Forms Agreement With Thorn EMI

MagneTek Defense Systems has entered into an agreement with the Naval Systems Division of Thorn EMI Electronics Limited of the U.K. for joint marketing, development and manufacture of its military electronics products and Thorn EMI magnetometry products. This agreement covers these activities in the U.S. and the U.K. Announcement of the agreement was made in Anaheim, Calif., by **Ed Rizzotti**, senior vice president and general manager of MagneTek Defense Systems.

MagneTek Defense Systems, a strategic business unit of MagneTek, Inc., designs, markets and manufactures electrical/electronic power equipment for domestic and international applications.

Thorn EMI Electronics, Ltd., a part of Thorn EMI plc, is an international supplier of specialized electronics for military and civil applications.

The agreement was reached between the two companies in order to combine the marketing and manufacturing strengths of each and meet increasing worldwide customer demand for selected products currently offered by both.

For further information on products offered in this agreement,

Circle 32 on Reader Service Card

Hoffer Offers Short-Form Catalog On Turbine Flowmeter Products

Hoffer Flow Controls, Inc., Elizabeth City, N.C., is offering a short-form catalog full of engineering information on their turbine flowmeter products and associated electronics.

Detailed information on precision in-line turbine flowmeters, mini-flowmeters for low flow rates, insertion flowmeters for large pipe diameters, and their new low-cost, industrial grade turbine flowmeters is provided.

A complete cross-reference of turbine flowmeter to electronics is included plus a cryogenic electronics and application review.

For a free copy of this comprehensive short-form catalog from Hoffer Flow Controls,

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Expert knowledge. Exceptional creativity. A proven record of delivering projects **on time**—and **within budget**. The reasons why Directions In Design (DID) has established itself as one of America's elite ship design specialists.

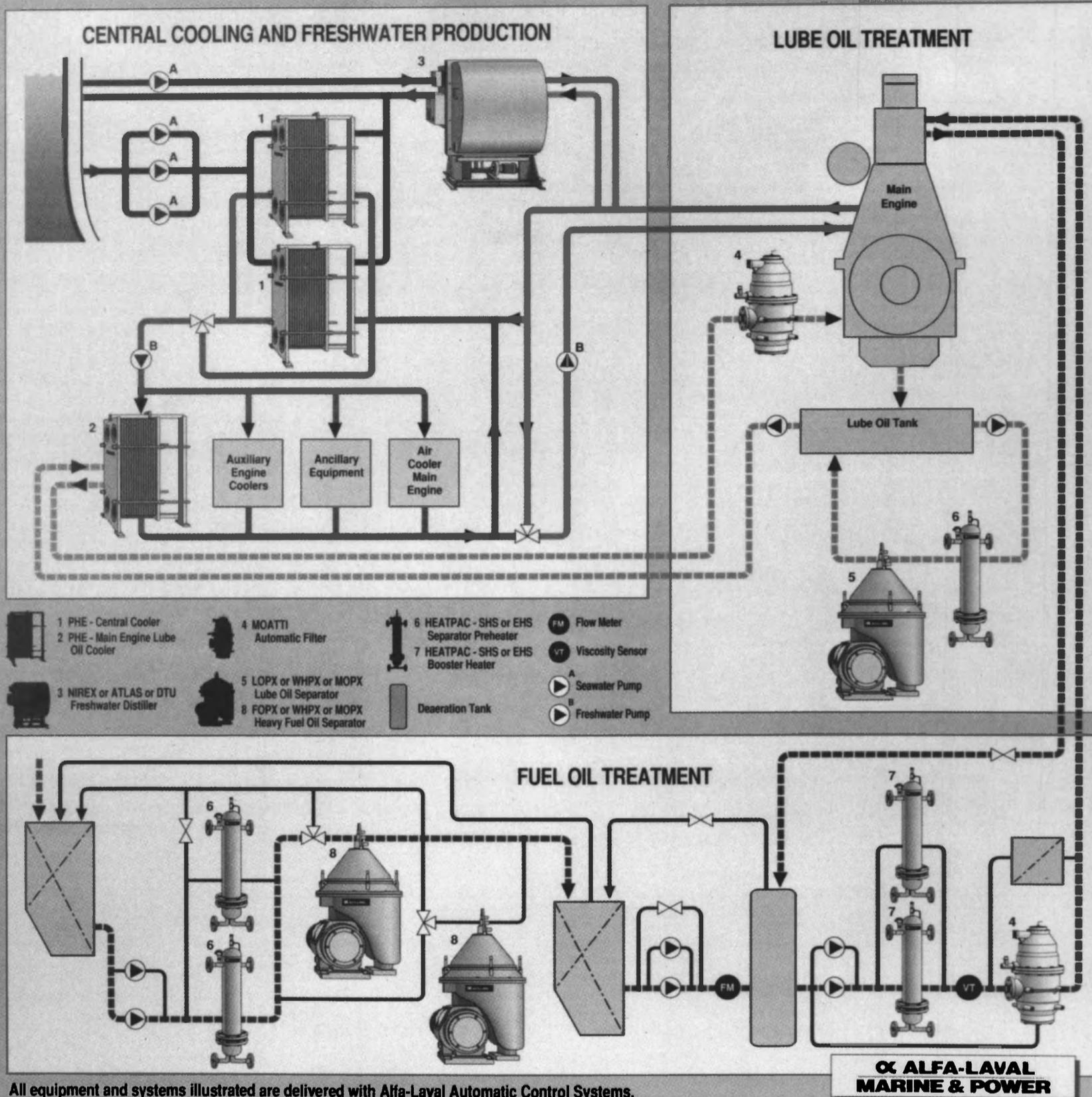
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4000 fax (215) 957-4859.

Circle 331 on Reader Service Card

**ACR Introduces
Two New EPIRBs
—Literature Available**

ACR Electronics, Fort Lauderdale, Fla., has introduced two new EPIRBs (Emergency Position Indicating Radio Beacons). The beacons work in conjunction with COSPAS/

SARSAT satellite systems and transmit on two separate emergency frequencies, 406.0 MHZ (satellite) and 121.5 MHZ (homing). Each EPIRB transmits its own unique identification message.

The RLB-23 may be activated manually or is automatically activated and deployed by a built-in hydrostatic release which frees the unit to the surface when submerged

in 3 meters or more of water.

The RLB-24 is designed to be manually activated and deployed in emergency situations.

Both units are powered by heavy-duty 10-year replacement cycle batteries. They are fully approved by the FCC, COSPAS, SARSAT and USCG. They can be self-tested upon activation and feature a built-in strobe for easy location.

For additional information on the two new EPIRBs from ACR Electronics,

Circle 16 on Reader Service Card

**Prince William Sound
Environmental Recovery
Documented In Report**

Three distinguished marine biologists recently reported that two years after the 1989 Valdez oil spill in Prince William Sound, Alaska, the environment is largely recovered, the biota is healthy, fish populations are thriving, water quality is excellent, and concern about long-term adverse effects on the environment including animal life has been overstated.

The report, titled "Two Years After the Spill: Environmental Recovery in Prince William Sound and the Gulf of Alaska," was recently issued at the 1991 International Oil Spill Conference sponsored by the U.S. Environmental Protection Agency, the American Petroleum Institute and the U.S. Coast Guard.

In addressing the question of whether further cleanup needs to be done and whether restoration programs such as replanting and restocking of damaged areas needs to be accomplished, they "saw nothing to indicate that further human intervention in the marine restoration process would be of any value," since biological recovery is well under way.

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Circle 252 on Reader Service Card

**Bender To Convert
Dinner Cruise Boat
To Casino Riverboat**

Bender Shipbuilding & Repair Co., Inc. was recently awarded a contract worth \$1.1 million for the conversion of the M/V Alton Belle Casino (ex-Empress of Palm Beach). The vessel is owned by the Alton Riverboat Gambling Partnership of Alton, Ill., near St. Louis.

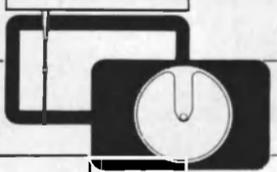
Expected to take 70 days, the conversion will change the vessel from a dinner cruise boat to a casino riverboat. Bender will insert a 50-foot midbody section into the original vessel and when completed, the Alton Belle Casino will be 156 feet long and will accommodate 660 passengers. She will be equipped with approximately 400 gaming positions. Games will include slot machines and table games. Electrical services, HVAC services and interior decor will be upgraded to casino standards.

Bender's full-service facilities stretch along a mile of Mobile's waterfront. Founded in 1919, the company builds, converts and repairs vessels for commercial and government owners and operators.

For free literature on the facilities and capabilities of Bender Shipbuilding & Repair,

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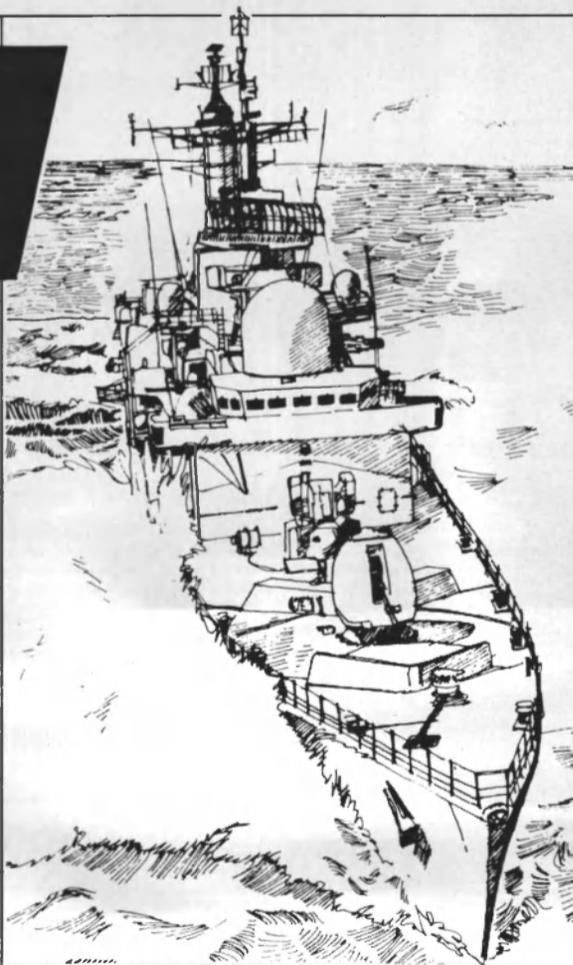
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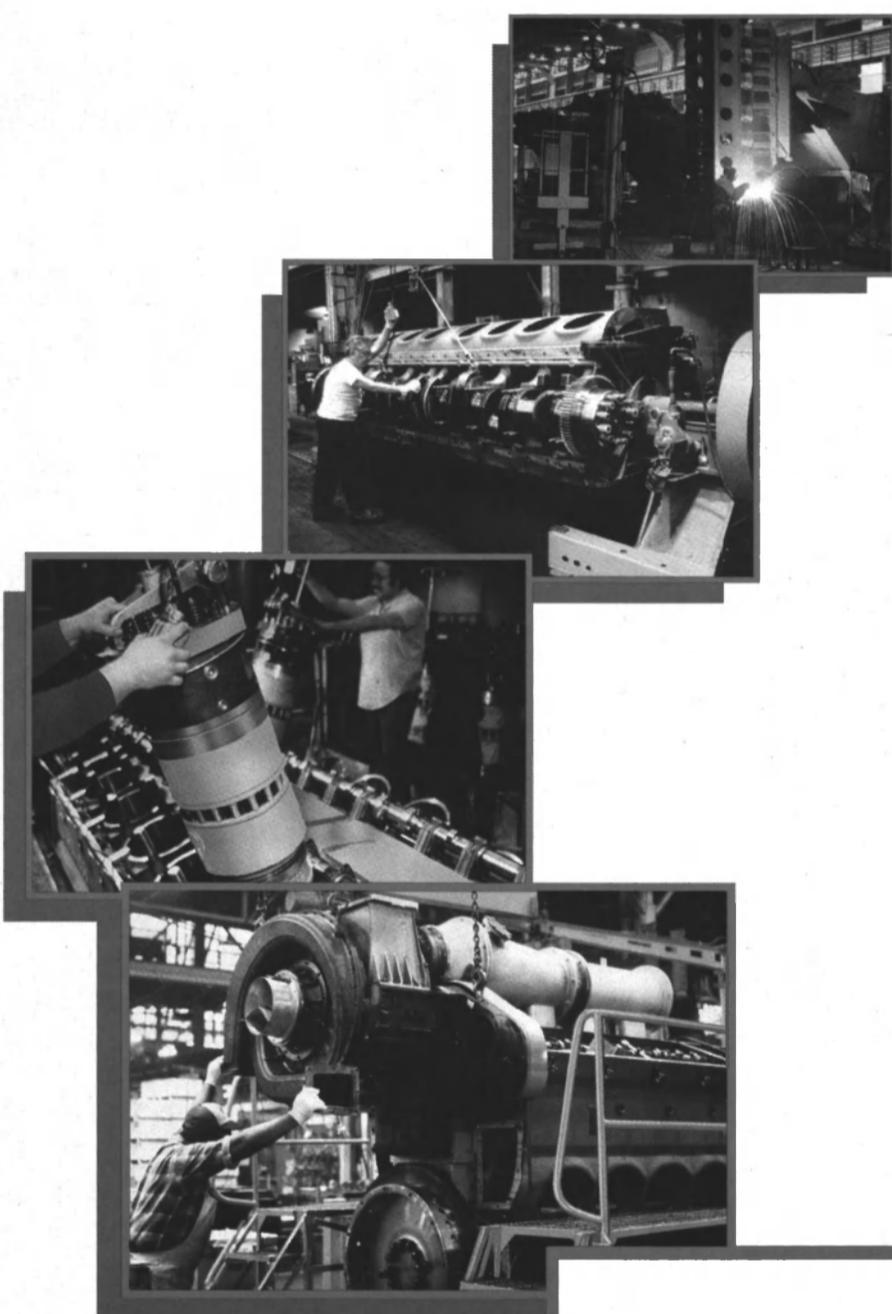
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**60,000 engines!
No other manufacturer of
medium speed Diesel engines
has produced as many.**

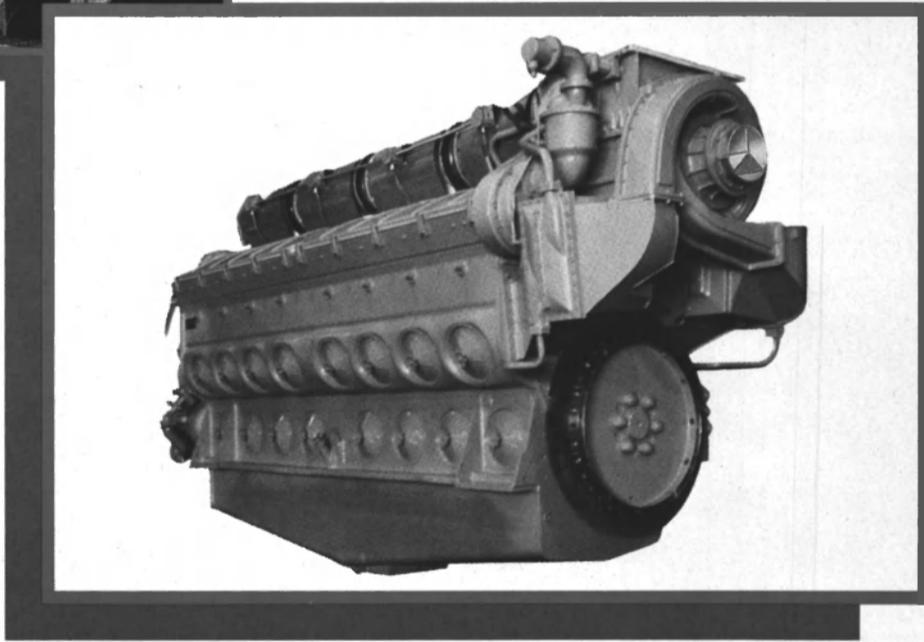
General Motor's Electro-Motive Division is the leading manufacturer of medium speed Diesel engines, building more engines than any other manufacturer in its class.

EMD employs advanced engineering technologies and proven manufacturing processes to produce Diesel engines that are reliable, economical and easy to maintain. Our commitment to quality is built into every engine.

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**A Proud
Tradition
Continues**



Boats & Barges

Gulf Craft Delivers 130-Foot Aluminum Crewboat To Offshore Oil Services

Gulf Craft, Inc. of Patterson, La., recently delivered the 130-foot-long aluminum crewboat M/V Evelyn M. to Offshore Oil Services, Inc. of Freeport, Texas. The Evelyn M. will be used to transport passengers, cargo, fuel, and water to the offshore platforms in the Gulf of Mexico.

The Evelyn M. is powered by four Caterpillar 3412 diesel engines turning 40-inch-diameter propellers through Twin Disc 518 (2-1/2:1) reverse and reduction gear. Electrical power is provided from two 30-kw diesel generators. The electrical requirements are for central air conditioning and heat, freshwater pump, bilge and ballast pump, hy-

draulic steering, electronics, and the onboard lighting.

In addition to passenger and lounge spaces, the Evelyn M. has accommodations and galley spaces for a crew of five. The aft deck is 68 feet long and has a cargo capacity of 85 long tons. Tankage includes 10,800 gallons of fuel, 900 gallons of potable water, and 18,000 gallons of rig water.

The Evelyn M. is Coast Guard-approved for 200-mile ocean service for oil exploitation in the Gulf of Mexico.

Gulf Craft also recently delivered the 90-foot all-aluminum, whale-watch vessel M/V Voyager II to the



The Caterpillar-powered aluminum crewboat Evelyn M. is the latest vessel delivered by Gulf Craft, Inc. of Patterson, La.

New England Aquarium in Boston, Mass. Voyager II is powered by four Detroit Diesel engines turning 34-inch propellers through Twin Disc

reverse reduction gears.

For free literature on the facilities and capabilities of Gulf Craft, Circle 40 on Reader Service Card

WestPac Industries Named MMC Distributor

WestPac Industries, Cardiff, Calif., has been appointed sales representative in southern California for all products manufactured

by MMC International Corporation.

MMC International Corporation was founded in 1939 and is a major manufacturer of electronic gaging tapes of all kinds, C-L couplings and other specialty products for the marine and liquid handling industries.

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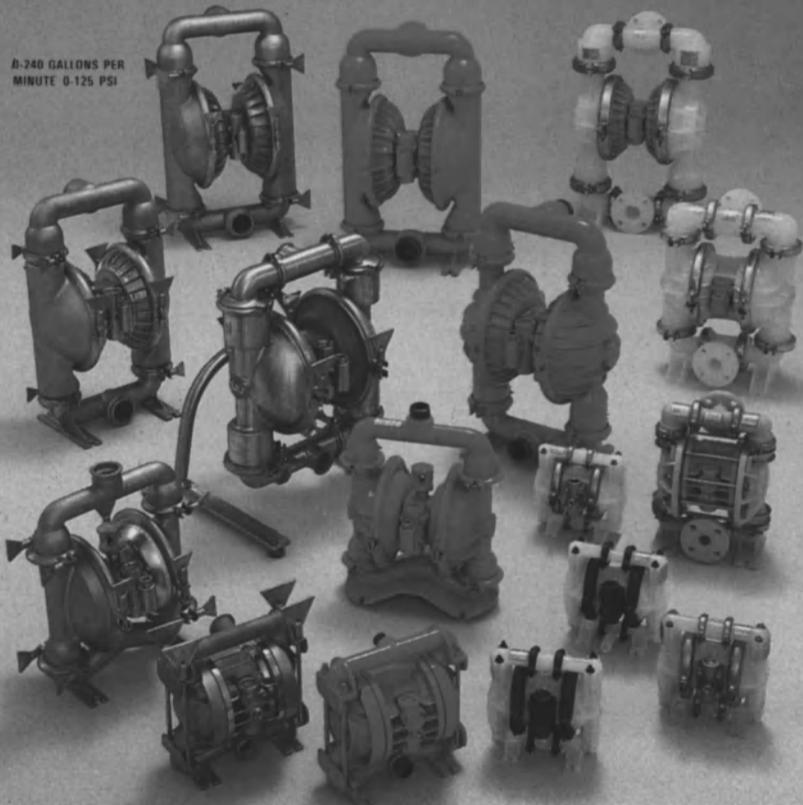
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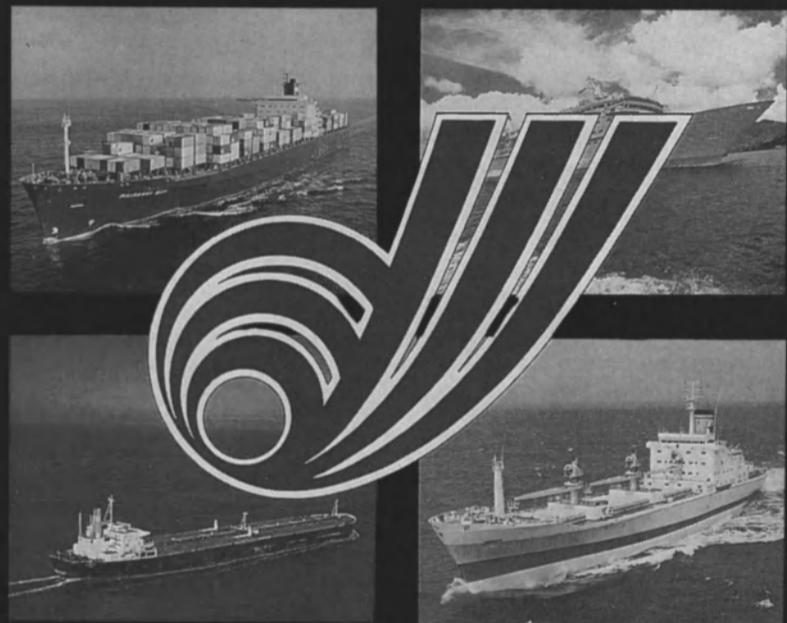
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Texaco In Talks With U.S. Yards For Construction Of 4-5 New Oil Tankers

Texco Inc. is now engaged in talks with a number of domestic yards for the construction of four to five new 40,000-dwt oil tankers with double hulls to replace a number of 26,000-

46,000-dwt tankers now coming to the end of their active lives, according to Jim Liebertz, manager of economics and planning in Texaco's marine department.

A likely price per vessel of more than \$60 million was suggested by industry sources, dropping closer to \$50 million per ship with series production.

In the wake of passage through

Congress last year of the Oil Pollution Act, Mr. Liebertz said the Texaco had reexamined its oil transportation policy. The company is still committed to carrying Texaco oil on Texaco ships, he added, stating that if Texaco is going to be held accountable for whatever happens, they want as much control as possible.

Mr. Liebertz said that a four-to-five ship order would satisfy Tex-

aco's U.S.-flag requirements for the near future. He pointed out that the company is also looking at international needs, but there is more of a time constraint in the U.S. because of the Oil Pollution Act.

Because the domestic shipbuilding industry has shrunk drastically over recent years, the Texaco order would provide significant stimulation.

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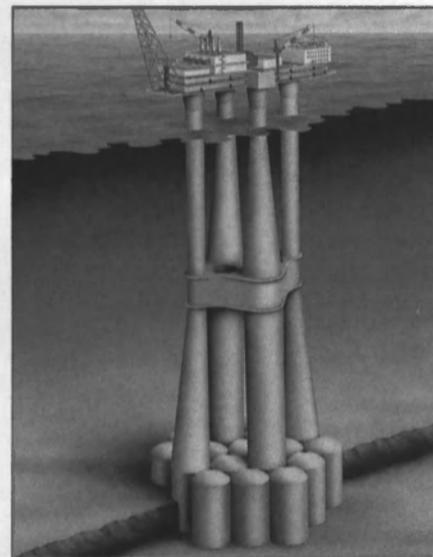
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NC Awarded Troll Platform Contracts Worth \$614.2 Million



Artists conception of the giant Troll platform to be built by Norwegian Contractors for Norske Shell.

Norwegian Contractors a.s. (NC) of Stabekk, Norway, was recently awarded the largest single contract ever in the history of the company. The contract, awarded by Norske Shell for construction of the giant Troll platform, has a value of 3.5 billion NOK (about \$518,000,000). (See MARITIME REPORTER/Engineering News, October 1990 issue.)

In addition, NC was also awarded the MMO contract—the mechanical outfitting of the concrete structure. This contract has a value of 650 million NOK (about \$96.2 million). The two major construction contracts mount to a total value of 4.15 billion NOK (about \$614.2 million).

The platform will be installed on the Norwegian continental shelf at a water depth of 990 feet, where it will mainly produce gas for the European market. Construction work will start at NC's yard in Stavanger in September, and be completed in Vats prior to installation on the field in 1995. The concrete structure will have a total height of 1,209 feet, and the completed platform will have a displacement of some 1,270,000 tons during low-out to the field.

Apart from being the largest contract related to the Troll field development, the contract for the construction of the platform is the largest single contract ever awarded in Norway.

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Judge Temporarily Halts \$2 Billion Contract For Second Seawolf Sub

The Pentagon contract with General Dynamics Electric Boat division to build the second \$2 billion Seawolf-class attack submarine has temporarily been blocked by a federal judge in Norfolk, Va.

The order was issued by Judge **Robert Doumar** after Tenneco Inc.'s shipbuilding unit, the unsuccessful bidder for the nuclear-powered submarine, filed a lawsuit challenging the contract. Newport News Shipbuilding & Dry Dock Co. claims in the suit that senior Pentagon officials violated the law by improperly influencing the Navy to award the construction contract to its rival, General Dynamics's Electric Boat division.

The suit contends that although the General Dynamics unit was the low bidder to build the fast, super-quiet submarine, Congress previously approved language explicitly requiring the Pentagon to give at least as much weight to an acquisition strategy designed to keep both shipyards actively building submarines.

Initially, the Navy had hoped to keep both yards busy by ordering as many as 23 Seawolfs over the next seven or eight years, but those plans were scaled back sharply to one attack submarine a year. Some officials predict only a handful more are likely to be built. Navy planners are working on a less-expensive generation of attack subs—code-named Centurions—intended to replace or supplement the Seawolf after the late 1990s.

Lawmakers from Virginia have said that at first, the Navy's brass favored giving the work to the Newport News, Va.-based Tenneco unit. The suit alleges that Electric Boat and its supporters lobbied senior Pentagon acquisition officials to get that original decision reversed.

Before the contract award on May 3, Electric Boat officials are said to have quietly complained to the Navy about their rival's lobbying efforts, and the General Dynamics unit threatened to file suit against Newport News Shipbuilding, charging political manipulation if it lost.

The first nuclear-powered Seawolf-class submarine is currently being built in Groton, Conn., by Electric Boat.

Norway Backs Plan To Increase Safety Levels For Ships

One of the world's most powerful shipping nations, Norway, has proposed a radical overhaul of world ship safety requirements to the International Maritime Organization (IMO). The proposal would compel owners to spend hundreds of millions of dollars on bringing elderly ships up to modern safety standards, and would end the immunity en-

joyed by owners from introducing improved safety standards after a ship is delivered.

To be discussed later this month by IMO's maritime safety committee, the Norwegian proposal would require shipowners to upgrade their ships periodically to meet important terms of safety legislation.

The five-point plan being backed by Norway, which it says would increase safety levels for existing

ships, calls for:

Removal of "grandfather clauses" in IMO instruments and replacement with new rules calling for the gradual improvement of existing ships.

Shipowners would be required to implement higher safety standards if they carried out modifications to ships which were intended to increase service life or revenue.

Ships of an inferior safety level

which could not be upgraded on technical or economic grounds would be phased out.

Improved operational methods to prevent accidents would not be considered as an alternative to technical upgrading.

The safety of older ships, the Norwegians say, has become a matter of public concern following a number of serious accidents in recent years.

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Singmarine Wins Contract To Build \$29.5 Million Combination Carrier

Singapore-based Singmarine Industries Limited (Singmarine), through its shipbuilding and repair division Singmarine Dockyard & Engineering Pte. Ltd., has won a

contract worth about S\$52 million (\$29.4 million) to design and build a highly specialized combination carrier for molten sulfur/petroleum products for Abu Dhabi National Tanker Company of the United Arab Emirates (UAE).

The 8,850-dwt combination sulfur/petroleum products carrier, measuring 127 meters (about 417 feet) will be one of 15 such carriers

in the world. She will be deployed to transport molten sulfur from Das Island to Ruwais, where the molten sulfur will be converted into dry sulfur for export.

The combination carrier will be built to strict requirements and rules of Lloyd's Register of Shipping, as well as in accordance with the rules and regulations of the United Arab Emirates.

Propelled by single-screw, heavy oil diesel engines, the carrier has three independent self-supporting cargo tanks, each equipped with two deep-well pumps for the transfer of molten sulfur at a temperature of +135 degrees C. The cargo tanks for molten sulfur has a total capacity of 4,725 cubic meters, while the cargo tanks for petroleum products can take up to 3,682 cubic meters.

Some of the major newbuildings currently being built by Singmarine Dockyard include the 9,300-dwt sophisticated chemical tanker for Mediterraneo Di Navigazione, the world's largest well stimulation vessel for Western Petroleum Services International, and a 120-TEU roll-on/roll-off container vessel for ANL Limited. Another vessel, a 5,000-dwt clean product tanker, was recently delivered ahead of schedule to Thai Oil Company.

Secretary Watkins Warns, Develop Alaskan Refuge Oil Now Or Risk Loss

Energy Secretary **James Watkins** said recently that unless energy exploration is allowed soon on Alaska's Arctic National Wildlife Refuge, the Trans-Alaska Pipeline could be shut down early, and more than a billion barrels of crude oil could be lost.

At a Senate Energy and Natural resources Committee hearing, the Secretary unveiled a report titled "Alaskan Oil and Gas: Energy Wealth or Vanishing Opportunity." The report warned that if no new large-scale oil fields are developed on Alaska's North Slope, the 800-mile pipeline will likely shut down in the year 2009, when declining output from Prudhoe Bay is expected to drop the flow of oil in the pipeline to below its minimum throughput rate.

Mr. **Watkins** said not only do we risk losing possible new reserves larger than any onshore field discovered in the U.S. since the 1940s, but the possibility exists that we could abandon as much as 1 billion barrels of recoverable crude oil that would be left in known fields when the pipeline is taken out of service.

Citing a 12-year turnaround time from lease sale to production, the Secretary said authority for leasing a portion of the wildlife refuge must be granted before 1997.

Maritrans Elects Dorman Director

Craig E. Dorman was recently elected a director of Maritrans GP Inc., the managing general partner of Maritrans Partners L.P. **Stephen A. Van Dyck**, chairman and chief executive officer, made the announcement following Dr. **Dorman's** election as a new director by the board of directors.

Maritrans Partners L.P. is a master limited partnership formed in 1987 to purchase and operate, through Maritrans Operating Partners L.P., a fleet of tugboats and oceangoing tank barges along the Gulf and Atlantic Coasts.

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Corps Of Engineers Awards \$112 Million Dredging Contract

The U.S. Army Corps of Engineers has awarded a joint venture, headed by Great Lakes Dredge & Dock Co., the contract for Phase 4A of the deepening of the Kill Van

Kull, the entrance channel to Newark Bay and Port Elizabeth, according to an announcement by Great Lakes president **Witt Barlow**. When the project is completed, the channel will be 42 feet deep.

The value of the contract for KVK4A, as the project is known, is \$112,000,000. The other partner in the joint venture is American Dredging Co. Duration of the contract is

36 months.

Great Lakes Dredge & Dock Company is one of America's leading marine contractors and a unit of ITEL Corporation. With headquarters in Oak Brook, Ill., it has division offices in Staten Island, Baltimore, Jacksonville, New Orleans, Cleveland, and Oakland. Founded in 1890, the company celebrated its centenary last year.

Finnish Shipbuilders Win Orders For Cruise Ships Worth Over \$300 Million

Orders for two new cruise ships worth a total of more than \$300 million have been won by Finnish shipbuilders.

Dolphin Cruise Line of Miami, Fla., signed a \$200 million contract with Masa-Yards, now owned by Kvaerner, for a 1,100-passenger vessel to be delivered next summer.

Delivery of the 32,400-gt vessel, already launched, is possible in little more than a year because it was first ordered by Birka Line with the now-bankrupt Wartsila Marine, but not renegotiated with Masa, its successor company.

To be named the Royal Majesty, the new ship may be placed under the Panama flag.

The other new contract is a second twin-hulled ship for new Finnish owner Diamond Cruises, whose directors met this week to decide on an option held with the Rauma-Repola yard.

The company hopes to make an announcement soon on the second ship, worth \$130 million. A similar option exists for a third vessel.

ASNE/Atlantic Fleet Joint Symposium Set For October 1991, Virginia Beach, Va.

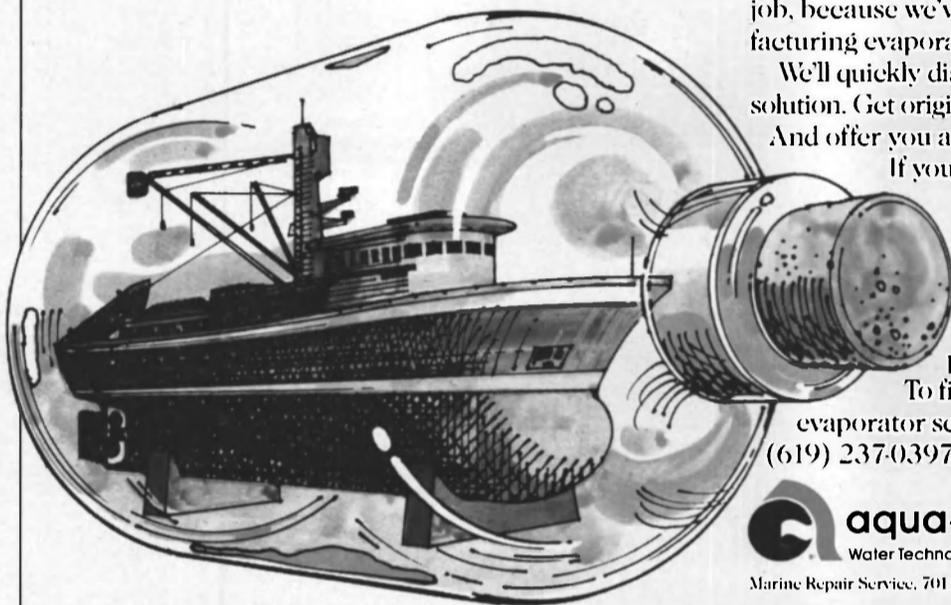
ASNE Tidewater Section will cosponsor with Commander in Chief, U.S. Atlantic Fleet, a Joint Symposium entitled "Fleet Maintenance in the 21st Century." The symposium will be held October 22 and 23, 1991 at the Pavilion Convention Center in Virginia Beach, Va. Nationally prominent speakers from the military, government and private industry will address current issues during luncheons.

A panel of Flag/Executive level experts from the fleet and private industry will discuss critical aviation, surface and submarine maintenance concerns during TYCOM/INDUSTRY panel presentations. Technical papers regarding fleet maintenance management, engineering, logistics and training within the aviation, surface and submarine communities will be presented each day. Over 100 displays and exhibits are anticipated in the Convention Center Exhibit Hall.

Cost for a 10-foot by 10-foot exhibit booth (includes program advertisement) is \$900. Cost for the symposium is: members \$95; non-members \$150. Exhibit packages were mailed in December '90. Registration packages will be mailed in June '91.

For more information contact **Lewis J. Friedrichsen**, M. Rosenblatt & Son, Inc., 5700 Thurston Avenue, Suite 204, Virginia Beach, Va. 23455, phone (804) 460-4449, autofax (804) 464-2801.

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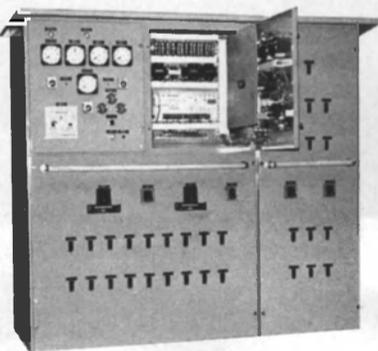
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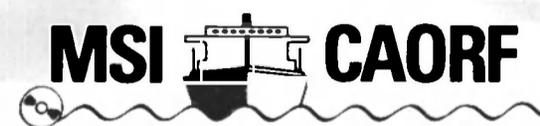
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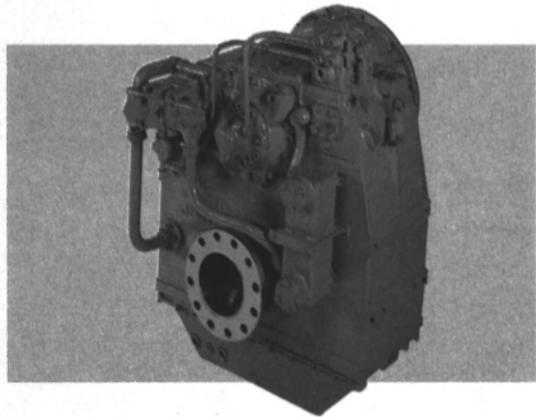
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WORLD SHIPBUILDING & REPAIR

Ship Construction Surge To Continue Into '90s

Ship Repair, Conversion Market To Rise As Well

Overview

In the second half of 1990, the resurgence of world shipbuilding showed a slight drop-off from the record levels of new construction in the two previous years. For the most part, this was due to the uncertain atmosphere created by the Gulf War and the world economic recession.

Some analysts, however, believe that this downturn is only a "hiccup" in a continuing improving market.

U.K. shipbuilder Harland & Wolff, for example, is very optimistic about the outlook for shipbuilding, which it feels will be spurred by replacement of an aging world fleet and the new U.S. Oil Pollution Act. **T. John Parker**, the chairman of Harland & Wolff Holdings plc, has been quoted as saying prospects should be good for the next 10 years, as shipowners are forced to upgrade and replace old tonnage. He believes that now that the Persian Gulf War has been settled, "... we can move into the post-Saddam era

of more sensible planning."

Total gross tonnage ordered in 1990 showed a 25 percent increase on the 1989 figures—which in turn were substantially higher than the previous year. Annual new orders rose from 12.3 million gross tons (gt) in 1988 to 19.3 million gt in 1989 to 24.1 million gt last year. However, the majority of this 1990 record ordering came within the first half of the year, but there were already signs of waning confidence by the start of the Gulf Crisis—after which orders fell off dramatically. Nevertheless, many shipyards have established relatively good orderbooks for the next two years.

Despite the record ordering, there appears to have been capacity for receiving more orders in 1990. Some yards may have held back from new orders to keep contract prices high: a VLCC's newbuilding cost peaked mid-year at around \$93 million, and ended the year around \$90 million, which was up \$20 million on end-1988 figures.

To no one's surprise, of the 24.1

million gt of new orders, Japanese and South Korean shipyards increased their market share to 70 percent, with Korea recording 5.7 million gt in new orders.—79 percent greater than 1989. The record Korean tonnage was due to improved industrial relations with its shipbuilding industry. The reported value of Korean tonnage ordered was nearly \$4 billion, more than double that of two years ago.

Japan, although maintaining the largest percentage, was only able to increase its new order tonnage to 11.1 million gt, a 15.8 percent increase on 1989. This suggests that the large rise in 1989 had taken up much of the country's existing spare capacity, which was limited because a skilled labor shortage had slowed down reactivation of mothballed yards.

Worldwide, the 4.8 million gt rise in orders over 1989 consisted almost entirely of oil tanker tonnage. The 13.8 million gt of tanker orders was almost double 1989 orders, and for the only time in the last 10 years ac-

counted for over 50 percent of the total gross tonnage ordered.

In contrast, dry bulk orders, after a rise in total gross tonnage ordered over the previous three years, fell back to below 1988 levels. This slowdown was particularly influenced by falling charter rates in 1990. General cargo and container orders continued to rise slowly.

Shipyards in the U.S. continued to rely on U.S. Navy ship construction, with about \$24 billion budgeted for the building of 33 ships for the fiscal years of 1991-1993.

Major news on the commercial side, was the \$75 million conversion of the cruise ship Viking Serenade, the largest export order for the U.S. in a number of years, and the order for two molten sulfur tankers for a U.S. owner.

On the other hand, over the last several years, smaller U.S. yards have experienced a surge in commercial activity, with several supply and work boat, passenger vessel and casino riverboat orders.

Record Total Orderbook In '90

The substantial increase in orders in 1990 resulted in a record end-of-year total orderbook of nearly 40 million gt—a near doubling in four years. Though obviously encouraging, the increase from 1989 of 9 million gt also reflects the difficulties which yards have experienced in keeping pace with new orders.

20 Percent Rise In Completions

The turnaround that occurred in 1989 of the total annual completions after a four-year decline was boosted by a further 20 percent rise in 1990. The total of 15.9 million gt, however, remained over 2 million gt below 1984-85, the highest of the 1980s.

Whereas new orders placed in 1990 were dominated by tankers, the proportion of completion accounted for by tankers remained at 5 million gt. In contrast, dry bulk carrier completions of 5.5 million gt represented a rise of 42.5 percent over 1989 figures, and general cargo/container ship completions a rise of 34 percent. This will significantly affect the composition of the world orderbook, which will once again be dominated by tanker tonnage.

(continued)

ALL SHIPS IN THE WORLD ORDER BOOK
(As of January 1, 1991)

Where Building	Under Construction		Not Commenced		TOTAL			Percentage of World Tonnage
	No.	Gross Tonnage	No.	Gross Tonnage	No.	Gross Tonnage	Deadweight Tonnage	
Argentina	20	37,048	17	63,828	37	100,876	98,030	0.25
Belgium	16	110,180	4	18,000	20	128,180	127,040	0.32
Brazil	28	698,062	17	467,820	45	1,165,882	1,775,754	2.93
Bulgaria	12	129,138	7	84,085	19	213,223	327,805	0.54
*China, People's Republic of	32	339,823	47	739,406	79	1,079,229	1,647,775	2.71
China, People's Republic of (Taiwan)	7	444,400	9	353,400	16	797,800	1,309,200	1.01
Denmark	18	107,801	69	1,517,747	87	1,679,548	2,699,828	4.22
Egypt	7	20,392	4	18,480	11	38,872	49,530	0.10
Finland	15	350,417	5	152,200	20	502,617	275,168	1.26
France	22	181,749	4	79,600	26	261,349	34,578	0.66
Germany, Federal Republic of	45	501,500	108	1,481,323	153	1,982,823	2,175,715	4.98
India	53	144,488	17	59,568	70	204,056	317,640	0.51
Italy	85	826,349	13	468,000	98	1,294,349	1,418,101	3.025
Japan	250	5,030,361	293	9,620,952	543	14,651,313	22,448,193	36.82
Korea (South)	56	1,794,748	98	6,726,557	154	8,521,305	14,493,138	21.42
Mexico	23	12,011	39	27,112	62	39,123	30,347	0.10
Netherlands	62	137,486	57	127,708	119	265,194	333,058	0.67
Norway	38	111,471	33	207,297	71	318,768	373,985	0.80
Poland	66	424,756	81	681,144	147	1,105,900	1,382,182	2.78
Portugal	34	23,928	18	190,090	52	214,018	339,725	0.54
*Romania			33	642,614	33	642,614	1,039,980	1.62
Singapore	42	101,520	24	96,813	66	198,333	241,519	0.50
Spain	86	482,353	56	695,627	142	1,177,980	1,752,065	2.96
Sweden	8	40,348	2	37,300	10	77,648	30,906	0.20
Turkey	27	206,804	32	93,300	59	300,104	448,450	0.75
*U.S.S.R.			42	312,300	42	312,300	490,900	0.78
United Kingdom	32	283,891	20	341,425	52	625,316	957,142	1.57
United States of America	42	18,352	77	59,258	119	77,610	91,372	0.20
Yugoslavia	38	797,580	52	740,206	90	1,537,786	2,324,956	3.86
Others	130	176,321	67	88,249	181	264,570	292,436	0.66
WORLD TOTAL	1,288	13,533,277	1,345	26,256,141	2,633	39,789,418	59,326,518	100.00

Source: Lloyd's Register
*data incomplete

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TARGETS YOU CAN REALLY SEE

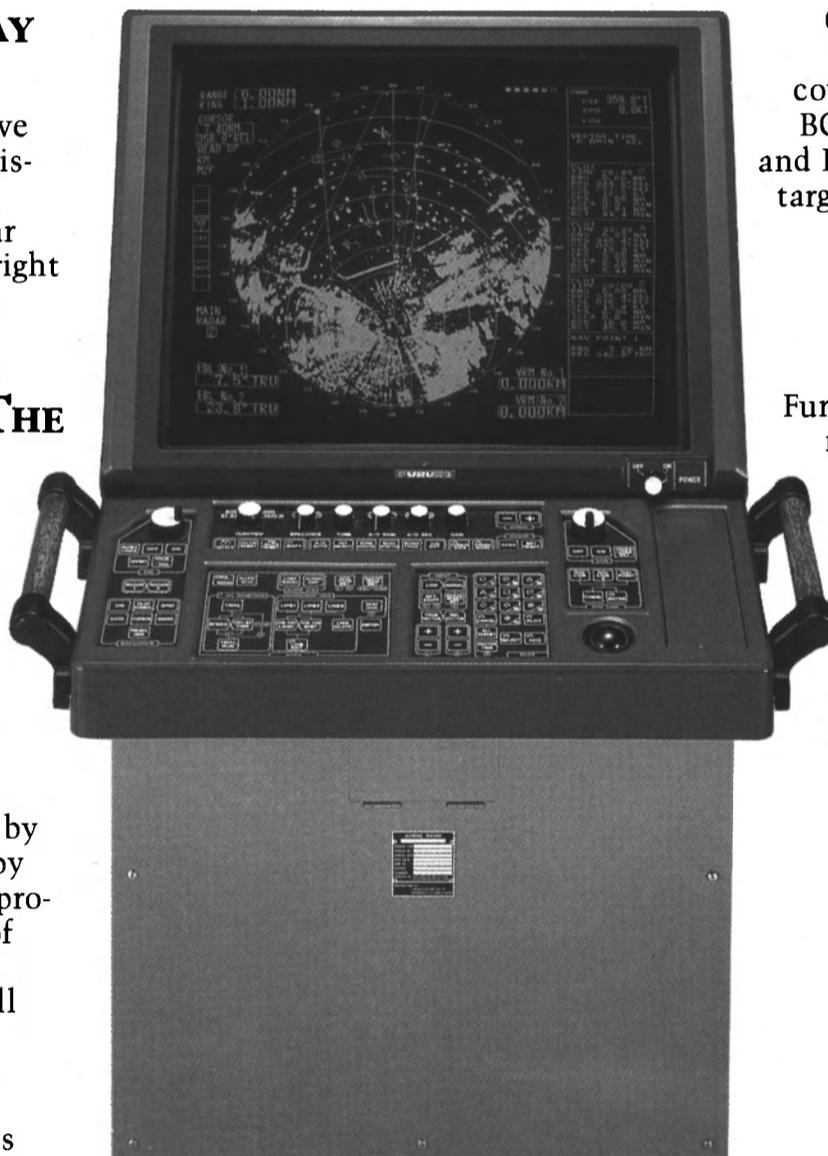
Exceptional target detection is assured with the 2800's by a combination of Furuno's exclusive low noise microwave integrated circuit receiver, matched pulse lengths and repetition rates, echo averaging and stretch, with full 15-level signal quantization. This performance package assures detection of even the weakest targets in the worst conditions of clutter.

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The FR-2800's provide such features as electronic plotting with 10 different symbols, electronic parallel index lines, dual VRM's and EBL's, guard zone with alarm, and easy assessment of target course and speed by simulated afterglow or by vector. The FAR Series provides auto acquisition of another 20 targets plus manual acquisition of all 40 targets. Also traffic lanes, buoys, dangerous points and other important navigation elements can be displayed.



On-screen data readouts include range, bearing, course, speed, CPA, TCPA, BCR (bow crossing range), and BCT for up to 3 selected targets, as well as own ship course and speed.

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World Shipbuilding & Repair

(continued)

Scrapping Down

The broken-up tonnage in 1990 was negligible, totaling just over 1 million gt for all vessels types. The apparent shortage of construction capacity, and high prices, have provided a strong incentive to owners to prolong the lives of existing ships. With only an estimated 0.25 million gt of tankers broken up in 1990, there is clearly a significant increase in the average age of the tanker fleet. However, environmental issues and legislation, particularly in the U.S., are expected to focus attention on this aspect and the economic viability of older ships.

Laid-Up Tonnage Levels Off

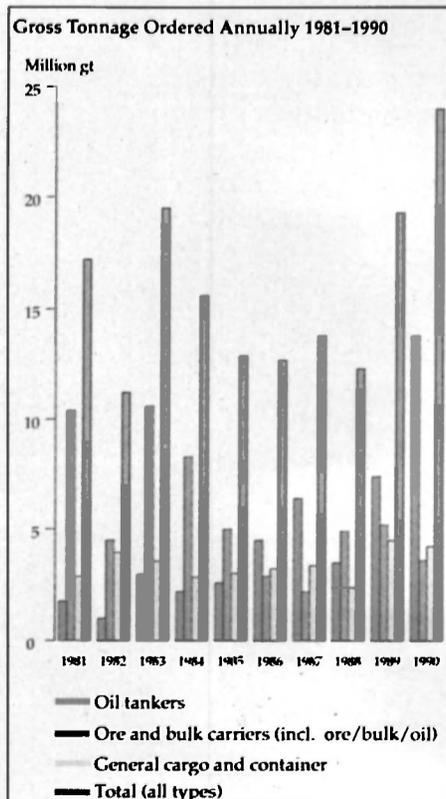
The fall in total laid-up tonnage appears to have bottomed out in 1990 following a continuous decline since 1982. The end of the year total of 2.9 million gt was only 0.1 million gt down on the December 1989 total.

There did, however, appear to be a change in the proportions of vessel types making up this tonnage. Laid-up tanker tonnage continued to fall, ending the year at 1.6 million gt. This was counteracted by an observed rise in dry cargo tonnage to 1.3 million gt.

The modest lay-up is put into perspective when noting that 2.9 million gt is only 0.7 percent of the total world fleet.

Fleet Growth

Increases in the total gross tonnage of each of the tanker, dry bulk and general cargo/container vessel groups resulted in a rise of over 13 million gt in 1990. The total gross



Region	1985	1988	1990	1993	1995
N. America	5.4	4.5	4.4	4.4	4.4
N. Europe	31.4	23.7	24.4	24.4	24.4
S. Europe	15.9	19.5	17.9	17.3	17.0
SE Asia	6.0	13.5	14.0	15.0	15.5
Japan	19.5	13.7	13.9	13.9	13.7
Far East	8.1	10.3	10.8	10.0	10.2
Mid East	0.7	2.0	2.1	2.5	2.6
Rest of World	13.0	12.7	12.4	12.4	12.3

Source: Drewry Shipping Consultants Ltd.

tonnage of 423.6 million was 1 million short of the 1982 figure, the year of the highest fleet tonnage figures of the 1980s.

Between 1982 and 1990, there was a 19 percent fall in tanker gross tonnage, offset by a 12 percent and 6 percent rise in general cargo/container fleets, respectively. This 6 percent rise in the general cargo/container fleet over 105 million gt represented a fourth successive year of gradual growth, resulting in an extra 5.6 million gt over these years.

The 12 percent increase in dry bulk tonnage, which has created a total tonnage of 133 million gt, turned around a four-year decline between 1985 and 1989, to such an extent that the fleet was almost back to its 1985 size.

Dry Bulk Orders To Rise In 90s

Dry bulk carrier orders will rise substantially through the remainder of the 90s, according to the report, *Bulk Trade & Shipping to 2000*. Annual new construction orders for bulk ships should rise to an average of 16 million to 16.5 million tons throughout the 1990s. This compares favorably with figures from the 1980s, when orders averaged almost 10.7 million per year.

Based on current dry bulk ship construction prices, deliveries would be worth about \$6.9 billion per year.

The report by Ocean Shipping Consultants bases its forecasts on projected scrapping levels of aged tonnage and increases in certain bulk trade sectors.

Fleet Replacement, Life Extension Work To Continue

Analysis of the fleet age profile reveals that 25.8 percent is now in the 15-19 year age bracket and 34.1 percent in the 15-24 year bracket; in 1987 the figures were 15.3 percent and 21.3 percent. This means that fleet replacement and life extension programs will continue to be necessary throughout the 1990s. As there appears to be concerted action among major yards to maintain prices at current, if not higher levels, shipowners will incur substantial costs—and this leads to the inevitable conclusion that freight rates will have to increase considerably.

Ship Conversion Sector Active

Over the last three years, contracts worth well over half a billion dollars have been placed with shipyards for tanker life extension and conversion projects, according to the recently released report, *"The World Shiprepair and Conversion Market,"* published by Drewry Shipping Consultants of London. Many owners are opting for conversion and life extensions in an effort to avoid rising new construction costs and comply with new environmental regulations.

In particular, the report points out that at least 35 major tanker conversion contracts have been placed from 1988 to 1990. These vessels have an average age of 14 years. Most of these conversion contracts were placed with Far East yards, in particular, Singapore.

Over the same three-year period, 30 major contracts were awarded for containership conversions.

One of the most important markets continues to be the passenger vessel sector. Although averaging less per contract, cruise and ferry conversions accounted for a majority of the revenue, representing about 38 percent of the gross turnover in a 2-1/2-year period.

The Drewry report states that high dock utilization should continue over the next few years, since ship conversion capacity is not expected to rise during that period.

Ship Repair To Remain Strong Into '90s

According to Drewry, because of increased safety considerations and environmental awareness in shipping, price will play a lesser role in determining repair workload distribution, while technical standards and competence will assume increasing significance. However, shipowners will still look for value in ship repair—the best quality at the lowest price—and the change of emphasis is likely to be fairly subtle. Nevertheless, those areas with a reputation for high quality work such as Northern Europe and Japan should find their cost disadvantage less of a competitive obstacle. With classification societies under pressure to improve standards, with legislation causing a reduction in drydocking intervals, and with an aging fleet requiring greater main-

tenance, most of the negative influences on ship repair which characterized much of the 1980s are set to increase activity in the next few years.

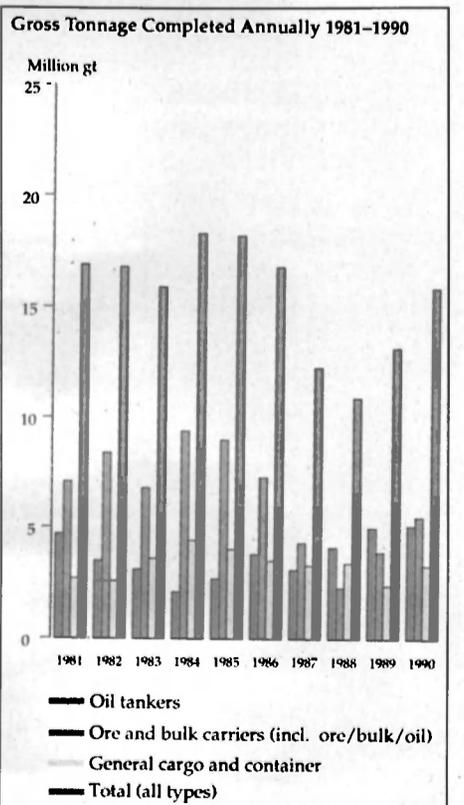
As the repair market expands, all major ship repair regions can expect an increase in their total workload during the next five years, with Southeast Asia forecast to record the largest rise (although this will depend upon the availability of sufficient capacity and skilled labor). The Middle East yards of the Persian Gulf are also expected to increase their share of the repair market over the period.

Drewry forecasts that Southern Europe, the Far East and Japan will suffer a slight drop in market share. Southern Europe's share will drop mostly from increased labor costs arising from the completion of the EC single market and from a reduction in governmental subsidies. High inflation in the Far East and the uncertainties over labor relations in Korea, and other political developments in China and Hong Kong, are likely to reverse the growth in market share which the region has experienced in recent years. Continuing labor shortages in Japan will prevent it from exploiting the difficulties of countries such as Korea.

Drewry also points out that because of economic and political developments in the Far East, some ship repair work is expected to shift to other regions, such as Germany and the Netherlands.

In the U.S., despite reductions in the defense budget, the Navy remains a key source of ship maintenance and repair work. Over the next three fiscal years, 1991-93, the Navy plans to spend \$25.7 billion for fleet maintenance and modernization.

On the commercial side, the decline in the U.S. workload and market share should be halted, with more cruise vessels utilizing U.S. facilities.



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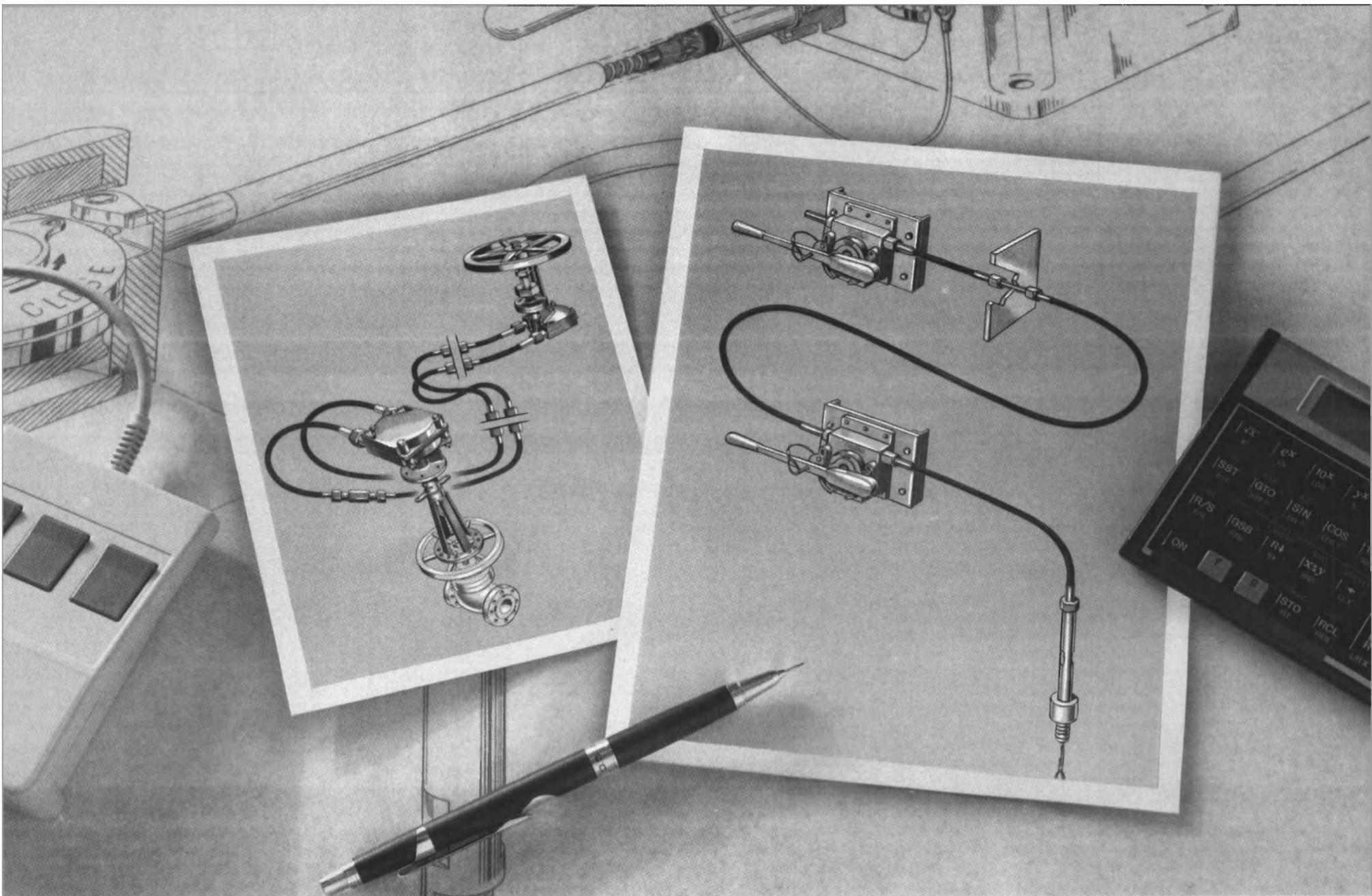
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CRUISE SHIPPING

(2,000 Gross Tons & Over)
Compiled by Maritime Reporter Staff

OWNER/OPERATOR Ship	GT	No. of Passengers	Year Built	OWNER/OPERATOR Ship	GT	No. of Passengers	Year Built
ADMIRAL CRUISES, Miami, FL				Golden Odyssey	6,757	460	74
Azure Seas	14,673	880	56/88	Royal Viking Sea	28,018	710	73/89
Emerald Seas	18,927	982	44/89	Royal Viking Sky	28,078	710	73/88
				Royal Viking Sun	38,000	740	88
				Westward	28,211	750	72/89
AMERICAN HAWAII CRUISES, San Francisco, CA				NIPPON YUSEN KAISHA - NKY LINE, Tokyo, JAPAN			
Constitution	30,090	798	51/88	Frontier Spirit	6,752	184	90
Independence	30,090	798	50/88				
CARNIVAL CRUISE LINES, Miami, FL				OCEAN CRUISE LINES, Fort Lauderdale, FL			
Carnivale	27,250	950	56/90	Ocean Pearl	12,456	460	67/88
Celebration	47,262	1,486	87	Ocean Princess	12,200	460	67/84
Fantasy	70,307	2,044	90				
Festivale	38,175	1,146	61/86	P & O CRUISES / PRINCESS CRUISES, Los Angeles, CA			
Holiday	46,052	1,452	85	Canberra	44,807	1,648	61/86
Jubilee	47,262	1,486	86	Sea Princess	27,760	714	66/86
Mardi Gras	27,200	906	62/85	Crown Princess	70,000	1,748	90
Tropicale	36,674	1,022	82/89	Dawn Princess	25,000	890	57/89
				Fair Princess	25,000	890	58/89
CHANDRIS FANTASY / CELEBRITY CRUISES, Miami, FL				Fairstar	23,764	850	57/63
Amerikanis	20,000	619	52/88	Island Princess	20,000	610	71/85
Britanis	26,000	922	32/87	Pacific Princess	20,000	610	71/85
Romanza	11,000	562	54/88	Royal Princess	45,000	1,200	84
Azur, The	15,000	663	71/89	Sky Princess	46,000	1,200	84/89
Victoria, The	19,000	550	36/89	Star Princess	63,500	1,470	89
Horizon	46,811	1,354	90				
Meridian	30,000	1,106	63/90	PREMIER CRUISE LINES, Cape Canaveral, FL			
				Starship Atlantic	19,337	1,600	82/88
CLASSICAL CRUISES, New York, NY				Starship Majestic	17,750	950	72/89
Ilyria	3,751	140	62/85	Starship Oceanic	19,500	1,500	65/86
Polar Circle	2,500	80	90				
CLUB MEDITERRANEE, Paris, FRANCE				REGENCY CRUISES, New York, NY			
Club Med I	3,994	425	88	Regent Sea	15,294	720	57/85
				Regent Star	24,413	960	56/87
COMMODORE CRUISE LINE LTD, Coral Gables, FL				Regent Sun	25,500	815	64/82
Caribe I	23,000	875	53/89				
Enchanted Isle	23,395	731	57/90	RENAISSANCE CRUISES, Fort Lauderdale, FL			
Enchanted Seas	23,500	736	57/90	Renaissance I	4,500	100	89
				Renaissance II	4,500	100	89
COSTA CRUISES, Genoa, ITALY				Renaissance III	4,500	100	89
Carla Costa	19,942	730	52/86	Renaissance IV	4,500	100	89
Costa Marina	25,000	850	69/90				
Costa Riviera	31,500	974	62/85	ROYAL CARIBBEAN CRUISES, LTD, Miami, FL			
Danae	17,000	420	56/85	Monarch of the Seas	73,400	2,354	91
Daphne	17,000	420	55/86	Nordic Empress	44,300	1,610	90
Enrico Costa	16,495	800	50/87	Nordic Prince	23,200	1,012	71/80
Eugenio Costa	30,567	1,100	76/86	Song of America	37,584	1,412	82
				Song of Norway	23,005	1,022	70/78
CROWN CRUISE LINES, Boca Raton, FL				Sovereign of the Seas	73,192	2,282	87
Crown Del Mar	16,292	600	67/88	Sun Viking	18,556	728	72
Crown Monarch	13,991	560	90	*Viking Serenade	27,000 ¹	1,514 ²	82/91
Viking Princess	6,421	366	64/85	*Under conversion at Southwest Marine, Inc.; (1) gross tonnage prior to conversion; (2) passenger capacity after conversion.			
				SEA CLOUD CRUISES GMBH, Hamburg, GERMANY			
CRYSTAL CRUISES, Los Angeles, CA				Sea Cloud	2,517	69	31/88
Crystal Harmony	49,400	960	90				
CUNARD LINE LTD, New York, NY				SEA VENTURE CRUISES, Miami, FL			
Cunard Countess	17,593	790	76/86	Tropicana	5,000	1,000	66/88
Cunard Princess	17,496	750	77/86				
Queen Elizabeth 2	66,450	1,815	69/87	SEABOURN CRUISE LINE, San Francisco, CA			
Sagafjord	25,147	588	65/86	Seabourn Pride	10,000	212	88
Sea Goddess I	4,253	120	84/86	Seabourn Spirit	10,000	212	89
Sea Goddess II	4,260	120	85/86				
Vistafjord	24,492	736	73/86	SEAESCAPE LTD, Miami, FL			
				Scandinavian Dawn	7,356	1,050	68/90
DISCOVERY CRUISES, Fort Lauderdale, FL				Scandinavian Saga	5,259	900	74/88
Discovery I	12,244	1,250	70/89	Scandinavian Song	8,496	350	66/88
				Scandinavian Sun	9,902	1,100	68
DOLPHIN CRUISE LINE, Miami, FL				SOCIETY EXPEDITIONS, Seattle, WA			
Dolphin IV	13,007	588	56/88	Society Explorer	2,398	100	69/85
Seabreeze	21,000	840	57/89	World Discoverer	3,153	140	77/84
				SPECIAL EXPEDITIONS, New York, NY			
HOLLAND AMERICA LINE - WESTOURS, Seattle, WA				Polaris	2,214	76	60
Nieuw Amsterdam	33,930	1,210	82				
Noordam	33,930	1,214	84	SUN LINE CRUISES, New York, NY			
Rotterdam	37,783	1,111	59/89	Stella Maris	4,000	180	60/66
Westerdam	53,000	1,476	86/89	Stella Oceanis	3,963	300	65
				Stella Solaris	10,595	620	53
HOTELES MARINOS, Almeria, SPAIN				WINDJAMMER BAREFOOT CRUISES LTD, Miami, FL			
Vistamar	6,517	400	89	Fantome	2,400	126	27/91
IVARANS REDERI, Oslo, NORWAY				WINDSTAR CRUISES, Seattle, WA			
*Americana	19,203	88	88	Wind Song	5,350	148	87
*Passenger-Carrying Container/Cargo Ship				Wind Spirit	5,350	148	88
				Wind Star	5,350	148	86
KLOSTER CRUISE LIMITED, Coral Gables, FL				WORLD EXPLORER CRUISES, San Francisco, CA			
(Includes Norwegian Cruise Line, Royal Cruise Line and Royal Viking Line)				Universe	18,000	550	53/90
Norway	75,000	2,044	60/90				
Seaward	42,276	1,534	88				
Skyward	16,254	730	69/88				
Southward	16,607	730	71/90				
Starward	16,107	758	68/89				
Sunward II	14,100	676	71/89				
Crown Odyssey	34,242	1,209	88				



Left: Remote Mechanical Valve Actuator. Right: Remote Trip Valve Actuator.

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Compiled by Maritime Reporter Staff

BUILDER Ship	No. of Passengers	Owner/Operator	Delivery	BUILDER Ship	No. of Passengers	Owner/Operator	Delivery								
ASTILLEROS ESPANOLAS, S.A., Madrid, SPAIN				NUOVI CANTIERI APUANIA, SPA, Marina di Carrara, ITALY											
(2) N/A	260	Navieras Dosmares	N/A	Renaissance VII	100	Yachtship	91								
Vivamar	500	Hoteles	4/92	Renaissance VIII	100	Yachtship	91								
Martlet I	1,200	Marflet Vacaciones	N/A	31,000-grt Cruise Ship	N/A	Inter Ocean Italiana	12/92								
CANTIERE NAVALE FERRARI, La Spezia, ITALY				RAUMA YARDS OY, Rauma, FINLAND											
(5) N/A	220	Panta Rei Cruises	92-96	Society Adventurer	188	Discoverer Reederei	6/91								
29,760-grt Cruise Ship	N/A	Unknown	92	Society Explorer	188	Discoverer Reederei	6/92								
FINCANTIERI - CANTIERI NAVALI ITALIANI, Trieste, ITALY				SCHICHAU SEEBECKWERFT AG, Bremerhaven, GERMANY											
(3) N/A	1,250	Holland America Line	92-94	10,000-grt Cruise Ship	212	Kloster Cruise Line	92								
(2) N/A	1,700	Costa Cruises	91-92	SOCIETA ESCERIZIO CANTIERI, Viareggio, ITALY											
GEC - ALSTHOM - CHANTIERS DE L'ATLANTIQUE, St. Nazaire, FRANCE				(2) 7,500-grt Cruise Ships											
Monarch of the Seas	2,354	Royal Caribbean Cruise Line	12/91	9,500-grt Cruise Ship	N/A	Coimar	91								
Majesty of the Seas	2,354	Royal Caribbean Cruise Line	6/92	San Eur, SpA											
(2) N/A	1,200	Kloster Cruise Line	12/92-6/93	SOUTHWEST MARINE, INC., San Diego, Calif., U.S.A.											
KVAERNER - MASA - YARDS, Helsinki, FINLAND				<table border="0"> <tr> <td>Viking Serenade¹</td> <td>1,510</td> <td>Royal Caribbean Cruise Line</td> <td>92</td> </tr> <tr> <td colspan="4">(1) Under conversion; due for delivery June 17.</td> </tr> </table>				Viking Serenade ¹	1,510	Royal Caribbean Cruise Line	92	(1) Under conversion; due for delivery June 17.			
Viking Serenade ¹	1,510	Royal Caribbean Cruise Line	92												
(1) Under conversion; due for delivery June 17.															
MEYER WERFT, Papenburg, GERMANY				UNION NAVAL DE LEVANTE, SA, Valencia, SPAIN											
Zenith	1,700	Chandris Celebrity	92	Commodore I	820	Effjohn International	92								
MITSUBISHI HEAVY INDUSTRIES LTD, Toyko, JAPAN				Commodore II											
Asuka	600	NYK	10/91	820	Effjohn International	93									

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OFFSHORE RIG CONSTRUCTION

MOBILE RIGS UNDER CONSTRUCTION

(includes all rigs on order or with letters of intent to shipyards)

RIG OWNER	RIG NAME	DESIGN	WATER DEPTH	SHIPYARD	ESTIMATED COST (\$SMM)	DELIVERY DATE	CONTRACT
JACKUPS							
Compact Drilling K/S (Viking Rigs Mgr)	Compact Unnamed Jackup 01	LeTourneau Class 116-C, 3 square legs, cantilever	300'	Marathon LeTourneau - Vicksburg, Ms, U.S.A.	\$40.0e	12/91	Available
Maersk	Maersk Unnamed Jackup 01	Marine Structure CJ 62 S-120, 3 legs, cantilever, harsh environment.	400'	Far East Livingston - Singapore	\$125.0e	03/92	Available
Maersk	Maersk Unnamed Jackup 02	Marine Structure CJ 62 S-120, 3 legs, cantilever, harsh environment.	400'	Far East Livingston - Singapore	\$125.0e	03/92	Available
National Iranian Drig	Iranian Unnamed Jackup 01	Rauma-Repola, 3 triangular legs, cantilever.	300'	Iran Marine Industrial - Neka, Iran	\$70.0	05/92	NIOC - owner operated.
Santa Fe	Galaxy 01	Friede & Goldman L-780 Mod VI, 3 triangular legs, cantilever, universe class, harsh environment.	400'	Far East Livingston - Singapore	\$80.0e	08/91	Ranger
Santa Fe	Magellan	Friede & Goldman L-780 Mod V, 3 triangular legs, cantilever, harsh environment.	350'	Far East Livingston - Singapore	\$70.0e	03/92	Available
U.S.S.R.	USSR Unnamed Jackup 02	Arctic Class	300'	Vyborg Shipyard - U.S.S.R.	\$67.0	06/91	U.S.S.R. - owner operated - Arctic
SEMISUBMERSIBLES							
Drillmar	Drillmar 01	Friede & Goldman L-1033, Enhanced Pacesetter, self-propelled, thruster assist	1,500'	Astano - El Ferrol, Spain	\$96.0	05/91	Drillmar - owner operated - Sale pending.
S A N A	M & S Unnamed Semi 01	Friede & Goldman L-1020 Trendsetter, drilling/production.	5,000'	Fincantieri - Genova, Italy	\$120.0	01/92	Available
USSR	Shelf 05	Friede & Goldman Enhanced Pacesetter, 6 columns, self-propelled.	650'	Astrakhan Shipyard - Astrakhan, U.S.S.R.	\$65.0e	Undet	U.S.S.R. - owner operated.
SHIPS							
U.S.S.R.	U.S.S.R. Unnamed Ship 01	Soviet design, dynamic positioning, drill to 21,235'.	1,000'	Kherson - Ukraine - U.S.S. R.	\$60.0e	06/91	U.S.S.R. - owner operated.

Source: Offshore Rig Locator

OFFSHORE MOBILE DRILLING UNITS UNDER CONSTRUCTION OR ORDERED BY AREA OF WORLD (Location of Shipyard)

	JACKUP	SEMISUBMERSIBLES	SHIPS	TOTAL
U.S. GULF OF MEXICO	1	0	0	1
EUROPE OTHER	0	1	0	1
MEDITERRANEAN	0	1	0	1
MIDDLE EAST	1	0	0	1
SOUTHEAST ASIA	4	0	0	4
U.S.S.R.	1	1	1	3
TOTAL	7	3	1	11

BY DELIVERY DATE

	JACKUPS	SEMISUBMERSIBLES	SHIPS	TOTAL
1991	3	1	1	5
1992	4	1	0	5
1993	0	0	0	0
1994	0	0	0	0
Undetermined	0	1	0	1
TOTAL	7	3	1	11

WITH NO DRILLING CONTRACT

	JACKUPS	SEMISUBMERSIBLES	TOTAL
1991	1	0	1
1992	3	1	4
1993	0	0	0
1994	0	0	0
Undetermined	0	0	0
TOTAL	4	1	5

Source: Offshore Rig Locator



Natural gas is flared from the ODECO jack-up rig Ocean Titan during production testing of a confirmation well in the Gulf of Mexico.

Source: The Offshore Rig Locator is published the first week of each month by Offshore Data Services, Inc., Houston, Texas. Subscriptions are available from Offshore Data Services, P.O. Box 19909, Houston, TX 77224. For full details on this and other publications and services from Offshore Data Services, contact: **Loran R. Sheffer**, president, 3200 Wilcrest #170, Houston, TX 77042; telephone: (713) 781-2713; and telefax: (713) 781-9594.

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Navy Ship Projects, Workboat Sector Primary Sources Of Vessel Construction

New Construction May Be Spurred By OPA, Sealift Program

Texaco Order On Horizon?

Although the U.S. Navy and Government remain the primary customers of U.S. shipyards, there are signs emerging that a significant boost might be on its way from the commercial sector propelled by the Oil Pollution Act of 1990.

Texaco Inc. is reportedly engaged in talks with a number of domestic yards for the construction of as many as five 40,000-deadweight double-hull tankers.

According to **Jim Liebertz**, manager of economics and planning at Texaco's marine department, the new tankers would replace 26,000- to 40,000-dwt ships nearing the end of their service lives in the company's current fleet.

Mr. Liebertz said that Texaco has put the order out for public bid and is talking with a number of U.S. yards. Prices for the tankers could range between \$60 million to \$50 million per vessel in series production.

Navy Primary Source Of New Construction

Navy work remains the primary source of new construction contracts for large ships in the United States. The Navy has asked for \$8.6 billion to build 12 ships in fiscal year 1992 and \$8.3 billion for 11 ships in fiscal year 1993.

The program calls for one SSN-21 Seawolf Class submarine in each year. General Dynamics-Electric Boat Division of Groton, Conn., is currently building the lead ship of this new class of attack submarines. A second contract awarded to the yard has been blocked temporarily by a judge following a lawsuit by Newport News Shipbuilding, which was also bidding on the contract.

As of April 1st of this year, one dozen U.S. shipyards held new construction contracts for 100 naval vessels, 11 of which were ordered in 1991 and eight in 1990. In addition, five fleet oilers were under contract at Avondale Shipyards for jumboization.

Billion Dollar Navy Sealift Program In Works

The current Navy budget has \$1.275 billion available to begin the sealift program, which might mean the construction of several Roll-On/Roll-Off ships to commercially viable designs at U.S. yards. Other plans are under discussion for the possible acquisition of existing RO/

ROs and their subsequent conversion. An additional \$1.2 billion has been allocated for sealift over the next five years, with further funding possible in the future. Work under this program, as well as the impact of OPA could provide U.S. yards with a significant order book in the near future.

Significant Commercial Orders

Although no new construction commercial oceangoing ships were delivered by U.S. shipyards in 1990, there were several orders placed during the year.

In January 1990, National Steel and Shipbuilding Co. (NASSCO) of San Diego, Calif., received the first oceangoing commercial ship order placed with a U.S. shipyard since 1984. The 713-foot, 23,314-dwt, diesel-powered containership, designed to carry 1,650, twenty-four containers, was ordered by Matson Navigation Co. for delivery in June 1992.

In February 1990, Edison Chouest Offshore Inc. of Galliano, La., was awarded a contract to provide an icebreaking research and sup-

port vessel to serve the National Science Foundation operations in Antarctica. Under this contract, Edison Chouest will construct, charter, and operate the vessel, which is scheduled for completion in February 1992. Construction is under way at North American Shipbuilding in Larose, La.

In September of 1990, Eastern Shipyards, Inc., of Panama City, Fla., was awarded a contract worth about \$30 million for the construction of two 400-foot molten sulfur tankers for Freeport-McMoRan, Inc. The first tanker is scheduled for delivery late this year and the second in the first quarter of 1992.

\$75 Million Cruise Ship Conversion

In the last quarter of 1990, Southwest Marine, Inc., San Diego, Calif., was awarded a \$75 million contract for the conversion of the Viking Serenade for Royal Caribbean Cruise Line.

The award of this contract represents the largest cruise ship conversion to be undertaken in a U.S. yard and has significant international implications for Southwest Marine

and the U.S. ship repair industry.

High Activity In Shallow-Draft Market

In the shallow-draft sector, where there seems to be a significant rise in activity, several noteworthy contracts were landed by U.S. yards.

Avondale Boat Division secured a contract to build three 6,800-hp towboats for Viking Maritec, Inc., Pittsburgh, Pa. The vessels will reportedly be the first large inland towboats constructed in the U.S. since 1982.

Each vessel will be 168 feet long with a beam of 45 feet, and draft of about three feet, which will allow them to operate on the lower Mississippi, as well as the upper Mississippi River and Ohio River.

The Trinity Marine Group was one of the first U.S. builders to receive orders for the construction of offshore supply boats. Trinity Marine received the contract from Kilgore Offshore, Inc. of Houston, Texas, for one 202-foot, all-steel supply boat, with an option for three more vessels. Delivery of the vessel is scheduled for September 1991.

New Gambling Laws Spur Orders

Spurred by new Iowa gambling laws which will allow gambling on the Mississippi River, several new construction and conversion contracts were awarded to small yards for casino and riverboat gambling vessels. Among those yards receiving contracts were Patti Shipyards, Atlantic Marine, Leevac Shipyards, Service Marine Industries, and Bender Shipbuilding.

The largest of the gambling vessels was the \$12-million 387-foot Dubuque Casino Belle delivered by Patti Shipyards, Pensacola, Fla., to Roberts River Rides of Dubuque, Iowa.

Annual Vessel Construction Survey

A regular feature of the yearbook issue is MARITIME REPORTER's "Annual Vessel Construction & Conversion Survey," in which the latest activity of the leading U.S. builders involved in the construction of all types of Navy, military, government and commercial ships, passenger vessels, workboats and barges is reported. The results of the survey are summarized in the accompanying table. The actual deliveries for 1990 and the orderbook for 1991 are shown in the subsequent listings under each builder that responded to the survey.

SUMMARY OF MARITIME REPORTER'S
1991 SURVEY OF NEW VESSEL CONSTRUCTION & CONVERSION AT U.S. SHIPYARDS
(Based on replies received as of press time)

Vessel Type	NEW CONSTRUCTION 1990 Deliveries		1991 Orders	
	# of vessels	% of total	# of vessels	% of total
Mil/Gov't Combatants/Subs	5	1.2	70	11
Mil/Gov't Aux Craft	26	6.4	148	23
Containerships	0	—	1	0.2
Tankers	0	—	2	0.3
Passenger Vessels	20	4.9	32	5.0
Fishing Vessels	25	6.1	36	5.6
Workboats—All Types	48	11.8	109	17
Dry Cargo Barges	244	60	157	24
Liquid Cargo Barges	19	4.6	52	8.2
Misc Barges	18	4.4	15	2.3
TOTALS—	405	100	632	100
Vessel Type	CONVERSIONS & REFRUBISHMENTS 1990 Deliveries		1991 Orders	
	# of vessels	% of total	# of vessels	% of total
Mil/Gov't Aux Craft	1	7.1	13	46
Tankers	1	7.1	0	—
Passenger Vessels	2	14.2	6	21.4
Fishing Vessels	3	21.4	5	17.8
Workboats—All Types	3	21.4	4	14.2
Barges—All Types	4	28.5	0	—
TOTALS	14	100	28	100



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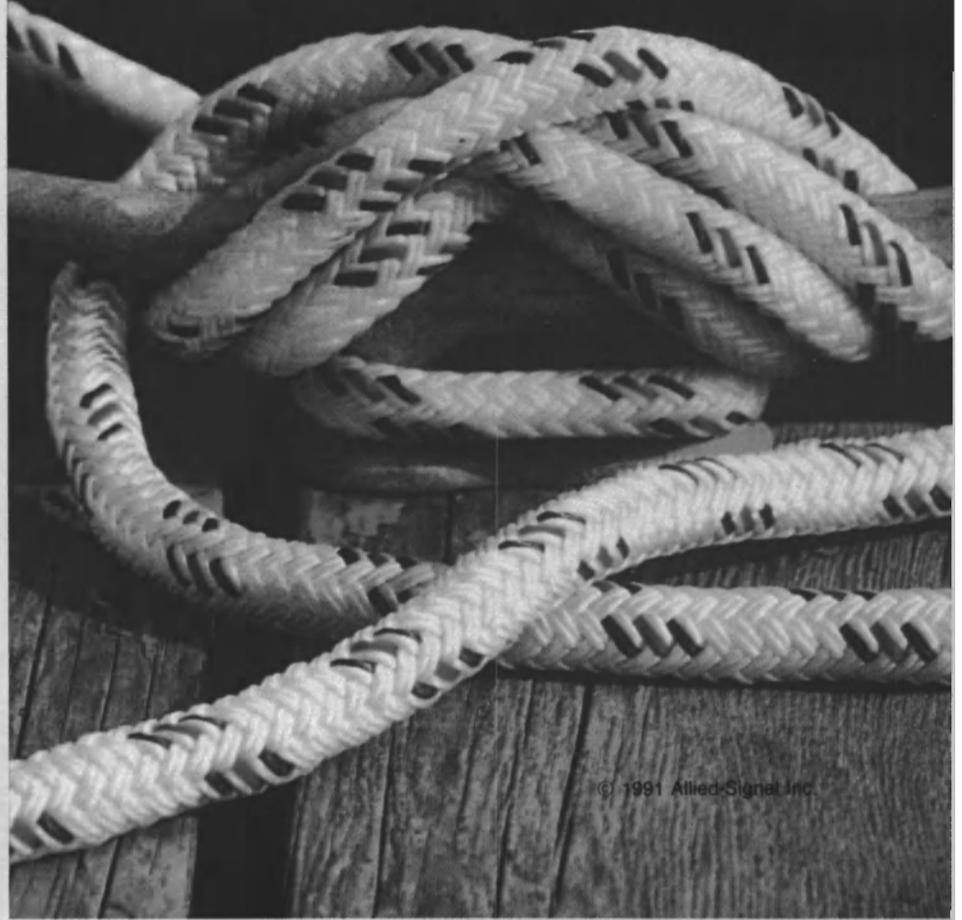
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SURVEY OF NEW VESSEL CONSTRUCTION & CONVERSION

SHIPYARD						SHIPYARD							
Vessel	Type	Dimensions (in feet) L x W x D		Main Engines	Owner/Operator	Delivery Date	Vessel	Type	Dimensions (in feet) L x W x D		Main Engines	Owner/Operator	Delivery Date
AVONDALE BOAT DIVISION, Westwego, LA							Celtic Seahorse	Supply	190 x 40 x 17	(2) EMD16-545E5	N/A		1991
Kankakee	WLR Cutter	75 x 24 x 9	(2) Caterpillar 3412	U.S. Coast Guard		10/90	M/V Alton Casino	Casino	155 x 34 x 7	(2) Cummins NT-855	Alton Riverboat Gambling		7/91
Greenbriar	WLR Cutter	75 x 24 x 9	(2) Caterpillar 3412	U.S. Coast Guard		12/90	Pacific Orion	Crabber	180 x 38 x 15		Mark Maring		1991
Karen K.	Towboat	168 x 54 x 11.5	(2) Caterpillar 3612	Viking Maritec		9/91	BOURG DRY DOCK & SERVICE CO., Houma, LA						
Unnamed	Towboat	168 x 45 x 11.5	(2) Caterpillar 3612	Viking Maritec		11/91	*6-Ball	Crane Barge	195 x 66 x 13	Non-self Propelled	Midstream Stevedoring Co.		11/90
Unnamed	Towboat	168 x 45 x 11.5	(2) Caterpillar 3612	Viking Maritec		12/91	*Dry Dock #2	1M Ton Floating Dry Dock	120 x 70 x 7	Non-self Propelled	Undetermined (For Sale)		N/A
Capt. Bud Bisso	Tugboat	110 x 34 x 19	(2) EMD 16-645E6	E.N. Bisso		11/91	*MMI 302	Inland Tank Barge	280 x 50 x 13.3	Non-self Propelled	Maryland Marine		6/90
AVONDALE SHIPYARDS DIVISION, AVONDALE INDUSTRIES, New Orleans, LA							*St. Charles	Passenger Ferry	98.9 x 36 x 7.6	(2) V-12 GM	LA Dept. of Transportation		6/90
John Ericsson	T-AO-194	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		1990	ELECTRIC BOAT DIVISION, GENERAL DYNAMICS, Groton, CT						
Kanawha	T-AO-196	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		6/91	USS Miami (SSN-755)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		5/90
Pecos	T-AO-197	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		7/90	Alexandria (SSN-757)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		6/91
Big Horn	T-AO-198	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		10/91	Annapolis (SSN-760)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		1992
Tippecanoe	T-AO-199	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		9/92	Springfield (SSN-761)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		TBD
Guadaloupe	T-AO-200	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		5/92	Columbus (SSN-762)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		TBD
Patuxent	T-AO-201	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		5/93	Santa Fe (SSN-763)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		TBD
Yukon	T-AO-202	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		12/92	Hartford (SSN-768)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		TBD
Laramie	T-AO-203	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		3/94	Columbia (SSN-771)	Attack Submarine	360 x 33	Steam Turbines	U.S. Navy		TBD
Rappahanock	T-AO-204	667.5 x 97.5	(2) Colt-Pielstick	U.S. Navy		10/93	Seawolf (SSN-21)	Attack Submarine	353 x 40	Steam Turbines	U.S. Navy		5/95
Comstock	LSD-45	609.6 x 84	(2) Colt-Pielstick	U.S. Navy		1/90	SSN-22	Attack Submarine	353 x 40	Steam Turbines	U.S. Navy		TBD
Tortuga	LSD-46	609.6 x 84	(2) Colt-Pielstick	U.S. Navy		9/90	USS West Virginia (SSBN-736)	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy		9/90
Rushmore	LSD-47	609.6 x 84	(2) Colt-Pielstick	U.S. Navy		4/91	Kentucky (SSBN-737)	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy		7/91
Ashland	LSD-48	609.6 x 84	(2) Colt-Pielstick	U.S. Navy		12/91	Maryland (SSBN-738)	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy		1992
Harper's Ferry	LSD-49 (CV)	609.6 x 84	(2) Colt-Pielstick	U.S. Navy		11/93	Nebraska (SSBN-739)	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy		TBD
Carter Hall	LSD-50 (CV)	609.6 x 84	(2) Colt-Pielstick	U.S. Navy		4/94	Rhode Island (SSBN-740)	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy		TBD
Unnamed	LSD-51 (CV)	609.6 x 84	(2) Colt-Pielstick	U.S. Navy		2/95	Maine (SSBN-741)	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy		TBD
Pelican	MHC-53	188 x 36	(2) Isotta Fraschini	U.S. Navy		10/93	SSBN-742	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy		TBD
Robin	MHC-54	188 x 36	(2) Isotta Fraschini	U.S. Navy		2/94							
Unnamed	MHC-57	188 x 36	(2) Isotta Fraschini	U.S. Navy		2/95							
Waters	T-AGS-45	N/A	N/A	U.S. Navy		11/92							
BENDER SHIPBUILDING & REPAIR CO., INC., Mobile, AL													
Island Enterprise	Factory Trawler	304 x 45 x 18	Caterpillar 3612	Arctic Alaska		2/90							
Arctic V	Fish Meal Processor	190 x 52 x 16.5	(2) EMD16-645E5	Arctic Alaska		7/90							
Rora 10	Shrimper	72 x 20 x 10.7	Caterpillar 3408	Hakodate Kokai Fishing Co.		9/90							
Rora 11	Shrimper	72 x 20 x 10.7	Caterpillar 3408	Hakodate Kokai Fishing Co.		9/90							
Royal Enterprise	Crabber	212 x 44 x 18	EMD	Arctic Alaska		9/90							
Highland Light	Factory Trawler	270 x 42 x 16	(2) EMD16-645E7	Highland Light Fisheries Limited Partnership		12/90							
CMD-1	Barge	523 x 42 x 16		C.M. Barge Partnership, LP		1991							
Rigel Tide	Crabber	180 x 38 x 15.7	EMD12-645E5	Melbourne Co., TD		1991							
North Seahorse	Supply	190 x 40 x 17	(2) EMD16-645E5	N/A		1991							

Availability

SHIPYARD					SHIPYARD						
Vessel	Type	Dimensions (in feet) L x W x D	Main Engines	Owner/Operator	Delivery Date	Vessel	Type	Dimensions (in feet) L x W x D	Main Engines	Owner/Operator	Delivery Date
SSBN-743	Missile Submarine	560 x 42	Steam Turbines	U.S. Navy	TBD	M/V Sea Critter	Passenger/Tour	65 x 22 x 5	(2) Caterpillar	Ocean Entertainment, Inc.	1/90
FRED WAHL MARINE CONSTRUCTION, INC., Depoe Bay, OR						M/V Madeleine	Crewboat	130 x 26 x 6.5	(4) Detroit Diesel	McCall Enterprises, Inc.	7/90
F/V Lisa Gayle	Seiner/Comb.	53 x 19 x 9.5	Cummins	Phil Robbins	4/90	M/V M.S. Shahan II	Crewboat	110 x 25 x 6	(4) Detroit Diesel	U.S. Dept. of Agriculture	9/90
F/V St. Patrick	Seiner/Comb.	58 x 19 x 9.5	Cummins	Mark Anderson	12/90	M/V Deanne	Crewboat	160 x 30 x 7	(6) Cummins	McCall Enterprises, Inc.	1/91
F/V Tradition	Seiner/Comb.	58 x 19 x 9.5	Cummins	Doug Hoedel	4/91	McCall					
FREEMPORT SHIPBUILDING & MARINE REPAIR, INC., Freeport, FL						M/V Sylvia F.	Crewboat	130 x 26 x 6.5	(4) Cummins	Galaxie Marine Service, Inc.	10/90
N/A	Steel Houseboat	80 x 20 x 1.5	N/A	N/A	7/91	M/V Evelyn M.	Crewboat	130 x 26 x 6.5	(4) Caterpillar	Offshore Oil Services, Inc.	2/91
Webb Tide II	Alum. Megayacht	124 x 24 x 5	N/A	Webb Cruise Lines	6/91	M/V Sam McCall	Crewboat	160 x 30 x 7	(6) Cummins	McCall Enterprises, Inc.	7/91
Alpha Centauri	Charter Boat	110 x 27 x 6	Cummins	Ray Miller/Star of Texas	2/91	M/V Kevin McCall	Crewboat	160 x 30 x 7	(6) Cummins	McCall Enterprises, Inc.	1/92
Sandy Hook Lady	Passenger/Dinner Paddlewheel	65 x 26 x 6	N/A	Capt. Ron Santee & Son	2/91	M/V Voyager II	Whale Watch	90 x 25 x 6	(4) Detroit Diesel	New England Aquarium	4/91
Jack London	Dinner/Excursion Boat	76 x 32 x 4	Caterpillar	Ward & Susan Proescher	3/91	M/V Explorer	Commuter	85 x 20 x 5.5	(3) Detroit Diesel	Fire Island Ferries, Inc.	5/91
GLADDING-HEARN SHIPBUILDING (DUCLOS CORP.), Somerset, MA						M/V Tim McCall	Crewboat	145 x 28 x 7	(5) Cummins	McCall Enterprises, Inc.	7/91
Victoria Clipper III	Fast Ferry	102.5 x 28.5	(2) DDA	Clipper Navigation	6/90	M/V Stephanie	Crewboat	130 x 26 x 6.5	(4) Detroit Diesel	McCall Enterprises, Inc.	11/91
(ex: Audubon Express)	Catamaran					McCall					
Jet Cat Express	Fast Ferry	102.5 x 28.5	(2) DDA	Doug Bombard Enterprises	4/91	Hull 366 N/A	Ship Freight Tender	65 x 24 x 5	(3) Detroit Diesel	Crescent Ship Service, Inc.	4/91
H.S.V. Osprey	Research Vessel	55 x 17	(2) DDA	Dept. of Environ. Protection, City of N.Y.	3/91	HANSEN BOAT COMPANY, Marysville, WA					
Unnamed	Research Vessel	60 x 18	(2) DDA	U.S. Navy, David Taylor Research Center	7/91	Steel	Crab/Tender	125 x 33 x 12	(2) Caterpillar	Handler Corp.	10/91
P.B. Hampton	Pilot Boat	51 x 17	(2) DDA	Virginia Pilots Association	9/91	Steel/Alum.	Crab/Long Line/ Salmon	58 x 22 x 10	Cummins	Mark Severson	10/91
Unnamed	Pilot Boat	38 x 13	DDA	Charleston Branch Pilots Asso.	9/91	Mickey H.	Salmon	55 x 17 x 5	(2) Lugger	Randy Hansen	4/91
Put-In Bay II	Fast Ferry Catamaran	92.5 x 28.5	(2) Deutz MWM	Put-In Bay Boat Line	4/92	Fiberglas/Alum.					
GULF COAST FABRICATION INC., Port Bienville, Pearlinton, MS						Monica Jene,	Salmon/Crab	52 x 17 x 5	Lugger	Arnold Nelson	10/91
*Delta Queen	Steamboat	280 x 58 x 15	Steam Paddlewheel	Delta Queen Steamboat Co.	3/91	Fiberglas/Alum.					
Alafia	19M Ton Molten Sulphur Barge	433 x 80 x 40		Cargill Fertilizer	12/90	*Sea Em,	New Pilot House, Galley, Living Quarters	120 x 28		Pete, Rolf Myhre	10/91
DD5801	Floating Dry Dock	320 x 105 x 25		U.S. Army Corps of Engineers	2/92	Steel/Alum.	Salmon/Crab/ Long Line	52 x 17 x 5	Lugger	Brad Underwood	4/91
N/A	Deck Barge	343 x 86 x 21		Pacific Hawaiian Line	1/92	Jamboree,	Salmon/Crab/ Long Line	52 x 17 x 5	Lugger	Jim Calhoun	3/91
GULF CRAFT, INC., Patterson, LA						Fiberglas/Alum.					
M/V Billy McCall	Crewboat	160 x 30 x 7	(6) Cummins	McCall Enterprises, Inc.	2/90	HOMEPORT MARINE SERVICES, INC., Moss Point, MS					
M/V W. New York	Commuter	65 x 20 x 5	(2) Caterpillar	A.P.A. Transport	2/90	Eastern Wind	Fish Tender	195 x 41.5 x 28	(2) EMD12-645C	Arctic Alaska Fisheries, Inc.	6/90
M/V Voyager	Commuter	85 x 20 x 5.5	(3) Detroit Diesel	Fire Island Ferries, Inc.	5/90	Northern Wind	Fish Tender	195 x 41.5 x 28	(2) Caterpillar 3517A	Arctic Alaska Fisheries, Inc.	2/91
M/V Jered McCall	Crewboat	160 x 30 x 7	(6) Cummins	McCall Enterprises, Inc.	2/90	Edd Tide II	Supply Vessel	180	(2) Caterpillar 399	Tidewater Marine Inc.	10/91
M/V Cadillac	Commuter	65 x 22 x 5	(2) Detroit Diesel	Starline	5/90	Vee Sea Topaz	Standby/Rescue	212	(2) 16-Cylinder Alco	Seacor Marine, Inc.	5/91
						Vee Sea Sapphire	Standby/Rescue	212	(2) 16-Cylinder Alco	Seacor Marine, Inc.	6/91
						Pinnacle	Boat w/ Supply Capabilities Steel King Crab	152 x 38 x 16	(2) Caterpillar 3508	Walter L. Casto	N/A
						HOUMA FABRICATORS, A DIVISION OF L.O.R., INC., Houma, LA					
						D.P. McAuliffe	Tractor Tug	95 x 34 x 17	EMD12645E6/Voith28GII	Panama Canal Comm.	1/90
						Unidad	Tractor Tug	95 x 34 x 17	EMD12645E6/Voith28GII	Panama Canal Comm.	5/90
						Submerged Line Barge	Submerged Line Barge	74 x 30 x 10	NSP	Panama Canal Comm.	5/90

As a reader of Maritime Reporter you probably know about the new concept tankers we've built recently.

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gers ships. Or Chemicals. Or Cablelayers. Or LPG's. Or Super-Tuna Freezers. Or the newest PTS offshore units. Etcetera.

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The Shipbuilders of Spain

SHIPYARD						SHIPYARD					
Vessel	Type	Dimensions (in feet) L x W x D	Main Engines	Owner/Operator	Delivery Date	Vessel	Type	Dimensions (in feet) L x W x D	Main Engines	Owner/Operator	Delivery Date
Candy Clipper	OSU	180 x 38 x 14.3	Detroit Diesel 16V-149	Candy Fleet, Morgan City, LA	11/90	MAIN IRON WORKS, INC., Bayou Blue, LA					
Candy Supplier	OSU	180 x 38 x 14.3	Detroit Diesel 16V-149	Candy Fleet, Morgan City, LA	11/90	Antonio T. Gambarella	Tug	96 x 28 x 12	Detroit	G&B Marine Inc.	7/91
Robert J. Eymard	OSU	135 x 32 x 12	(3) Detroit Diesel 16V92 w/ Twin Disc	Commercial Interest	5/91	Hull 390	Tug	96 x 28 x 12	Detroit	Bisso Towboat Co. Inc.	9/91
Oaklawn	OSU	133.5 x 30 x 12	Detroit Diesel 16V92 w/ Twin Disc	Commercial	7/91	Coastal Florida	Tug	85 x 32 x 13	EMD (Defco)	Coastal Fuels Marketing Inc.	10/90
INGALLS SHIPBUILDING DIVISION, LITTON INDUSTRIES, Pascagoula, MS						Andrew K. Jupiter	Tug	96 x 34 x 19	EMD (Defco)	Bay Houston Towing, Co.	6/90
CG 66 Hue City	Aegis Cruiser	565.8x56x31.5	GE/LM-2500	U.S. Navy	6/91	Jupiter	Tug	96 x 34 x 19	EMD (Defco)	Intracoastal Towing & Trans. Corp.	3/90
CG 68 Anzio	Aegis Cruiser	565.8x56x31.5	GE/LM-2500	U.S. Navy	4/92	MARINE BUILDERS INC., Utica, IN					
CG 69 Vicksburg	Aegis Cruiser	565.8x56x31.5	GE/LM-2500	U.S. Navy	9/92	Pleasant America	Towboat	60 x 26 x 9	Caterpillar 3412 Cummins 855	C.G. & E. Zimmer Plant	4/90
CG 71 Cape St. George	Aegis Cruiser	565.8x56x31.5	GE/LM-2500	U.S. Navy	3/93	Monticello III	Excursion	150 x 40 x 10		River City USA	4/90
CG 72 Vella Gulf	Aegis Cruiser	565.8x56x31.5	GE/LM-2500	U.S. Navy	6/93	Miss Sandy	Towboat	70 x 15 x 5		City of Coshocton, OH	5/90
CG 73 Port Royal	Aegis Cruiser	565.8x56x31.5	GE/LM-2500	U.S. Navy	1/94	Robert T. JFB	Towboat	52 x 22 x 7.6	Cummins 855	Mulzer Crushed Stone	10/90
DDG 52 Barry	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	5/92	DF1	Barge	111 x 36 x 10	Caterpillar 3516	Luhr Bros., Inc.	2/91
DDG 55 Stout	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	10/93	Unnamed	Barge	80 x 7 x 3.6		J.F. Brennan, Inc.	2/9
DDG 57 Mitscher	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	4/94	Unnamed	Towboat	50 x 20 x 7.6	Cummins 855	Barleycorn's, Inc.	5/91
DDG 59 Russell	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	9/94	Unnamed	Towboat	52 x 22 x 7.6	Cummins 855	U.S. A.C.O.E.	11/91
DDG 63 Ramage	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	1/95	MARINE INLAND FABRICATORS, Panama City, FL					
DDG 63 Stethem	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	5/95	MIF036	Steel Workboat	25.2 x 10 x 3.5	GM 6-71	Mark Bednar	6/90
DDG 65	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	11/95	MIF048	Steel Workboat	25.2 x 14 x 4.5	(2) GM 6-71s	Osage Ferry Co.	6/90
DDG 67	Aegis Destroyer	504.4 x 66.5 x 30.6	GE/LM-2500	U.S. Navy	3/96	MIF050	Steel Workboat	25.2 x 14 x 4.5	(2) GM 6-71s	Jordan Pile Driving	7/90
LHD 2 Essex	Amphibious Assault	844 x 106 x 23.7	Westinghouse/Steam Turbines	U.S. Navy	4/92	MIF055	Steel Workboat	20.2 x 8 x 3	GM 4-71	Cape Romain Contractors, Inc.	6/90
LHD 3 Kearsarge	Amphibious Assault	844 x 106 x 23.7	Westinghouse/Steam Turbines	U.S. Navy	5/93	MIF056	Steel Barge	40 x 10 x 5		Alabama Power Company	6/90
LHD 4 Boxer	Amphibious Assault	844 x 106 x 23.7	Westinghouse/Steam Turbines	U.S. Navy	6/94	MIF057	Steel Barge	40 x 10 x 5		Alabama Power Company	6/90
SA'AR 501	Corvette	281 x 39 x 10.5	GE/LM-2500 & MTU/12V1163 TB82	Israel	11/93	MIF058	Steel Workboat	20.2 x 8 x 3	GM 4-71	Action Dock Works, Inc.	7/90
SA'AR 502	Corvette	281 x 39 x 10.5	GE/LM-2500 & MTU/12V1163 TB82	Israel	4/94	MIF059	Steel Barge	30 x 9 x 4		L. Swain Construction	6/90
SA'AR 503	Corvette	281 x 39 x 10.5	GE/LM-2500 & MTU/12V1163 TB82	Israel	10/94	MIF060	Steel Barge	30 x 9 x 4		L. Swain Construction	6/90
CG 65 USS Chosin	Aegis Cruiser	565.8 x 56 x 31.5	GE/LM-2500	U.S. Navy	11/90	MIG061	Steel Barge	16 x 8 x 4		Action Dock Works, Inc.	7/90
JEFFBOAT, Jeffersonville, IN						MIF062	Steel Barge	30 x 10 x 3		Progress Marine, Inc.	7/90
Chem. 154 RCT 5	Double Skin Tank Barge	195 x 35 x 12.6		Commercial Interest	1/91	MIF063	Steel Barge	30 x 10 x 3		Progress Marine, Inc.	7/90
Job 5208 (6 Hulls)	Rake Covered Barge	195 x 35 x 12		Commercial Interest	1/91	MIF064	Steel Barge	30 x 8 x 1.4		Seaview Diving Contractors, nc.	7/90
Jobs 5332-5382 (60 Hulls)	Box Covered Barge	200 x 35 x 12		Commercial Interest	4/91	MIF065	Steel Barge	25 x 2.5 x 2		Dock Masters, Inc.	7/90
Hull 7021, 7022, 7023	Double Skin Tank Barge	297.5 x 54 x 12		Commercial Interest	3/91	MIF066	Steel Barge	25 x 2.5 x 2		Dock Masters, Inc.	7/90
Hull 2903, 2904, 2905	Double Skin Tank Barge	297.5 x 54 x 12		Commercial Interest	5/91	MIF067	Steel Workboat	20.2 x 8 x 3	GM 4-71	Frontier Kemper Constructors	8/90
Chem. 242, 243, 244	Double Skin Tank Barge	200 x 35 x 12		Commercial Interest	4/91	MIF068	Steel Barge	48 x 12 x 4		Mariner's Marina, Inc.	8/90
Job 5218 (5 Hulls)	Box Covered Barge	200 x 35 x 12		Commercial Interest	5/91	MIF069	Steel Barge	48 x 12 x 4		Mariner's Marina, Inc.	8/90
Job 5138	Covered Rake Hopper Barge	195 x 35 x 12		Commercial Interest	11/90	MIF070	Steel Barge	40 x 10 x 4		Tampa Bay Stevedores, Inc.	3/91
Job 5392	Open Rake Hopper Barge	200 x 35 x 12		Commercial Interest	9/90	MIF071	Steel Barge	40 x 10 x 4		Tampa Bay Stevedores, Inc.	3/91
Job 5292	Open Rake Hopper Barge	200 x 35 x 12		Commercial Interest	12/90	MIF072	Steel Workboat	25.2 x 10 x 4	GM 8V-71	Waterway Dock & Marine	9/90
Job 5798	Covered Rake Hopper Barge	195 x 35 x 12		Commercial Interest	12/90	MIF073	Steel Workboat	25.2 x 14 x 4.5	(2) GM 6-71s	Alabama Power Company	5/91
Job 5152	Double Skin Tank Barge	195 x 35 x 12.6		Commercial Interest	9/90	MIF074	Steel Workboat	20.2 x 8 x 3	GM 4-71	Custom Dock & Repair	3/91
Job 5153	Double Skin Tank Barge	195 x 35 x 12.6		Commercial Interest	5/90	MIF075	Steel Barge	35 x 8 x 4		San Diego Gas & Electric	10/90
Job 5154	Double Skin Tank Barge	195 x 35 x 12.6		Commercial Interest	12/90	MIF076	Steel Barge	35 x 8 x 4		San Diego Gas & Electric	10/90
Hull 442	Double Skin Tank Barge	290 x 54 x 12		Commercial Interest	1/90	MIF077	Steel Tow	36.7 x 18 x 7	(2) GM 6-71s	Sabine Towing & Transportation	12/90
Hull 435B	Double Skin Tank Barge	300 x 54 x 12		Commercial Interest	2/90	MIF078	Steel Barge	18 x 8 x 6		Docko Management, Inc.	11/90
Hull 421, 423, 425	Double Skin Tank Barge	150 x 54 x 12		Commercial Interest	8/90	MIF079	Steel Barge	18 x 8 x 6		Docko Management, Inc.	11/90
Job 5128 (2 Hulls)	Double Skin Tank Barge	200 x 35 x 12.6		Commercial Interest	2/90	MIF080	Steel Workboat	25.2 x 10 x 3.5	GM 6-71	Milbocker & Sons, Inc.	3/91
Job 5159 (3 Hulls)	Double Skin Tank Barge	195 x 35 x 12.6		Commercial Interest	6/90	MIF081	Steel Repair Boat	35 x 18 x 4	GM 6-71	Cargo Carriers	3/91
Job 5155 (5 Hulls)	Double Skin Tank Barge	195 x 35 x 12.6		Commercial Interest	10/90	MIF082	Steel Barge	30 x 12 x 2.5		Custom Dock & Davit	1/91
Job 5058 (56 Hulls)	Open Rake Hopper Barge	195 x 35 x 12		Commercial Interest	7/90	MIF083	Steel Workboat	20.2 x 8 x 3	GM 4-71	Escape Marine	3/91
Job 5018 (40 Hulls)	Open Box Hopper Barge	200 x 35 x 12		Commercial Interest	9/90	MIG084	Steel Workboat	20.2 x 8 x 3	GM 4-71	Dynamic Painting Corp.	4/91
Job 5164 (10 Hulls)	Open Box Hopper Barge	200 x 35 x 12		Commercial Interest	5/90	MIG085	Steel Workboat	25.2 x 10 x 3.5	GM 6-71	Stock	
Job 5174 (18 Hulls)	Open Rake Hopper Barge	195 x 35 x 12		Commercial Interest	6/90	MIG086	Steel Workboat	20.2 x 8 x 3	GM 4-71	Pressure Concrete Construction	5/91
J.M. MARTINAC SHIPBUILDING CORP., Tacoma, WA						MIF087	Steel Barge	40 x 10 x 4		Stock	
Hull 237	Stem Trawler	150 x 39 x 22	Wichman 10V-28B		11/91	MIF088	Steel Barge	17 x 8.5 x 2		Mohawk Northeast, Inc.	5/91
Eleu	Tractor Tug Z-Peller	75 x 28 x 12	(2) Caterpillar 3512	Hawaiian Tug & Barge	1/90	MIF089	Steel Barge	17 x 8 x 2		Mohawk Northeast, inc.	5/91
Capt. Vincent Gann	Tuna Purse Steiner	251 x 44 x 21	MAK 9M453C	Caribbean Marine Service, Inc.	3/90	MARINETTE MARINE CORPORATION, Marinette, WI					
Bold Adventuress	Tuna Purse Steiner	251 x 44 x 21	MAK 9M453C	Caribbean Marine Service, Inc.	9/90	MCM-4 Champion	Mine Counter-measures	224 x 38.9	(4) Isotta Fraschini 1036 SS6 V-AM	U.S. Navy	1/91
*Essaquam	Passenger/Car Ferry	328 x 78 x 16	G.E.	Washington State Ferry System	5/91	MCM-7 Patriot	Mine Counter-measures	224 x 38.9	(4) Isotta Fraschini 1036 SS6 V-AM	U.S. Navy	9/91
*Kittitas	Passenger/Car Ferry	328 x 78 x 16	G.E.	Washington State Ferry System	11/91	120 Aton	Aids to Navigation Servicing Barge	123 x 50		U.S. Coast Guard	7/91
						120 Aton	Aids to Navigation Servicing Barge	123 x 50		U.S. Coast Guard	4/92
						MASTER MARINE, INC., Bayou La Batre, AL					
						Steel/New Const. Petrel	Longliner Alum. SES (Surface Effect Ships)	72 x 20 x 9 110 x 42	Caterpillar 3408DITA	Dan Farnham U.S. Coast Guard	9/91 8/91
						Shearwater	Alum. SES (Surface Effect Ships)	110 x 42		U.S. Coast Guard	8/91
						Sea Hawk	Alum. SES (Surface Effect Ships)	110 x 42		U.S. Coast Guard	8/91
						*Manitou	Island Class Cutter	110	N/A	U.S. Coast Guard	1/90
						*Farallon	Island Class Cutter	110	N/A	U.S. Coast Guard	2/90
						*Matagonia	Island Class Cutter	110	N/A	U.S. Coast Guard	4/90
						*Maui	Island Class Cutter	110	N/A	U.S. Coast Guard	6/90
						*Padre	Island Class Cutter	110	N/A	U.S. Coast Guard	3/90
						*Sitkinak	Island Class Cutter	110	N/A	U.S. Coast Guard	5/90
						*Adak	Island Class Cutter	110	N/A	U.S. Coast Guard	8/90
						*Truk Agressor	Cruise	110 x 26	N/A	Caribbean Inc.	7/90
						MISSISSIPPI MARINE CORP., Greenville, MS					
						Betsey Northup	Passenger/Excursion Barge	110 x 31 x 5	N/A	Padelford Packet Boat Co.	5/90

SHIPYARD		Dimensions (In feet)		Main Engines	Owner/Operator	Delivery Date
Vessel	Type	L x W x D				
MUNSON MFG., INC., Edmonds, WA						
ALF575K989	Oil Recovery	30 x 11 x 2		AQAD41 (2) Volvo I.O.	Tosco Refinery	2/90
Lady Express	Passenger	65 x 20 x 4		(2) 12V92TAG Detroit	L.K. Chelaw Boat Co.	5/90
ALF578A090	Cargo	42 x 15 x 3		(2) 6V53T Detroit	Government of Palau	6/90
ALF00579B090	Oil Recovery	36 x 12 x 4		(2) 3208T Cats	Shell Western	7/90
ALF00581B090	Oil Recovery	42 x 15 x 4		(2) 3208TA Cats	Clean Coastal Waters	8/90
Sea K-9	Dive	28 x 11 x 3		(2) 6V53T Detroit	Kona Coast Divers	9/90
ALF00586E090	Cargo	28 x 11 x 2		(2) 140HP Johnson O.B.	Holmes & Narver	9/90
CCW Spirit	Oil Recovery	72 x 25 x 6		(2) 3406 Cats	Clean Coastal Waters	3/91
ALF00592I090	Passenger	26 x 10 x 2		AQAD41 Volvo	VSCG	2/91
ALF00593H090	Cargo	32 x 11 x 2		(2) 200 Yamaha O.B.	Yellowstone National Park	10/90
ALF00594I090	Cargo	30 x 11 x 3		(2) AQAD41 Volvo I.O.	Washington State Parks	11/90
Splash	Dive	42 x 15 x 2		(2) 6V92TA Detroit	Pacific Island Dev. Corp.	8/90
ALF00596L090	Patrol	38 x 13 x 3		(2) 3208TA Cats	U.S.C.G., Gov. Is.	4/91
ALF00599K090	Oil Recovery	26 x 10 x 2		(2) Cummins 4BTA	Exxon Corp.	2/91
ALF00603A191	Oil Recovery	38 x 13 x 3		(2) 6V53T Detroit	Clean Bay	4/91

NATIONAL STEEL & SHIPBUILDING CO., San Diego, CA

Supply	AOE 6	753.8 x 107 x 37	(4) LM-2500 Gas Turb.	U.S. Navy	9/92
Rainier	AOE 7	753.8 x 107 x 37	(4) LM-2500 Gas Turb.	U.S. Navy	4/93
Arctic	AOE 8	753.8 x 107 x 37	(4) LM-2500 Gas Turb.	U.S. Navy	8/93
Unnamed	Containership	713.5 x 105.8 x 38	MAN B&W 8180MC	Matson Navigation Co.	6/92

NEWPORT NEWS SHIPBUILDING & DRYDOCK CO., Newport News, VA

USS George Washington	CVN-73	1040 x 134	(4) GE Steam Turbines	U.S. Navy	7/92
USS John C. Stennis	CVN-74	1040 x 134	(4) GE Steam Turbines	U.S. Navy	12/95
USS United States	CVN-75	1040 x 134	(4) GE Steam Turbines	U.S. Navy	12/97
USS Albany	SSN-753	360 x 33	(4) GE Steam Turbines	U.S. Navy	3/90
*USS Scranton	SSN-756	360 x 33	(4) GE Steam Turbines	U.S. Navy	12/90
*USS Asheville	SSN-758	360 x 33	(4) GE Steam Turbines	U.S. Navy	8/91
USS Jefferson City	SSN-759	360 x 33	(4) GE Steam Turbines	U.S. Navy	1/92
USS Boise	SSN-764	360 x 33	(4) GE Steam Turbines	U.S. Navy	7/92
USS Montpelier	SSN-765	360 x 33	(4) GE Steam Turbines	U.S. Navy	11/92
USS Charlotte	SSN-766	360 x 33	(4) GE Steam Turbines	U.S. Navy	1/94
USS Hampton	SSN-767	360 x 33	(4) GE Steam Turbines	U.S. Navy	8/93
USS Toledo	SSN-769	360 x 33	(4) GE Steam Turbines	U.S. Navy	6/94
USS Tucson	SSN-770	360 x 33	(4) GE Steam Turbines	U.S. Navy	11/94
USS Cheyenne	SSN-773	360 x 33	(4) GE Steam Turbines	U.S. Navy	10/95
USS Greenville	SSN-772	360 x 33	(4) GE Steam Turbines	U.S. Navy	4/95

SHIPYARD		Dimensions (In feet)		Main Engines	Owner/Operator	Delivery Date
Vessel	Type	L x W x D				
NICHOLS BROTHERS BOAT BUILDING, INC., Freeland, WA						
Spirit of San Francisco	Dinner/Excursion Vessel	150 x 40 x 7		Cummins	Pacific Marine Yacht Charters	6/91
S-100	Monte Carlo Cruise Yacht	205 x 45 x 6.5		Caterpillar	Hornblower Yachts Inc.	8/91
S-101	Dinner/Excursion Vessel	232 x 45 x 13.5		Caterpillar	Paradise Cruise	2/92
S-102	High Speed Alum. Mono-Hull Ferry	65 x 17.5 x 4		(2) Detroit	Mitsubishi Inter. Corp.	1/91
*R-21 Arctic Rose	Catcher Processor Scallop Boat	192		Wichmann	Arctic Alaska Fisheries	1/91
*Pacific Mariner	Crab Boat	Stretch 125		Caterpillar	Kaldestad	10/90

NICHOLS MARINE WAYS, INC., Portland, OR

*F/V Silver Dolphin	Crabber	108			Brekka Fisheries	9/91
*F/V Polar Sea	Crabber	104 x 33			Polar Sea Partnership	10/91
*F/V Bold Contender	Crabber	66 x 22			F/V Bold Contender	4/91
*Bismark	Rail Barge Conversion to Chip Carrier	329 x 60			Brix Maritime	12/90
*FNT 180	Tank Barge	180 x 54			Harbor Enterprises	11/90
*F/V Arctic Lady	Crabber	107 x 31			Arctic Lady Fisheries	10/90

NORTH AMERICAN SHIPBUILDING INC., Larose, LA

Nathaniel B. Palmer	Research Vessel	308.5 x 60 x 22.6	(4) Caterpillar 3608		Edison Chouest Offshore, Inc.	1/92
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OFFSHORE SHIPBUILDING INC., Jacksonville, FL

Unnamed	Paper Barge	300 x 90 x 18.5	None		McAllister Towing	
Unnamed	54 Passenger Vessel	150 x 30	(2) 8V71T1		South America Co.	
Unnamed	Supply boats (2)	180 x 35 x 14	(2) CAT 399		McAllister Towing	
Unnamed	Casino Boat Swath	240 x 90	MTU		N/A	

PATTI SHIPYARD, INC. Pensacola, FL

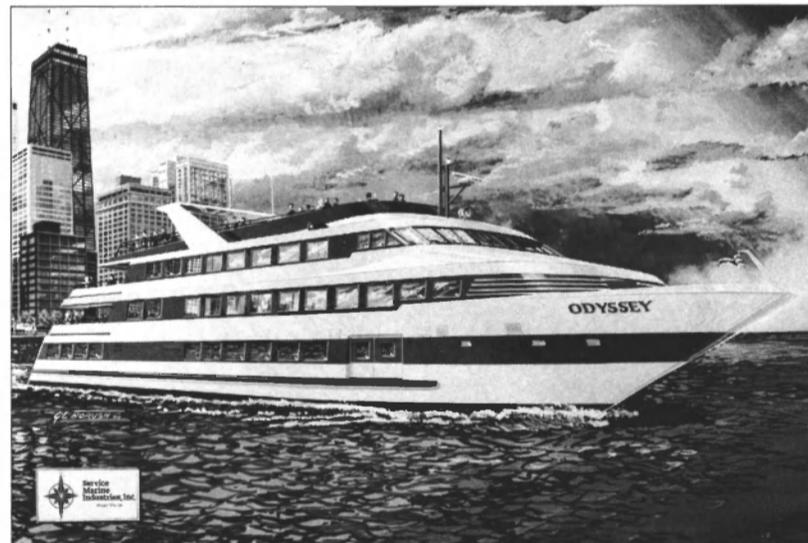
Casino Belle Tender One	Gambling Vessel Dredge Tender	387 x 58 65 x 30	Cummins Cummins		Roberts River Rides U.S. Corp. of Engineers	4/91 Late-91
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LEADER-SHIP LEADER: OUT IN FRONT

Service Marine, the nation's leader in design and construction of dinner boats, charter yachts and casino boats, has a brand new design that will put you out in front of your competition.

Following lineage of the highly successful Spirits of Norfolk and Puget Sound, the new LEADER-SHIP displays the sleek clean lines which are Service Marine's trade marks. Seen from shore or another boat, the viewer would be sure that they're looking at a sumptuous 175' long private yacht. The two beautifully decorated main cabins are set up for haute cuisine table-served dining for 400 guests, with food prepared in the first deck galley. Passengers can move between whisper-quiet cabins without intruding on other guests. The third deck cabin provides secluded privacy for fifty special guests.

The LEADER-SHIP is out in front for guests' comfort, also. Windows are heavily tinted to block unwanted heat, and sized to give an unprecedented view of the surrounding scenery. Tables are arranged so that everyone



has a view of the entertainment and dance floor. Ceiling heights close to eight feet, and air conditioning especially designed to provide continuous fresh air, will satisfy even your most critical

guest. With an extended keel and specially designed anti-roll chocks, this boat will be operating in relative comfort while other boats are restricted to port.

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The boat can be designed in various lengths, from 140' to 200', depending on your mission. Passenger counts can vary from 149 to 1500, depending on length, beams and number of cabins. Choose the two-cabin design, add some luxurious couches, chairs and draperies along with a spectacular lounge, and you'll have an exciting charter yacht.

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Circle 297 on Reader Service Card

SHIPYARD		Dimensions (In feet) L x W x D	Main Engines	Owner/Operator	Delivery Date
Vessel	Type				
Tender Two	Dredge Tender	65 x 30	Cummins	U.S. Corp. of Engineers	Late-91
Drift Collector	Drift Collector	60 x 26	Caterpillar	U.S. Corp. of Engineers	Mid-92
Fishing Vessel	Combination	115 x 32	Cummins	Off Shore Industries, Inc.	Mid-92
*Mississippi Belle	Passenger Vessel	180 x 40	Cummins	Bob Kehl	6/91

PETERSON BUILDERS, INC., Sturgeon Bay, WI

MCM-6	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	8/91
MCM-8	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	11/91
MCM-9	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	8/92
MCM-10	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	10/92
MCM-11	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	5/93
MCM-12	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	8/93
MCM-13	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	11/93
MCM-14	Mine Counter-measures	224 x 39 x 11	(4) Isotta Fraschini	U.S. Navy	7/94

PLATZER SHIPYARD, INC., Houston, TX

Buffalo 250	Bunker Tank Barge	195 x 50 x 12	Detroit Pump Engine	Buffalo Marine Service	1/91
Unknown	Lube Tank Barge	195 x 35 x 12	Detroit Pump Engine	N/A	5/91
Unknown	Lube Tank Barge	195 x 35 x 12	Detroit Pump Engine	N/A	6/91
Unknown	Type I Hull Tank Barge	195 x 35 x 12	Detroit Pump Engine	N/A	8/91
Unknown	Lube Tank Barge	195 x 35 x 12	Detroit Pump Engine	N/A	10/91
Unknown	Lube Tank Barge	195 x 35 x 12	Detroit Pump Engine	N/A	11/91

SHIPYARD		Dimensions (in feet) L x W x D	Main Engines	Owner/Operator	Delivery Date
Vessel	Type				
PRODUCTION MANAGEMENT STRUCTURAL SYSTEMS, INC., New Orleans, LA					
Concrete	Underwater Storage Tank (Barge)	116 x 104 x 14	None	EIF Aquitaine	6/91

QUALITY SHIPYARDS, INC. Houma, LA

*Constitution	OSV to Oil Spill Service	207 x 40 x 17	EMD16-645E7A	Zapata Gulf Marine	10/90
Halliburton 221	Service Vessel	210 x 42 x 15	(2) Caterpillar 3516	Halliburton	4/91
*Northern Empire	OSV to Fishing	194 x 40 x 17	(2) Caterpillar 3606	Empire Alaska Seafoods, Inc.	9/91

ROBERT E. DERECKTOR OF R.I., INC., Middleton, RI

Mohawk	Medium End. Cutter (WMEC)	270 x 38 x 14	(2) Alco 18-251F	U.S.C.G.	8/90
Nathanael Greene	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	8/91
Henry Knox	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	11/91
Anthony Wayne	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	2/92
Zebulon Pike	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	5/92
Winfield Scott	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	8/92
Seth Warner	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	11/92
John Champe	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	2/93
LT 808	Large Tug (LT)	128 x 36 x 15	(2) EMD	U.S. Army	5/93

SERODINO, INC. Chattanooga, TN

M/V Falcon	Workboat	54 x 22	(2) Cummins 19M	Tennessee Valley Authority	3/91
M/V Cecilia	Skimmer	35 x 15	(2) Caterpillar D-3304	New York Dept. of Sanitation	5/91
M/V Anne Marie	Skimmer	35 x 15	(2) Caterpillar D-3304	New York Dept. of Sanitation	5/91
M/V Bearcat	Towboat	76 x 26	(3) Cummins 19M	Stock	7/91
Heartland of America Fountain	Fountain	42	Electric	County of Douglas, Omaha	7/90

SERVICE MARINE INDUSTRIES, INC., Morgan City, LA

Spirit of Puget Sound	Dinner/Excursion	175 x 35 x 6.6	Caterpillar 3408 DITA	Spirit Cruises	4/90
M/V Odyssey	Dinner/Excursion	175 x 37 x 6.6	Caterpillar 3408 DITA	Odyssey Cruises	3/91
M/V Linda	Offshore Supply	142 x 36 x 9.6	Detroit Diesel 12V149N	Gilbert Cheramie Boats	8/91
Unnamed	Casino	210 x 50 x 6.6	Caterpillar 341201 DITA	Confidential	8/92

STEINER SHIPYARD, INC., Bayou La Batre, AL

*M/V Commander	Cargo Vessel	190 x 38 x 16	(2) EMD16-645E5	Ameritrade S de R.L.	10/90
*M/V Western Surf	Geophysical Research	151 x 33 x 13.6	(2) Caterpillar D-398PCTA	Seacor Marine, Inc.	9/90
*M/V Mirage	Passenger/Excursion/Casino/Yacht	190 x 38 x 14	(2) Caterpillar D-399	S.S.T., Inc.	9/91
*M/V Vee Sea Typhoon	Stand-By/Rescue	180 x 40 x 15	(2) Caterpillar D-399	Seacor Marine, Inc.	6/91
*M/V Vee Sea Winds	Stand-By/Rescue	185 x 38 x 14	(2) Caterpillar D-399	Seacor Marine, Inc.	7/91
M/V Sun Island	Offshore Supply	220 x 40 x 14	(2) EMD12-645E2	Seacor Marine, Inc.	1/90
M/V Laura	Passenger (Alum.)	104 x 24 x 8	(4) Caterpillar 3408	Modern Continental Construction Co., Inc.; Alternate Concepts, Inc.; Harbor Cruises, Inc. (A Joint Venture)	6/90
M/V Matthew J. Hughes	Passenger (Alum.)	104 x 24 x 8	(4) Caterpillar 3408	Modern Continental Construction Co., Inc.; Alternate Concepts, Inc.; Harbor Cruises, Inc. (A Joint Venture)	6/90
M/V Eugenia Louise	Passenger (Alum.)	104 x 24 x 8	(3) Caterpillar 3408	Modern Continental Construction Co., Inc.; Alternate Concepts, Inc.; Harbor Cruises, Inc. (A Joint Venture)	9/90
M/V Discovery Island	Offshore Supply	220 x 40 x 14	(2) EMD12-645C	Seacor Marine, Inc.	2/91
F/V Cayenne Stephanie	Shrimp Trawler	75 x 22 x 11	Cummins KT-19M	Armag. Cayenne	2/90
F/V Margaux	Shrimp Trawler	75 x 22 x 11	Cummins KT-19M	Unipeche	5/90
F/V Natacha	Shrimp Trawler	75 x 22 x 11	Cummins KT-19M	Unipeche	5/90
F/V La Creole 3	Shrimp Trawler	80 x 22 x 11	Cummins KTA-19M	CIE Francaise De Peche	12/90
F/V La Parisienne 2	Shrimp Trawler	80 x 22 x 11	Cummins KTA-19M	CIE Francaise De Peche	12/90
F/V La Gauloise 3	Shrimp Trawler	80 x 22 x 11	Cummins KTA-19M	CIE Francaise De Peche	2/91
F/V La Marianne 3	Shrimp Trawler	80 x 22 x 11	Cummins KTA-19M	CIE Francaise De Peche	3/91
M/V Chicago's First Lady	Excursion Vessel	96 x 22.5 x 5.6	(2) Caterpillar 3306	Mercury Skyline Yacht Charters, Inc.	7/91
M/V Avery Island	Offshore Supply	220 x 40 x 14	(2) EMC16-567C	Seacor Marine, Inc.	7/91
M/V Hull No. AP-4	Passenger Vessel (Alum.)	104 x 24 x 8	(4) Caterpillar 3408	Modern Continental Construction Co., Inc.; Alternate Concepts, Inc.; Harbor Cruises, Inc. (A Joint Venture)	10/91
M/V Hu. No. AP-5	Passenger Vessel (Alum.)	104 x 24 x 8	(3) Caterpillar 3408	Modern Continental Construction Co., Inc.; Alternate Concepts, Inc.; Harbor Cruises, Inc. (A Joint Venture)	10/91
F/V Capitaine Michel	Shrimp Trawler	75 x 22 x 11	Cummins KT-19M	Felix Alonzeau	5/91
F/V Turbot II	Shrimp Trawler	75 x 22 x 11	Cummins KT-19M	Andre Florus	5/91

SWATH OCEAN SYSTEMS, INC., Chula Vista, CA

Long Range Fish.	Swath	90 x 45 x 9	Caterpillar 3516 Series	N/A	3/92
Frederick G. Creed Pursuit	Swath	67 x 32 x 7	Detroit Diesel 12V92TA	D.F.O. Canada Canship Limited	9/90
	Swath	35 x 16 x 4	Detroit Diesel 6V53 TI	Swath Ocean Systems; America's Cup Organizing Committee	5/91

SWIFTSHIPS, INC., Morgan, LA

*Arc T.N. Jose Maria Palac	Alum. Patrol Boat	110 x 24 x 6.5	(2) MTU12V331TC92	Government of Colombia	90
*Arc On Medardo Monzon C.	Alum. Patrol Boat	110 x 24 x 6.5	(2) MTU12V331TC92	Government of Colombia	90
*Safe Conduct II Intrepid	Motor Yacht	117 x 25 x 14	(2) 16V92TA Detroit Dsl.	Private	90
0410	Motor Yacht	155 x 30 x 7.2	(2) Caterpillar 3516 DITA	Private	91
	Landing Craft	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91

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SHIPYARD						SHIPYARD					
Vessel	Type	Dimensions (in feet) L x W x D	Main Engines	Owner/Operator	Delivery Date	Vessel	Type	Dimensions (in feet) L x W x D	Main Engines	Owner/Operator	Delivery Date
0411	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	Motor Lifeboat	Self-Righting (Monohull)	47 x 14	(2) Detroit Diesel 6V92TA	U.S. Coast Guard	2/90
0412	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	Landing Craft, Air Cushion (LCAC): LCAC-024	Air-Cushion Vehicle	89 x 48	(4) Textron Lycoming TF40B Marine Gas Turbine	U.S. Navy	3/90
0413	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	LCAC-025	Air-Cushion Vehicle	89 x 48	(4) TF40B Marine Gas Turbine	U.S. Navy	6/90
0414	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	LCAC-026	Air-Cushion Vehicle	89 x 48	(4) TF40B Marine Gas Turbine	U.S. Navy	6/90
0415	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	LCAC-027	Air-Cushion Vehicle	89 x 48	(4) TF40B Marine Gas Turbine	U.S. Navy	8/90
0416	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	LCAC-028	Air-Cushion Vehicle	89 x 48	(4) TF40B Marine Gas Turbine	U.S. Navy	10/90
0417	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	LCAC-029	Air-Cushion Vehicle	89 x 48	(4) TF40B Marine Gas Turbine	U.S. Navy	12/90
0418	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	LCAC-030	Air-Cushion Vehicle	89 x 48	(4) TF40B Marine Gas Turbine	U.S. Navy	12/90
0419	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	(Backlog - LCAC-031, 032, 033, 037, 048, 060, 072)					
*0420	Harbor Tug/Launcher	71 x 20 x 4	(2) 16V92TA Detroit Diesel	U.S. Navy	90	TIDEWATER EQUIPMENT CORPORATION, Chesapeake, VA					
0421	Route Survey Vessel	87.7 x 24.7 x 8.2	(2) MTU12V183TE61	U.S. Navy/Govt. of Egypt	91	Barge	Hopper, Ocean Service	362 x 74.4 x 31.6	N/A	Allied Towing Corporation	9/90
0422	Route Survey Vessel	87.7 x 24.7 x 8.2	(2) MTU12V183TE61	U.S. Navy/Govt. of Egypt	91	Barges (4)	Deck, River Service	128 x 32 x 7.10	N/A	Union Camp Corporation	9/90
0423	Coastal Minehunter	110 x 27 x 8	(2) MTU12V183TE61 DB51L	Arab Republic of Egypt	91	Barge	Hopper, River Service	270 x 52 x 18	N/A	Cogentrix Virginia Leasing Corp.	4/91
0424	Coastal Minehunter	110 x 27 x 8	(2) MTU12V183TE61 DB51L	Arab Republic of Egypt	91	Barge	Hopper, Ocean Service	360 x 56 x 32	N/A	Undisclosed	Under Constr.
0425	Coastal Minehunter	110 x 27 x 8	(2) MTU12V183TE61 DB51L	Arab Republic of Egypt	91	TRINITY MARINE GROUP, Gulfport, MS					
0426	Coastal Minehunter	110 x 27 x 8	(2) MTU12V183TE61 DB51L	Arab Republic of Egypt	91	Anita Dee II	Dinner Cruise	140	(2) Caterpillar 3408 TA	Tee Dee Int.	6/90
0427	Coastal Minehunter	110 x 27 x 8	(2) MTU12V183TE61 DB51L	Arab Republic of Egypt	91	Abeer Eighteen	Crew Boat	110	(4) DD 12V71 TI	Commercial	5/90
0428	Coastal Minehunter	110 x 27 x 8	(2) MTU12V183TE61 DB51L	Arab Republic of Egypt	91	R. Island	House Boat	85	(2) Caterpillar 3406 TA	Commercial	11/90
0429	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	Coastal Dolphin	Yacht	80	(2) Caterpillar 3408 TA	Commercial	7/90
0430	Landing Craft Mech.8	74.5 x 21.4 x 4.2	(2) 8V92N Detroit Diesel	U.S. Navy	91	Fjorland	Excursion	85	(2) DD 12V92 TA	Commercial	5/90
*Viper	Fast Motor Yacht	80 x 20.5 x 10.8	(3) 16V92TA Detroit Dsl.	Private	90	Abeer Nineteen	Crew Boat	85	(2) DD 12V71 TI	Commercial	5/90
*0289	Utility Boat	115 x 26 x 6	(2) 16V92N Detroit Diesel	A.A. Turki Corp.	90	Abeer Twenty One	Crew Boat	85	(2) DD 12V92 TA	Commercial	8/90
*0290	Utility Boat	115 x 26 x 6	(2) 16V92N Detroit Diesel	A.A. Turki Corp.	90	Abeer Twenty Two	Crew Boat	85	(2) DD 12V71 TI	Commercial	9/90
TEXTRON MARINE SYSTEMS, New Orleans, LA						Abeer Twenty Five	Crew Boat	110	(3) DD 12V71 TI	Commercial	12/90
*SES-200	Surface Effect Ship	160 x 40	(2) MTU Diesel 16V396 TB94	U.S. Navy	2/91	Sea Fox	Crew Boat	126	(4) DD 12V92 TA	Commercial	10/90
SES-Fireboat (1-2)	Surface Effect Ship	70 x 19	(2) Detroit Diesel 8V92TA	City of New York	2/92	Abeer Twenty Three	Crew Boat	85	(2) DD 12V71 TI	Commercial	1/91
						Abeer Twenty Four	Crew Boat	85	(2) DD12V71 TI	Commercial	2/91
						Gray Spear	Crew Boat	110	(3) DD12V71 TI	Commercial	3/91
						Gray Sable	Crew Boat	110	(3) DD12V71 TI	Commercial	4/91
						Abeer Twenty Six	Crew Boat	85	(2) DD12V71 TI	Commercial	4/91
						Abeer Twenty Seven	Crew Boat	85	(2) DD12V71 TI	Commercial	5/91

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Circle 220 on Reader Service Card



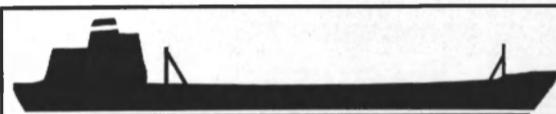
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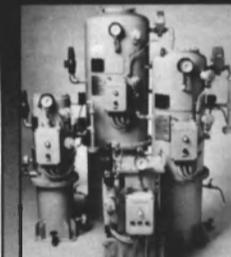
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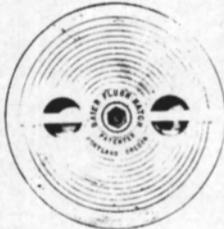
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Circle 281 on Reader Service Card

SHIPYARD					SHIPYARD						
Vessel	Type	Dimensions (In feet) L x W x D	Main Engines	Owner/Operator	Delivery Date	Vessel	Type	Dimensions (In feet) L x W x D	Main Engines	Owner/Operator	Delivery Date
Oscro Star I	Crew Boat	85	(2) DD12V71 TI	Commercial	6/91	Various (80)	Hopper Barges	195-200	N/A	Commercial	Various
Oscro Star II	Crew Boat	85	(2) DD12V71 TI	Commercial	7/91	Various (20)	Hopper Barges	200	N/A	Commercial	Various
Abeer Twenty Eight	Crew Boat	85	(2) DD12V71 TI	Commercial	6/91	Various (40)	Hopper Barges	200	N/A	Commercial	Various
Not Assigned	Crew Boat	130	(5) Cummins 19KTA	Commercial	12/91	Various (50)	Hopper Barges	195-200	N/A	Commercial	Various
Not Assigned	Oil Recovery	65	(2) Caterpillar 3406	O.M.I. Corp.	12/91	Commanche	Tank Barge	390	N/A	Commercial	12/90
Not Assigned	Crew Boat	85	(2) DD 12V71 TA	Reserved	Reserved	Somerset	Coal Barge	418	N/A	Moran Somerset Corp.	12/90
Not Assigned	Crew Boat	85	(2) DD 12V71 TA	Reserved	Reserved	Waialeale	RO/RO Barge	380	N/A	Commercial	2/91
Not Assigned	Crew Boat	120	Unknown	Abeer Marine Services	11/91	Natchez	Tank Barge	345	N/A	Commercial	9/91
Not Assigned	Crew Boat	65	(2) DD 16V92	Army Corps of Engineers	6/92	TRI-STAR MARINE, INC., Seattle, WA					
	Tank Barge	260	N/A	Hollywood Marine	8/91	Secret Island	Crabber/Tender	111 x 28 x 11	Caterpillar 3412T	Kennedy Fisheries	10/90
	Tank Barge	260	N/A	Hollywood Marine	9/91	Lady Kodiak	Crabber/Tender	124 x 32 x 12	Caterpillar 3412T	Suydam Boats	6/91
Leda	Motor Yacht	97	(2) MTU BV396TB93	Private	2/91	Gale Wind	Tug Boat	86 x 30 x 15	Caterpillar 3512T	Anderson Tug & Barge	6/91
LAE 5	Patrol Boat	112	(2) DD 16V149 TI & DD 16V92 TI	Ecuadorian Navy	5/91	Windy Bay	Crabber/Processor	160 x 36 x 12	Caterpillar 398T	Windy Bay Inc.	9/91
De Agosto	Patrol Boat	112	(2) DD 16V149 TI & DD 16V92 TI	Ecuadorian Navy	6/91	Lady Alaska	Crabber/Tender	124 x 32 x 12	Caterpillar 3412T	Suydam Boats	10/91
Various (25)	Patrol Boats	77	(2) DD 16V92	U.S. Navy F.M.	Various Del.	UNION BAY SHIPBUILDING CORP., Seattle, WA					
Albacora	Line Launch	50	(2) DD 8V71N	Commercial	5/91	*Sea Haven	Research	96 x 40	(2) Detroit 12-71	Dirk Nansen	4/90
Culebra	Dredge Tender	50	(2) DD 16V92NA	Panama Canal Comm.	10/91	*Pt. San Pablo	Harbor Tug	100 x 25.6 x 12	EMD-645E4	Bay & Delta Towing	9/90
	Lock Tender	50	(2) Cummins	U.S. Corp. of Engineers	6/92	*Aleutian	Trawler	86 x 26	(2) Cummins KTA19-1150	Meddar Corp.	6/90
	Fire Boat	106	(2) DD 16V92TAB	Brazil	12/91	*Challenger			Caterpillar 3408	Sonny Boy Fisheries	9/90
YD 251	Crane Barge	175	(2) DD 16V92TAB	Brazil	1/92	*Sonny Boy	Trawler/Proc.	98 x 26	(2) Cummins KTA19-1150	Seawest Fisheries	12/90
YD 252	Crane Barge	175	N/A	U.S. Navy	9/90	*Lady of Good Voyage	Trawler	86 x 26	(2) Caterpillar 3412	Golden Age Fisheries	2/91
YD 253	Crane Barge	175	N/A	U.S. Navy	1/91	*Amber Dawn	Trawler	110 x 30	(2) Cummins VTA-28-M	Burton Parker	2/91
Ocracoke	Ferry	149	Caterpillar 3408 DITA	State of North Carolina	11/90	*American Viking	Crabber	121 x 27	(2) Caterpillar 353	Buholm Fisheries	7/91
Mr Vick	Supply Boat	222	(2) EMD	Oil & Gas	5/91	WASHBURN & DOUGHTY ASSOC., INC., East Boothbay, ME					
Judy H	Supply Boat	222	(2) EMD	Oil & Gas	6/91	Grandon	Fisheries	47 x 16 x 5.5	Caterpillar	Ohio State University	6/90
Y.A. Adams	Supply Boat	222	(2) EMD	Oil & Gas	7/91	Cape Blomidon	Research Vessel	134.7 x 33 x 16	Krupp Mak	Scotia Trawler Equipment Ltd.	10/90
	Supply Boat	222	(2) EMD	Oil & Gas	8/91	Seacapture	Longliner	82 x 22 x 9.5	Caterpillar	Sea Capture, Inc.	4/91
K. Marine V	Supply Boat	202	(2) Caterpillar 3516 DITA	Commercial	9/91	Alice Winslow	Tugboat	90 x 30 x 13.7	Alco	Sheepscoot Pilots	5/91
	Crane Barge	100	N/A	Panama Canal Comm.	11/91	Unnamed	Car/Passenger Ferry	130 x 36 x 12	Caterpillar	State of Maine Dept. of Trans.	5/92
	Tug	124	(2) EMD	Commercial	12/91	WESTERN TOWBOAT CO., Seattle, WA					
Various (35)	LCU	174	(2) Cummins	U.S. Army	Various Del.	Western Navigator	Tug	94 x 28 x 15	Caterpillar	Western Towboat	5/91
	Tug	127	(2) EMD	Commercial	4/92	West Pt.	Tractor	60 x 22 x 10	Caterpillar	Western Towboat	2/92
Thomas G. Thompson	Agor 23	274	(3) Caterpillar w/ KATO Generator/GE Motors	U.S. Navy	7/91						
John McDonnell	T-AGS 51	208	EMD	U.S. Navy	7/91						
Littlehales	T-AGS 52	208	EMD	U.S. Navy	9/91						
M/G Charles P.	LSV-5	274	(2) EMD	U.S. Army	12/90						
Gross	Barge	195	N/A	Undisclosed	5/91						
M 241	Dredge	300	GE Diesel w/ GE Drive Mtrs.	U.S. Corp of Engineers	3/93						
Hurley	T-AGS 60	329		U.S. Navy	1/94						
	T-AGS 61	329		U.S. Navy	7/94						
Various (40)	Hopper Barges	195-200	N/A	Commercial	Various						
Various (10)	Tank Barges	200	N/A	Commercial	Various						
Various (2)	Tank Barges	180	N/A	Commercial	Various						

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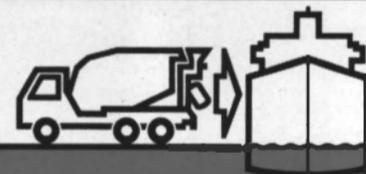


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Despite Rise In Order Book Prospects Down For Yards

By J.Y. Clarke, President,
Canadian Maritime Industries Association



J.Y. Clarke

Nineteen-ninety was not a banner year for Canada's shipyards and maritime industries. The aftermath of the Polar 8 icebreaker cancellation was severe to a substantial number of companies, large, medium and small, and its impact is still being felt.

The Canadian order book—vessels under construction and on order, totaled 64,444 gross tons at the end of 1990. This indicates an increase of about 13 percent from a year earlier, and is due to the construction of two small SAR (Search and Rescue) vessels for the Canadian Coast Guard and four small torpedo recovery ships for the Department of National Defence. Least anyone think that a 13 percent increase is indicative of a newbuilding turnaround, let me put it in some sort of perspective. The national order book total of 64,444 gross tons equates to one medium-size bulk carrier, many of which are being built in foreign shipyards around the world.

It is noteworthy that 92 percent of this total accrues to Canadian Government contracts, the remainder being small fishing vessels, tugs, barges and a couple of small ferries to commercial accounts.

The value of repairs and conversions slumped to about 84 percent of the figure a year earlier, notwithstanding the intense activity involved in the modernization of the Tribal Class destroyers (TRUMP). This apportioned to 51 percent commercial activity and 49 percent Government fleet refits.

In total, the value of shipyards production at the end of 1990 was 3 percent lower than the value a year earlier, which was, in turn, one of the worst years ever for Canada's shipyards, with respect to the order book.

Shipyard employment in CMIA member yards averaged 8,729 dur-

ing 1990, up by 132, or 1-1/2 percent from 1989, all due to repair work, and most associated with TRUMP.

It would be very nice if, following the review of 1990, something very positive could be said about the outlook for 1991 and beyond. Try as I can, I have been singularly unable to "make it so."

Starting with predictions of government departments for new construction, conversions and refits during the next few years, it appears that the forecasts given at the CMIA Procurement Outlook Conference last October in Ottawa, which totaled C\$525 million plus the value of Major Crown Projects (Patrol Frigates, TRUMP and Minehunting Coastal Defence Vessels (MCDV), have suffered some recent reductions due to budgetary constraint. While nothing has yet been announced, press reports and rumor mill "buzzes" seem to be circulating. The resignation of Admiral Charles Thomas, in protest against, inter alia, his contention that the powers-that-be are "intending to surrender sovereignty over the water column, that is over the

undersea water space surrounding our country," is sad in the extreme. The tone and content of the good admiral's letter of resignation cast doubt in the minds of thinking mariners, demanding public debate of these issues, and sounding somewhat foreboding concerning prospects for the much-needed upgrading of the Canadian oceangoing Navy to reverse the 20-year trend.

The Canadian Coast Guard's capital plan seems to have rung down for dead slow speed on both engines, with little more coming out to contract beyond the two small SAR vessels being built on the West Coast. The DFO plans look good on paper until one realizes that we are really talking about a few small craft about the size of a poor man's pleasure boat. Not much to sustain a national industry that the Canadian Government insists must remain viable and "face the challenges of the future."

On the commercial side, a similar situation exists, with no orders for major replacements of the aging Canadian fleets—not in Canadian yards, at any rate—and little be-

yond a few small fishing vessels from the once highly prosperous Canadian fisheries. One light still shines, which is the construction of a large passenger and car ferry in B.C. (British Columbia) with (perhaps) a second such order to follow.

To add insult to injury, 1990 saw 22 ships totaling 40,600 gt imported from foreign sources by Canadian owners.

With shipyards all over the world enjoying good order books, Canada's yards and maritime industries are still awaiting action promised years ago to create a business environment within which the industrial sector can become more competitive and survive. Like companies in other manufacturing sectors, Canadian maritime industries have been hard hit by all the emphasis on deficit reduction (which has yet to reduce it). One cannot help wondering at the logic of Canadian Government policy which seems to be telling us that our problems can only be solved by higher taxes, more cuts, and elimination of government support, other than to assist us to close down more yards—it sounds suicidal to me.

SHIPBUILDING AND SHIP REPAIRING INDUSTRY STATISTICAL HIGHLIGHTS AS AT DECEMBER 31, 1987-1990

	No.	1987	No.	1988	No.	1989	No.	1990
ORDER BOOK - Vessels Under Construction or on Order As at December 31, 1990								
Commercial (GT)	12	32,509	12	32,222	5	3,004	3	5,300
Federal Government (GT)	14	56,800	16	52,815	20	54,060	18	59,144
Total (GT)	26	89,309	28	85,037	25	57,064	21	64,444
NEW ORDERS - Received in 1990								
Commercial (GT)	15	33,818	9	2,872	9	6,932	6	6,072
Federal Government (GT)	7	25,700	4	2,415	4	940	0	0
Total (GT)	22	59,518	13	5,287	13	7,872	6	6,072
DELIVERIES - During 1990								
Commercial (GT)	8	3,615	10	3,272	19	38,870	7	3,687
Federal Government (GT)	2	7,600	3	6,636	0	0	1	857
Total (GT)	10	11,215	13	9,908	19	38,870	8	4,544
VALUE OF NEW CONSTRUCTION								
Commercial (\$000)		21,532		109,595		80,104		14,261
Federal Government (\$000)		125,406		221,873		758,524		835,919
Total (\$000)		146,938		331,468		838,626		850,180
VALUE OF REPAIRS AND CONVERSIONS								
Commercial (\$000)		118,010		134,133		139,803		119,194
Federal Government (\$000)		61,488		79,458		136,907		113,582
Total (\$000)		179,498		213,591		276,710		232,776
TOTAL VALUE OF SHIPYARD PRODUCTION - New Construction, Repairs and Conversions								
Commercial (\$000)		139,807		243,728		219,907		133,455
Federal Government (\$000)		558,287		759,790		895,431		949,501
Total (\$000)		698,094		1,003,518		1,115,338		1,082,956
TOTAL CMIA ALLIED INDUSTRIES GROSS MARINE-RELATED REVENUE								
Total (\$000)		524,488		542,346		507,326		436,000
FOREIGN BUILT VESSELS REGISTERED IN CANADA								
Total (GT)	7	23,069	21	29,484	26	45,425	22	40,584
EMPLOYMENT - In CMIA Shipyards (Annual Average)								
New Construction		3,171		4,939		5,509		5,193
Repairs and Conversions		2,478		2,909		3,088		3,536
Total		5,649		7,848		8,597		8,729

Sources: CMIA Members and Transport Canada



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Source: U.S. Navy/Maritime Reporter

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Nimitz Class (CVN-68)

Displacement: 91,487 tons; CVN-71, 96,358 tons; Length: 1,040 feet; Beam: 134 feet; Power Plant: Two nuclear reactors, four GE geared steam turbines and four shafts.

Built by Newport News Shipbuilding

USS Nimitz (CVN-68)
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USS Carl Vinson (CVN-70)
USS Theodore Roosevelt (CVN-71)
USS Abraham Lincoln (CVN-72)
USS George Washington (CVN-73)*
USS John C. Stennis (CVN-74)*
USS United States (CVN-75)*

Enterprise Class (CVN-65)

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Built by Newport News Shipbuilding

USS Enterprise (CVN-65)

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Displacement: 82,000 tons; Length: 1,052 feet; Beam: 130 feet; Power Plant: Eight boilers, four Westinghouse geared steam turbines and four shafts.

Built by Newport News Shipbuilding

USS John F. Kennedy (CV-67)

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USS America (CV-66)

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USS Ranger (CV-61)

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USS Independence (CV-62)

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Displacement: 62,000 tons; Length: 979 feet; Beam: 121 feet; Power Plant: Twelve boilers, four geared steam turbines and four shafts.

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USS Coral Sea (CV-43)

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Displacement: 18,088 tons; Length: 564 feet; Beam: 81 feet; Power Plant: Three boilers, geared turbines and single shaft.

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USS Butte (AE-27)

Built by Bethlehem Steel-Sparrows Point

USS Santa Barbara (AE-28)
USS Mount Hood (AE-29)

Built by Ingalls Shipbuilding

USS Flint (AE-32)
USS Shasta (AE-33)

USS Mount Baker (AE-34)

USS Kiska (AE-35)

Suribachi Class (AE-21)

Displacement: 15,500 tons; Length: 512 feet; Beam: 72 feet; Power Plant: Two boilers, geared turbines and single shaft.

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USS Suribachi (AE-21)
USS Mauna Kea (AE-22)

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Same as Suribachi Class.

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USS Nitro (AE-23)
USS Pyro (AE-24)
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Wasp Class (LHD-1)

Displacement: 40,500 tons; Length: 844 feet; Beam: 106 feet; Power Plant: Two boilers, two geared turbines and two shafts.

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USS Wasp (LHD-1)
USS Essex (LHD-2)*
USS Kearsage (LHD-3)*
USS Boxer (LHD-4)*

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Displacement: 39,300 tons; Length: 820 feet; Beam: 106 feet; Power Plant: Two boilers, two geared turbines and two shafts.

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USS Tarawa (LHA-1)
USS Saipan (LHA-2)
USS Belleau Wood (LHA-3)
USS Nassau (LHA-4)
USS Peleliu (LHA-5)

Iwo Jima Class (LPH-2)

Displacement: 18,000 tons; Length: 602 feet;

Beam: 84 feet; Power Plant: Two boilers, one geared turbine and one shaft.

Built by Puget Sound Naval Shipyard

USS Iwo Jima (LPH-2)

Built by Philadelphia Naval Shipyard

USS Okinawa (LPH-3)
USS Guadalcanal (LPH-7)
USS Guam (LPH-9)
USS New Orleans (LPH-11)

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USS Mobile (LKA-115)
USS St. Louis (LKA-116)
USS El Paso (LKA-117)

AMPHIBIOUS COMMAND SHIPS

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USS Mount Whitney (LCC-20)

ATTACK SUBMARINES

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Displacement: 9,137 tons Length: 353 feet
Beam: ? Power Plant: Nuclear reactor, geared turbines and one shaft.

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Beam: 33 feet; Power Plant: One nuclear
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USS Philadelphia (SSN-690)
USS Omaha (SSN-692)
USS Groton (SSN-694)
USS New York City (SSN-696)
USS Indianapolis (SSN-697)
USS Bremerton (SSN-698)
USS Jacksonville (SSN-699)
USS Dallas (SSN-700)
USS La Jolla (SSN-701)
USS Phoenix (SSN-702)
USS Boston (SSN-703)
USS Baltimore (SSN-704)
USS City of Corpus Christi (SSN-705)
USS Albuquerque (SSN-706)
USS Portsmouth (SSN-707)
USS Minneapolis-St. Paul (SSN-708)
USS Hyman G. Rickover (SSN-709)
USS Augusta (SSN-710)
USS Providence (SSN-719)
USS Pittsburgh (SSN-720)
USS Louisville (SSN-724)
USS Helena (SSN-725)
USS San Juan (SSN-751)
USS Pasadena (SSN-752)
USS Topeka (SSN-754)
USS Miami (SSN-755)
USS Alexandria (SSN-757)*
USS Annapolis (SSN-760)*
USS Springfield (SSN-761)*
USS Columbus (SSN-762)*
USS Santa Fe (SSN-763)*
USS Hartford (SSN-768)*
USS Columbia (SSN-771)*

Narwhal Class (SSN-671)

Displacement: 5,350 tons; Length: 314 feet;
Beam: 38 feet; Power Plant: One nuclear
reactor, two steam turbines and one shaft.

Built by General Dynamics-Electric Boat

USS Narwhal (SSN-671)

Glenard P. Lipscomb Class (SSN-685)

Displacement: 6,480 tons; Length: 365 feet;
Beam: 32 feet; Power Plant: One nuclear
reactor, two geared turbines and one shaft.

Built by General Dynamics-Electric Boat

USS Glenard P. Lipscomb (SSN-685)

Ethan Allen Class

Displacement: 7,880 tons; Length: 410 feet;
Beam: 33 feet; Power Plant: One nuclear
reactor, two steam turbines and one shaft.

Built by Newport News Shipbuilding

USS Sam Houston (SSN-609)
USS John Marshall (SSN-611)

Sturgeon Class (SSN-637)

Displacement: 4,640 tons; Length: 292 feet; Beam:
32 feet; Power Plant: One nuclear reactor, two
steam turbines and one shaft.

Built by General Dynamics-Electric Boat

USS Sturgeon (SSN-637)

USS Pargo (SSN-650)

USS Bergall (SSN-667)

USS Seahorse (SSN-669)

USS Flying Fish (SSN-673)

USS Trepang (SSN-674)

USS Bluefish (SSN-675)

USS Billfish (SSN-676)

USS Archerfish (SSN-678)

USS Silversides (SSN-679)

USS Batfish (SSN-681)

USS Cavalla (SSN-684)

Built by General Dynamics-Quincy

USS Whale (SSN-638)

USS Sunfish (SSN-649)

Built by Ingalls Shipbuilding

USS Tautog (SSN-639)

USS Pogy (SSN-647)

USS Aspro (SSN-648)

USS Puffer (SSN-652)

USS William H. Bates (SSN-680)

USS Tunny (SSN-682)

USS Parche (SSN-683)

USS Grayling (SSN-646)

USS Sand Lance (SSN-660)

Built by San Francisco Naval Yard

USS Gurnard (SSN-662)

(continued)

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Japan
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Fax: 078-252-0265

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U.S. Navy Fleet

(continued)

USS Guitarro (SSN-665)
USS Hawkbill (SSN-666)
USS Pintado (SSN-672)
USS Drum (SSN-677)

Built by Newport News Shipbuilding

USS Queenfish (SSN-651)
USS Ray (SSN-653)
USS Lapon (SSN-661)
USS Hammerhead (SSN-663)
USS Sea Devil (SSN-664)

USS Spadefish (SSN-668)
USS Finback (SSN-670)
USS L. Mendell Rivers (SSN-686)
USS Richard B. Russell (SSN-687)

Built by Newport News Shipbuilding

USS Shark (SSN-591)

Permit Class (SSN-594)

Displacement: 4,200 tons; Length: SSN-605, 297 feet; SSN-613-615, 292 feet; others, 278 feet; Beam: 32 feet; Power Plant: One nuclear reactor, two steam turbines and one shaft.

Built by Mare Island Naval Yard

USS Permit (SSN-594)

Built by Ingalls Shipbuilding

USS Haddock (SSN-621)

Built by New York Shipbuilding

USS Haddo (SSN-604)
USS Guardfish (SSN-612)

Built by Portsmouth Naval Yard

USS Jack (SSN-605)
USS Tinoso (SSN-606)

Built by General Dynamics-Electric Boat

USS Flasher (SSN-613)

USS Greenling (SSN-614)
USS Gato (SSN-615)

AUXILIARY CRANE SHIPS (RRF)

T-ACS-1 Class

Displacement: 25,660 tons; Length: 668-1/2 feet; Beam: 76 feet; Power Plant: Geared steam turbine and single shaft.

Converted by Defoe Shipbuilding

SS Keystone State (T-ACS-1)
SS Gem State (T-ACS-2)

Converted by Dillingham Ship Repair

SS Grand Canyon State (T-ACS-3)

Converted by NORSHIPCO

SS Gopher State (T-ACS-4)
SS Flickertail State (T-ACS-5)
SS Cornhusker State (T-ACS-6)
SS Green Mountain State (T-ACS-9)
SS Beaver State (T-ACS-10)*

Converted by Tampa Shipyard

SS Diamond State (T-ACS-7)
SS Equality State (T-ACS-8)

AVIATION LOGISTICS SUPPORT SHIPS (RRF)

Seabridge Class

Displacement: 23,872 tons; Length: 602 feet; Beam: 90 feet; Power Plant: Two boilers, geared steam turbine and one shaft.

Converted by Todd Shipyards-Galveston

USNS Wright (T-AVB-3)
USNS Curtiss (T-AVB-4)

BALLISTIC MISSILE SUBMARINES

Ohio Class (SSBN-726)

Displacement: 18,700 tons; Length: 560 feet; Beam: 42 feet; Power Plant: One nuclear reactor, two geared turbines and one shaft.

Built by General Dynamics-Electric Boat

USS Ohio (SSBN-726)
USS Michigan (SSBN-727)
USS Florida (SSBN-728)
USS Georgia (SSBN-729)
USS Henry M. Jackson (SSBN-730)
USS Alabama (SSBN-731)
USS Alaska (SSBN-732)
USS Nevada (SSBN-733)
USS Tennessee (SSBN-734)
USS Pennsylvania (SSBN-735)
USS West Virginia (SSBN-736)
USS Kentucky (SSBN-737)*
USS Maryland (SSBN-738)*
USS Nebraska (SSBN-739)*
USS Rhode Island (SSBN-740)*
USS Maine (SSBN-741)*
Unnamed (SSBN-742)*
Unnamed (SSBN-743)*

Benjamin Franklin Class (SSBN-640)

Displacement: 8,250 tons; Length: 425 feet; Beam: 33 feet; Power Plant: One nuclear reactor, two geared turbines and one shaft.

Built by General Dynamics-Electric Boat

USS Benjamin Franklin (SSBN-640)
USS George Bancroft (SSBN-643)
USS James K. Polk (SSBN-645)
USS Henry L. Stimson (SSBN-655)
USS Francis Scott Key (SSBN-657)
USS Will Rogers (SSBN-659)

Built by Mare Island Naval Yard

USS Kamehameha (SSBN-642)
USS Mariano G. Vallejo (SSBN-658)

Built by Newport News Shipbuilding

USS Simon Bolivar (SSBN-641)
USS Lewis and Clark (SSBN-644)
USS George C. Marshall (SSBN-654)
USS George Washington Carver (SSBN-656)

Lafayette Class (SSBN-616)

Same as Benjamin Franklin Class.

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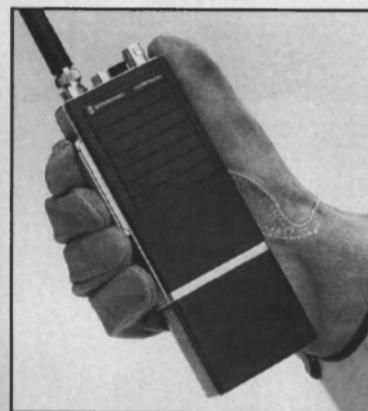
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 USS Alexander Hamilton (SSBN-617)
 USS Daniel Webster (SSBN-626)
 USS Woodrow Wilson (SSBN-624)

Built by Newport News Shipbuilding
 USS James Monroe (SSBN-622)
 USS Henry Clay (SSBN-625)

James Madison Class (SSBN-627)
 Same as Benjamin Franklin Class.

Built by Newport News Shipbuilding
 USS James Madison (SSBN-627)
 USS John C. Calhoun (SSBN-630)
 USS Von Steuben (SSBN-632)

Built by General Dynamics-Electric Boat
 USS Tecumseh (SSBN-628)
 USS Ulysses S. Grant (SSBN-631)
 USS Casimir Pulaski (SSBN-633)

Built by Mare Island Naval Yard
 USS Daniel Boone (SSBN-629)
 USS Stonewall Jackson (SSBN-634)

BATTLESHIPS

Iowa Class (BB-61)
 Displacement: 58,000 tons; Length: 887 feet;
 Beam: 108 feet; Power Plant: Eight boilers, four
 GE geared turbines and four shafts.

Built by New York Navy Yard
 USS Iowa (BB-61)
 USS Missouri (BB-63)

Built by Philadelphia Navy Yard
 USS New Jersey (BB-62)
 USS Wisconsin (BB-64)

CABLE REPAIR SHIPS (MSC)

Neptune Class (T-ARC)
 Displacement: 7,400 tons; Length: 369 feet;
 Beam: 47 feet; Power Plant: Turbo-electric, two
 boilers and two shafts.

Built by Pusey & Jones
 USNS Neptune (T-ARC-2)
 USNS Albert J. Myer (T-ARC-6)

Zeus Class (T-ARC-7)
 Displacement: 14,225 tons; Length: 511-1/2
 feet; Beam: 73 feet; Power Plant: Diesel-electric
 and two shafts.

Built by NASSCO
 USNS Zeus (T-ARC-7)

CRUISERS

Ticonderoga Class (CG-47)
 Displacement: 9,600 tons; Length: 563 feet;
 Beam: 55 feet; Power Plant: Four GE gas
 turbines and two shafts.

Built by Ingalls Shipbuilding
 USS Ticonderoga (CG-47)
 USS Yorktown (CG-48)
 USS Vincennes (CG-49)
 USS Valley Forge (CG-50)
 USS Bunker Hill (CG-52)
 USS Mobile Bay (CG-53)
 USS Antedam (CG-54)
 USS Leyte Gulf (CG-55)
 USS San Jacinto (CG-56)
 USS Lake Champlain (CG-57)
 USS Princeton (CG-59)
 USS Chancellorsville (CG-62)
 USS Chosin (CG-65)
 USS Hue City (CG-66)*
 USS Anzio (CG-68)*
 USS Vicksburg (CG-69)*
 USS Cape St. George (CG-71)*
 USS Vella Gulf (CG-72)*
 USS Port Royal (CG-73)*

Built by Bath Iron Works
 USS Thomas S. Gates (CG-51)
 USS Phillipine Sea (CG-58)

USS Normandy (CG-60)
 USS Monterey (CG-61)
 USS Cowpens (CG-63)
 USS Gettysburg (CG-64)*
 USS Shiloh (CG-67)*
 USS Lake Erie (CG-70)*

Virginia Class (CGN-38)
 Displacement: 11,000 tons; Length: 585 feet;
 Beam: 63 feet; Power Plant: Two General
 Electric nuclear reactors, two geared turbines
 and two shafts.

Built by Newport News Shipbuilding
 USS Virginia (CGN-38)

USS Texas (CGN-39)
 USS Mississippi (CGN-40)
 USS Arkansas (CGN-41)

California Class (CGN-36)
 Displacement: 10,450 tons; Length: 596 feet;
 Beam: 61 feet; Power Plant: Two General
 Electric nuclear reactors, two geared turbines
 and two shafts.

Built by Newport News Shipbuilding
 USS California (CGN-36)
 USS South Carolina (CGN-37)

Truxtun Class (CGN-35)

Displacement: 9,127 tons; Length: 564 feet;
 Beam: 58 feet; Power Plant: Two General
 Electric nuclear reactors, two geared turbines
 and two shafts.

Built by New York Shipbuilding
 USS Truxtun (CGN-35)

Bainbridge Class (CGN-25)
 Displacement: 8,592 tons; Length: 565 feet;
 Beam: 58 feet; Power Plant: Two General
 Electric nuclear reactors; two geared turbines
 and two shafts.

(continued)

You Could Lose Up To 94,000 Passengers This Year To Weight Problems.



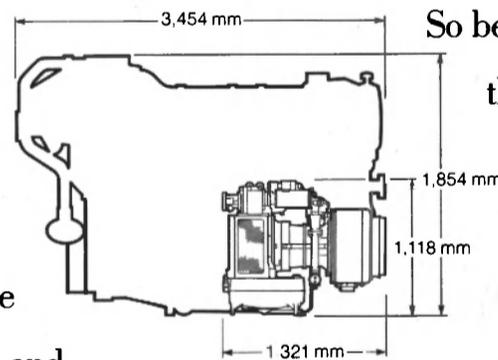
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 For details and an estimate of how many more passengers the TF40 can
 put in your boat, call us at (203) 385-3863.

U.S. Navy Fleet

(continued)

Built by Bethlehem Steel
USS Bainbridge (CGN-25)

Long Beach Class (CGN-9)

Displacement: 17,525 tons; Length: 721 feet;
Beam: 73 feet; Power Plant: Two Westinghouse
nuclear reactors, two geared turbines and two
shafts.

Built by Bethlehem Steel
USS Long Beach (CGN-9)

Belknap Class (CG-26)

Displacement: 7,930 tons; Length: 547 feet;
Beam: 55 feet; Power Plant: Four 1,200-psi
boilers, two geared turbines and two shafts.

Built by Bath Iron Works

USS Belknap (CG-26)
USS Josephus Daniels (CG-27)
USS Wainwright (CG-28)
USS William H. Standley (CG-32)
USS Biddle (CG-34)

Built by Puget Sound Naval Yard

USS Jouett (CG-29)
USS Sterett (CG-31)

Built by San Francisco Naval Yard

USS Horne (CG-30)

Built by Todd Shipyards

USS Fox (CG-33)

Leahy Class (CG-16)

Displacement: 7,800 tons; Length: 533 feet;
Beam: 55 feet; Power Plant: Four 1,200-psi
boilers; two geared turbines and two shafts.

Built by Bath Iron Works

USS Leahy (CG-16)
USS Harry E. Yarnell (CG-17)
USS Worden (CG-18)

Built by New York Shipbuilding

USS Dale (CG-19)
USS Richard K. Turner (CG-20)

Built by Puget Sound Naval Yard

USS Gridley (CG-21)
USS Reeves (CG-24)

Built by Todd Shipyards

USS England (CG-22)

Built by San Francisco Naval Yard

USS Halsey (CG-23)

DESTROYERS

Arleigh Burke Class (DDG-51)

Displacement: 8,300 tons; Length: 466 feet;
Beam: 59 feet; Power Plant: Four GE LM2500
gas turbines and two shafts.

Built by Bath Iron Works

USS Arleigh Burke (DDG-51)*
USS John Paul Jones (DDG-53)*
USS Curtis Wilbur (DDG-54)*
USS John S. McCain (DDG-56)*
USS Laboon (DDG-58)*
USS Paul Hamilton (DDG-60)*
USS Fitzgerald (DDG-62)*
Unnamed (DDG-64)*
Unnamed (DDG-66)*

Built by Ingalls Shipbuilding

USS John Barry (DDG-52)*
USS Stout (DDG-55)*
USS Mitscher (DDG-57)*
USS Russell (DDG-59)*
USS Ramage (DDG-61)*
USS Stethem (DDG-63)*
Unnamed (DDG-65)*
Unnamed (DDG-67)*

Kidd Class (DDG-993)

Displacement: 8,300 tons; Length: 563 feet;
Beam: 55 feet; Power Plant: Four GE LM2500
gas turbine engines and two shafts.

Built by Ingalls Shipbuilding

USS Kidd (DDG-993)
USS Callaghan (DDG-994)
USS Scott (DDG-995)
USS Chandler (DDG-996)

Spruance Class (DD-963)

Displacement: 7,865 tons; Length: 563 feet;
Beam: 55 feet; Power Plant: Four GE LM2500
gas turbine engines and two shafts.

Built by Ingalls Shipbuilding

USS Spruance (DD-963)
USS Paul F. Foster (DD-964)
USS Kinkaid (DD-965)
USS Hewitt (DD-966)
USS Elliott (DD-967)
USS Arthur W. Radford (DD-968)
USS Peterson (DD-969)
USS Caron (DD-970)
USS David R. Ray (DD-971)
USS Oldendorf (DD-972)
USS John Young (DD-973)
USS Comte de Grasse (DD-974)
USS O'Brien (DD-975)
USS Merrill (DD-976)
USS Briscoe (DD-977)
USS Stump (DD-978)
USS Conolly (DD-979)
USS Moosbrugger (DD-980)
USS John Hancock (DD-981)
USS Nicholson (DD-982)
USS John Rodgers (DD-983)
USS Leftwich (DD-984)
USS Cushing (DD-985)
USS Harry W. Hill (DD-986)
USS O'Bannon (DD-987)
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Model 500BFM at Abu Dhabi, United Arab Emirates

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Farragut Class (DDG-37)

Displacement: 5,800 tons; Length: 512 feet; Beam: 52 feet; Power Plant: Four 1,200-psi boilers, two geared turbines and two shafts.

Built by Bethlehem Steel

USS Farragut (DDG-37)
USS Luce (DDG-38)
USS MacDonough (DDG-39)

Built by Puget Sound Naval Yard

USS Coontz (DDG-40)
USS King (DDG-41)

Built by San Francisco Naval Yard

USS Mahan (DDG-42)

Built by Philadelphia Naval Yard

USS Dahlgren (DDG-43)
USS William V. Pratt (DDG-44)

Built by Bath Iron Works

USS Dewey (DDG-45)
USS Preble (DDG-46)

DESTROYER TENDERS**Yellowstone Class (AD-41)**

Displacement: 22,500 tons; Length: 644 feet; Beam: 85 feet; Power Plant: Two boilers, steam turbines and single shaft.

Built by NASSCO

USS Yellowstone (AD-41)
USS Acadia (AD-42)
USS Cape Cod (AD-43)

Samuel Gompers Class (AD-37)

Same as Yellowstone Class.

Built by Puget Sound Naval Yard

USS Samuel Gompers (AD-37)
USS Puget Sound (AD-38)

Dixie Class

Displacement: 18,000 tons; Length: 530 feet; Beam: 73 feet; Power Plant: Four boilers, geared turbines and two shafts.

Built by New York Shipbuilding

USS Prarie (AD-15)

Built by Tampa Shipbuilding

USS Sierra (AD-18)
USS Yosemite (AD-19)

DOCK LANDING SHIPS**Whidbey Island Class (LSD-41)**

Displacement: 15,726 tons; Length: 609 feet; Beam: 84 feet; Power Plant: Four medium-speed diesel engines and two shafts.

Built by Lockheed Shipbuilding

USS Whidbey Island (LSD-41)
USS Germantown (LSD-42)
USS Fort McHenry (LSD-43)

Built by Avondale Shipyards

USS Gunston Hall (LSD-44)
USS Comstock (LSD-45)
USS Tortuga (LSD-46)
USS Rushmore (LSD-47)*
USS Ashland (LSD-48)*
USS Harper's Ferry (LSD-49) (CV)*
USS Carter Hall (LSD-50) (CV)**
Unnamed (LSD-51)(CV)**

Anchorage Class (LSD-36)

Displacement: 14,000 tons; Length: 553 feet; Beam: 84 feet; Power Plant: Two 600-psi boilers, two steam turbines and two shafts

Built by Ingalls Shipbuilding

USS Anchorage (LSD-36)

Built by General Dynamics-Quincy

USS Portland (LSD-37)
USS Pensacola (LSD-38)
USS Mount Vernon (LSD-39)
USS Fort Fisher (LSD-40)

Thomaston Class

Displacement: 12,000 tons; Length: 510 feet; Beam: 84 feet; Power Plant: Two 600-psi boilers, two steam turbines and two shafts.

Built by Ingalls Shipbuilding

Thomaston (LSD-28)
Plymouth Rock (LSD-29)
Fort Snelling (LSD-30)
Point Defiance (LSD-31)
USS Spiegel Grove (LSD-32)
USS Alamo (LSD-33)
USS Hermitage (LSD-34)
Monticello (LSD-35)

FAST COMBAT SUPPORT SHIPS**Supply Class (AOE-6)**

Displacement: 48,500 tons; Length: 753 feet; Beam: 107 feet; Power Plant: Four GE gas turbine engines.

Built by NASSCO

USS Supply (AOE-6)*
USS Rainier (AOE-7)*
USS Arctic (AOE-8)*

Sacramento Class (AOE-1)

Displacement: 53,000 tons; Length: 793 feet; Beam: 107 feet; Power Plant: Four boilers,

geared turbines and two shafts.

Built by Puget Sound Naval Yard

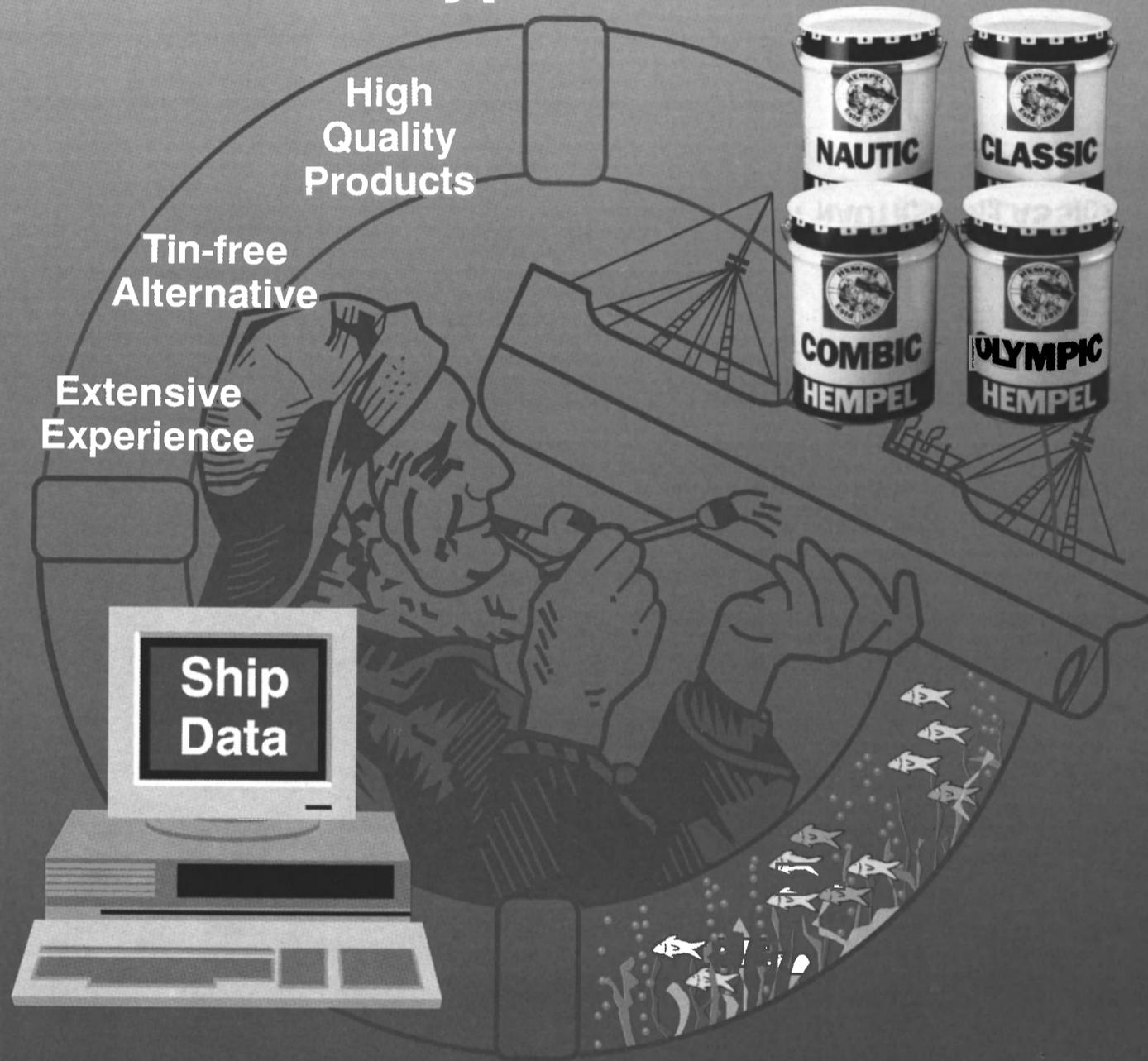
USS Sacramento (AOE-1)
USS Seattle (AOE-3)
USS Detroit (AOE-4)

Built by New York Shipbuilding

USS Camden (AOE-2)

(continued)

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until its next scheduled drydocking can be calculated for all antifouling types. Hempel's antifouling range comprises all the technologies known today: CLASSIC, OLYMPIC, COMBIC and NAUTIC. In those cases where environmental considerations assume priority, tinfree alternatives are of course also available.

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HEMPEL



U.S. Navy Fleet

(continued)

FAST SEALIFT SHIPS

Algol Class

Displacement: 41,127 tons; Length: 946 feet; Beam: 106 feet; Power Plant: Two steam turbines, two boilers and two shafts.

Converted by NASSCO

USNS *Algol* (T-AKR-287)
USNS *Bellatrix* (T-AKR-288)
USNS *Regulus* (T-AKR-292)

Converted by Pennship

USNS *Denebola* (T-AKR-289)
USNS *Capella* (T-AKR-293)

Converted by Avondale Shipyards

USNS *Pollux* (T-AKR-290)
USNS *Altair* (T-AKR-291)
USNS *Antares* (T-AKR-294)

FBM RESUPPLY SHIPS

Norwalk Class

Displacement: 15,199 tons; Length: 455 feet; Beam: 28-1/2 feet; Power Plant: Steam turbine, two boilers and one shaft.

Converted by Oregon Shipbuilding

USNS *Marshfield* (T-AK-282)

Northern Light Class

Displacement: 18,365 tons; Length: 483 feet; Beam: 68 feet; Power Plant: Steam turbine, two boilers and one shaft.

Built by Sun Shipbuilding

USNS *Vega* (T-AK-286)

FLEET OILERS

Cimarron Class (AO-177)

Displacement: 27,500 tons; Length: 592 feet;

Beam: 88 feet; Power Plant: Two boilers, one steam turbine and one shaft.

Built by Avondale Shipyards

USS *Cimarron* (AO-177)*
USS *Monogahela* (AO-178)*
USS *Merrimack* (AO-179)*
USS *Willamette* (AO-180)*
USS *Platte* (AO-186)*

Astabula Class (AO-51)

Displacement: 34,750 tons; Length: 644 feet; Beam: 75 feet; Power Plant: Four boilers, steam turbine and two shafts.

Built by Bethlehem Steel-Sparrows Point

USS *Caloosahatchee* (AO-98)
USS *Canisteo* (AO-99)

FRIGATES

Oliver Hazard Perry Class (FFG-7)

Displacement: 3,585 tons; Length: 445 feet; Beam: 45 feet; Power Plant: Two GE gas turbine engines and one shaft.

Built by Bath Iron Works

USS *Oliver Hazard Perry* (FFG-7)
USS *McInerney* (FFG-8)
USS *Clark* (FFG-11)
USS *Samuel Eliot Morison* (FFG-13)
USS *Estocin* (FFG-15)
USS *Clifton Sprague* (FFG-16)
USS *Flatley* (FFG-21)
USS *Jack Williams* (FFG-24)
USS *Gallery* (FFG-26)
USS *Stephen W. Groves* (FFG-29)
USS *John J. Hall* (FFG-32)
USS *Aubrey Fitch* (FFG-34)
USS *Underwood* (FFG-36)
USS *Doyle* (FFG-39)
USS *Klakring* (FFG-42)
USS *Dewert* (FFG-45)
USS *Nicholas* (FFG-47)
USS *Robert G. Bradley* (FFG-49)
USS *Taylor* (FFG-50)
USS *Hawes* (FFG-53)
USS *Elrod* (FFG-55)
USS *Simpson* (FFG-56)
USS *Samuel B. Roberts* (FFG-58)
USS *Kauffman* (FFG-59)

Built by Todd Shipyards-Seattle

USS *Duncan* (FFG-10)
USS *Antrim* (FFG-20)
USS *Fahrion* (FFG-22)
USS *Boone* (FFG-28)
USS *Stark* (FFG-31)
USS *Crommelin* (FFG-37)
USS *Halyburton* (FFG-40)
USS *Vandergrift* (FFG-48)
USS *Carr* (FFG-52)

Built by Todd Shipyards-San Pedro

USS *Wadsworth* (FFG-9)
USS *George Philip* (FFG-12)
USS *John H. Sides* (FFG-14)
USS *John A. Moore* (FFG-19)
USS *Lewis B. Puller* (FFG-23)
USS *Copeland* (FFG-25)
USS *Mahlon S. Tisdale* (FFG-27)
USS *Reid* (FFG-30)
USS *Jarrett* (FFG-33)
USS *Curts* (FFG-38)
USS *McClusky* (FFG-41)
USS *Thach* (FFG-43)
USS *Rentz* (FFG-46)
USS *Gary* (FFG-51)
USS *Ford* (FFG-54)
USS *Reuben James* (FFG-57)
USS *Rodney M. Davis* (FFG-60)
USS *Ingraham* (FFG-61)

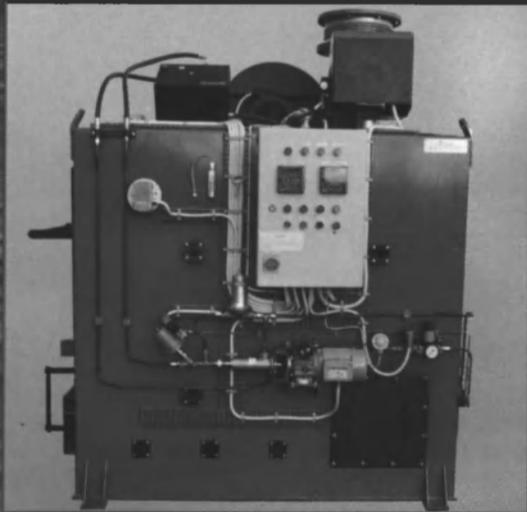
Glover Class (FF-1098)

Displacement: 3,426 tons; Length: 414 feet; Beam: 44 feet; Power plant: Two 1,200-psi boilers, two geared turbines, and one shaft.

Built by Bath Iron Works

USS *Glover* (FF-1098)

Waste at sea is your problem Vesta Incineration Technology - V.I.T. - is the solution



In the past waste was not considered a problem. Most of the waste was organic and the oceans were enormous. Over the years human technology created new types of waste more difficult to decompose, and the amount of waste increased dramatically. Waste became a recognized problem that had to be solved.

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Knox Class (FF-1052)

Displacement: 3,877 tons (FF-1052-1077); 4,200 tons, all others; Length: 438 feet; Beam: 47 feet; Power plant: Two 1,200-psi boilers, two geared turbines and one shaft.

Built by Todd Shipyards-Seattle

USS Knox (FF-1052)
USS Whipple (FF-1062)
USS Lockwood (FF-1064)
USS Marvin Shields (FF-1066)
USS Downes (FF-1070)
USS Badger (FF-1071)

Built by Todd Shipyards-San Pedro

USS Hepburn (FF-1055)
USS Meyerkord (FF-1058)
USS Francis Hammond (FF-1067)
USS Harold E. Holt (FF-1074)
USS Fanning (FF-1076)

Built by Lockheed Shipbuilding

USS Rathburne (FF-1057)
USS Reasoner (FF-1063)
USS Stein (FF-1065)
USS Bagley (FF-1069)
USS Robert E. Perry (FF-1073)

Built by Avondale Shipyards

USS Connole (FF-1056)
USS W. S. Sims (FF-1059)
USS Patterson (FF-1061)
USS Vreeland (FF-1068)
USS Trippe (FF-1075)
USS Quillet (FF-1077)
USS Joseph Hewes (FF-1078)
USS Bowen (FF-1079)
USS Paul (FF-1080)
USS Aylwin (FF-1081)
USS Elmer Montgomery (FF-1082)
USS Cook (FF-1083)
USS McCandless (FF-1084)
USS Donald B. Beary (FF-1085)
USS Brewton (FF-1086)
USS Kirk (FF-1087)
USS Barbey (FF-1088)
USS Jesse L. Brown (FF-1089)
USS Ainsworth (FF-1090)
USS Thomas C. Hart (FF-1092)
USS Capodanno (FF-1093)
USS Pharris (FF-1094)
USS Truette (FF-1095)
USS Moinester (FF-1097)

Bronstein Class (FF-1037)

Displacement: 2,650 tons; Length: 371 feet; Beam: 40 feet; Power Plant: Two 600-psi boilers, two geared turbines and one shaft.

Built by Avondale Shipyards

USS Bronstein (FF-1037)
USS McCloy (FF-1038)

HOSPITAL SHIPS (MSC)**Mercy Class (T-AH-19)**

Displacement: 69,360 tons; Length: 894 feet; Beam: 106 feet; Power Plant: GE geared steam turbine, two Foster-Wheeler boilers and one shaft.

Converted by NASSCO

USNS Mercy (T-AH-19)
USNS Comfort (T-AH-20)

HYDROGRAPHIC SURVEY SHIPS (MSC)**John R. McDonnell Class**

Displacement: 1,300 tons; Length: 208 feet; Beam: 45 feet.

Built by Halter Marine-Trinity

USNS John R. McDonnell (T-AGS-51)*
USNS George Washington Littlehales (T-AGS-52)*

Pathfinder Class

Displacement: 3,019 tons.

Built by Halter Marine-Trinity

USNS Pathfinder (T-AGS-60)*
USNS Sumner (T-AGS-61)**

MINE COUNTERMEASURES SHIPS**Avenger Class (MCM-1)**

Displacement: 1,312 tons; Length: 224 feet; Beam: 39 feet; Power Plant: Four Waukesha diesels in MCM-1 and MCM-2; four Isotta Fraschini diesels in others; and two shafts.

Built by Peterson Builders

USS Avenger (MCM-1)
USS Sentry (MCM-3)
USS Guardian (MCM-5)
USS Devastator (MCM-6)*
USS Scout (MCM-8)
USS Pioneer (MCM-9)*

USS Warrior (MCM-10)*

USS Gladiator (MCM-11)*

USS Ardent (MCM-12)*

USS Dextrous (MCM-13)*

USS Chief (MCM-14)*

Built by Marinette Marine

USS Defender (MCM-2)
USS Champion (MCM-4)
USS Patriot (MCM-7)*

MINEHUNTER SHIPS

Osprey Class (MHC-51) (Based on Italian Lerici Class)

Displacement: 840 tons; Length: 188 feet; Beam: 36 feet; Power Plant: Two diesels, two with Voith-Schneider cycloidal propulsion systems.

Built by Intermarine USA

USS Osprey (MHC-51)*
USS Heron (MHC-52)*
USS Oriole (MHC-55)*

Built by Avondale Industries

USS Pelican (MHC-53)*

(continued)

The travel companion you can always call on.



There's one thing predictable about the offshore environment: it's *unpredictable*. There's also one thing predictable about Kenwood's TKM-207 VHF Marine Handheld Transceiver: it's reliable under the most extreme conditions.

Kenwood has spent over forty years developing communications technology. And it shows in the many quality features packed into this compact (2.6" W x 7.56" H x 1.46" D) and lightweight (approx. 16 oz.) marine communications system. For example, every TKM-207 has the following:

- 5 watts power, with hi/lo power selection
- Economy battery saver mode
- All channels preprogrammed
- 30 memory channels
- Large easy-to-read display
- Moisture resistant design
- Dual Channel Watch (to monitor channel 16 every two seconds)
- Three scanning modes
- Quick and easy twist-lock battery
- Multiple battery pack options to increase versatility

Next time you plan to work in the offshore environment, remember the TKM-207 is a great travel companion to take along. Because with so much going on that's unpredictable, it's comforting to know your communications is predictably reliable.

KENWOOD

The **BIG** name in *quality* marine communications.

For dealer locations, phone (213) 639-4200 and ask for the Marine Products Division.
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Circle 267 on Reader Service Card

U.S. Navy Fleet

(continued)

USS Robin (MHC-54)*
 Unnamed (MHC-56)*
 Unnamed (MHC-57)*

MINESWEEPERS, OCEAN

Aggressive Class (MSO-422)
 Displacement: 853 tons; Length: 172 feet;
 Beam: 35 feet; Power Plant: Four diesels and

two shafts.

Built by Martinolich Shipbuilding
 USS Illusive (MSO-448)

Built by J.M. Martinac Shipbuilding
 USS Leader (MSO-490)

OCEANOGRAPHIC RESEARCH SHIPS (MSC) Conrad Class

Displacement: 1,300 tons; Length: 208 feet;
 Beam: 39 feet; Power Plant: Diesel-electric and
 one shaft.

Built by Marietta Manufacturing
 USNS Lynch (T-AGOR-7)

Built by Northwest Marine Iron Works
 USNS DeSteigneur (T-AGOR-12)
 USNS Bartlett (T-AGOR-13)

Converted Eitanin Class

Displacement: 3,886 tons; Length: 262 feet;
 Beam: 51-1/2 feet; Power Plant: Diesel electric
 and two shafts.

Built by Avondale Shipyards
 USNS Mizar (T-AGOR-11)

Hayes Class

Displacement: 3,320 tons; Length: 246 feet;
 Beam: 75 feet; Power Plant: Geared diesels and
 two shafts.

**Converted by Tacoma Boatbuilding/
 Puget Sound Naval Yard**
 USNS Hayes (T-AGOR-16)*

OCEANOGRAPHIC SURVEY SHIPS (MSC)

Maury Class (T-AGS-39)
 Displacement: 15,821 tons; Length: 500 feet;
 Beam: 72 feet; Power Plant: Two medium-speed
 Imo Delaval diesels.

Built by Bethlehem Steel-Sparrows Point
 USNS Maury (T-AGS-39)
 USNS Tanner (T-AGS-40)

H.H. Hess Class (T-AGS-38)

Displacement: 21,235 tons; Length: 536 feet;
 Beam: 76 feet; Power Plant: Steam turbine, two
 boilers and one shaft.

Built by National Steel & Shipbuilding
 USNS H.H. Hess (T-AGS-38)

Silas Bent Class (T-AGS-26)

Displacement: 2,800 tons; Length: 285 feet;
 Beam: 48 feet; Power Plant: Diesel electric and
 one shaft.

Built by American Shipbuilding
 USNS Silas Bent (T-AGS-26)

Built by Christy Corporation
 USNS Kane (T-AGS-27)

Wilkes Class (T-AGS-33)
 Same as Silas Bent Class.

Built by Defoe Shipbuilding
 USNS Wilkes (T-AGS-33)
 USNS Wyman (T-AGS-34)

Chauvenet Class (T-AGS-29)

Displacement: 4,200 tons; Length: 393 feet;
 Beam: 54 feet; Power Plant: Geared diesel and
 one shaft.

Built by Upper Clyde Shipbuilders (UK)
 USNS Chauvenet (T-AGS-29)
 USNS Harkness (T-AGS-32)

OCEAN SURVEILLANCE SHIPS (MSC)

Stalwart Class (T-AGOS-1)
 Displacement: 2,285 tons; Length: 224 feet;
 Beam: 43 feet; Power Plant: Four diesel
 generators and two shafts.

Built by Tacoma Boatbuilding
 USNS Stalwart (T-AGOS-1)
 USNS Contender (T-AGOS-2)
 USNS Vindicator (T-AGOS-3)
 USNS Triumph (T-AGOS-4)
 USNS Assurance (T-AGOS-5)
 USNS Persistent (T-AGOS-6)
 USNS Indomitable (T-AGOS-7)
 USNS Prevail (T-AGOS-8)



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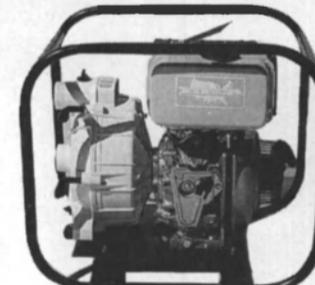
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CAPSTAN WINCHES



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U.S. Navy Fleet

(continued)

Beam: 44 feet; Power Plant: Diesel electric and
 two shafts.

Built by Basalt Rock
 USS Conserver (ARS-39)
 USS Recovery (ARS-43)

Abnaki Class (ATF-96)
 Displacement: 1,640 tons; Length: 205 feet;
 Beam: 39 feet; Power Plant: Diesel-electric and

one shaft.

Built by Charleston Shipbuilding & Drydock
 USS Paiute (ATF-159)
 USS Papago (ATF-160)

SUBMARINE RESCUE SHIPS

Pigeon Class (ASR-21)
 Displacement: 4,200 tons; Length: 251 feet;
 Beam: 86 feet; Power Plant: Four diesels and
 two shafts.

Built by Alabama Drydock & Shipbuilding

USS Pigeon (ASR-21)
 USS Ortolan (ASR-22)

Chanticleer Class

Displacement: 2,320 tons; Length: 251 feet;
 Beam: 42 feet; Power Plant: Diesel electric and
 one shaft.

Built by Moore Shipbuilding & Drydock
 USS Florikan (ASR-9)

Built by Savannah Machine & Foundry
 USS Kittiwake (ASR-13)
 USS Petrel (ASR-14)
 USS Sunbird (ASR-15)

SUBMARINE TENDERS

L.Y. Spear Class (AS-36)
 Displacement: 23,000 tons; Length: 644 feet;
 Beam: 85 feet; Power Plant: Two boilers, steam
 turbines and one shaft.

Built by General Dynamics-Quincy
 USS L.Y. Spear (AS-36)
 USS Dixon (AS-37)

Emory S. Land Class (AS-39)
 Same as L.Y. Spear Class.

Built by Lockheed Shipbuilding
 USS Emory S. Land (AS-39)
 USS Frank Cable (AS-40)
 USS McKee (AS-41)

Simon Lake Class (AS-33)

Displacement: AS-33, 19,934 tons; AS-34,
 21,089 tons; Length: 644 feet; Beam: 85 feet;
 Power Plant: Two boilers, steam turbines and
 one shaft.

FOR MARINE USE

Safety Treads & Safety Surfaces

Knox Class (FF-1052)

Displacement: 3,877 tons (FF-1052-1077); 4,200 tons, all others; Length: 438 feet; Beam: 47 feet; Power plant: Two 1,200-psi boilers, two geared turbines and one shaft.

Built by Todd Shipyards-Seattle

USS Knox (FF-1052)
USS Whipple (FF-1062)
USS Lockwood (FF-1064)
USS Marvin Shields (FF-1066)
USS Downes (FF-1070)
USS Badger (FF-1071)

Built by Todd Shipyards-San Pedro

USS Hepburn (FF-1055)
USS Meyerkord (FF-1058)
USS Francis Hammond (FF-1067)
USS Harold E. Holt (FF-1074)
USS Fanning (FF-1076)

Built by Lockheed Shipbuilding

USS Rathburne (FF-1057)
USS Reasoner (FF-1063)
USS Stein (FF-1065)
USS Bagley (FF-1069)
USS Robert E. Perry (FF-1073)

Built by Avondale Shipyards

USS Connole (FF-1056)
USS W. S. Sims (FF-1059)
USS Patterson (FF-1061)
USS Vreeland (FF-1068)
USS Trippe (FF-1075)
USS Quillet (FF-1077)
USS Joseph Hewes (FF-1078)
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USS Cook (FF-1083)
USS McCandless (FF-1084)
USS Donald B. Beary (FF-1085)
USS Brewton (FF-1086)
USS Kirk (FF-1087)
USS Barbey (FF-1088)
USS Jesse L. Brown (FF-1089)
USS Ainsworth (FF-1090)
USS Thomas C. Hart (FF-1092)
USS Capodanno (FF-1093)
USS Pharris (FF-1094)
USS Truette (FF-1095)
USS Moinester (FF-1097)

Bronstein Class (FF-1037)

Displacement: 2,650 tons; Length: 371 feet; Beam: 40 feet; Power Plant: Two 600-psi boilers, two geared turbines and one shaft.

Built by Avondale Shipyards

USS Bronstein (FF-1037)
USS McCloy (FF-1038)

HOSPITAL SHIPS (MSC)**Mercy Class (T-AH-19)**

Displacement: 69,360 tons; Length: 894 feet; Beam: 106 feet; Power Plant: GE geared steam turbine, two Foster-Wheeler boilers and one shaft.

Converted by NASCO

USNS Mercy (T-AH-19)
USNS Comfort (T-AH-20)

HYDROGRAPHIC SURVEY SHIPS (MSC)**John R. McDonnell Class**

Displacement: 1,300 tons; Length: 208 feet; Beam: 45 feet.

Built by Halter Marine-Trinity

USNS John R. McDonnell (T-AGS-51)*
USNS George Washington Littlehales (T-AGS-52)*

Pathfinder Class

Displacement: 3,019 tons.

Built by Halter Marine-Trinity

USNS Pathfinder (T-AGS-60)*
USNS Sumner (T-AGS-61)**

MINE COUNTERMEASURES SHIPS**Avenger Class (MCM-1)**

Displacement: 1,312 tons; Length: 224 feet; Beam: 39 feet; Power Plant: Four Waukesha diesels in MCM-1 and MCM-2; four Isotta Fraschini diesels in others; and two shafts.

Built by Peterson Builders

USS Avenger (MCM-1)
USS Sentry (MCM-3)
USS Guardian (MCM-5)
USS Devastator (MCM-6)*
USS Scout (MCM-8)
USS Pioneer (MCM-9)*

USS Warrior (MCM-10)*

USS Gladiator (MCM-11)*

USS Ardent (MCM-12)*

USS Dextrous (MCM-13)*

USS Chief (MCM-14)*

Built by Marinette Marine

USS Defender (MCM-2)
USS Champion (MCM-4)
USS Patriot (MCM-7)*

MINEHUNTER SHIPS

Osprey Class (MHC-51) (Based on Italian Lerici Class)

Displacement: 840 tons; Length: 188 feet; Beam: 36 feet; Power Plant: Two diesels, two with Voith-Schneider cycloidal propulsion systems.

Built by Intermarine USA

USS Osprey (MHC-51)*
USS Heron (MHC-52)*
USS Oriole (MHC-55)**

Built by Avondale Industries

USS Pelican (MHC-53)*

(continued)

The travel companion you can always call on.



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- 5 watts power, with hi/lo power selection
- Economy battery saver mode
- All channels preprogrammed
- 30 memory channels
- Large easy-to-read display
- Moisture resistant design
- Dual Channel Watch (to monitor channel 16 every two seconds)
- Three scanning modes
- Quick and easy twist-lock battery
- Multiple battery pack options to increase versatility

Next time you plan to work in the offshore environment, remember the TKM-207 is a great travel companion to take along. Because with so much going on that's unpredictable, it's comforting to know your communications is predictably reliable.

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U.S. Navy Fleet

(continued)

USS Robin (MHC-54)*
 Unnamed (MHC-56)*
 Unnamed (MHC-57)*

MINESWEEPERS, OCEAN

Aggressive Class (MSO-422)
 Displacement: 853 tons; Length: 172 feet;
 Beam: 35 feet; Power Plant: Four diesels and

two shafts.

Built by Martinolich Shipbuilding
 USS Illusive (MSO-448)

Built by J.M. Martinac Shipbuilding
 USS Leader (MSO-490)

OCEANOGRAPHIC RESEARCH SHIPS (MSC)

Conrad Class
 Displacement: 1,300 tons; Length: 208 feet;
 Beam: 39 feet; Power Plant: Diesel-electric and
 one shaft.

Built by Marietta Manufacturing
 USNS Lynch (T-AGOR-7)

Built by Northwest Marine Iron Works
 USNS DeSteigneur (T-AGOR-12)
 USNS Bartlett (T-AGOR-13)

Converted Eitanin Class
 Displacement: 3,886 tons; Length: 262 feet;
 Beam: 51-1/2 feet; Power Plant: Diesel electric
 and two shafts.

Built by Avondale Shipyards
 USNS Mizar (T-AGOR-11)

Hayes Class

Displacement: 3,320 tons; Length: 246 feet;
 Beam: 75 feet; Power Plant: Geared diesels and
 two shafts.

**Converted by Tacoma Boatbuilding/
 Puget Sound Naval Yard**
 USNS Hayes (T-AGOR-16)*

OCEANOGRAPHIC SURVEY SHIPS (MSC)

Maury Class (T-AGS-39)
 Displacement: 15,821 tons; Length: 500 feet;
 Beam: 72 feet; Power Plant: Two medium-speed
 Imo Delaval diesels.

Built by Bethlehem Steel-Sparrows Point
 USNS Maury (T-AGS-39)
 USNS Tanner (T-AGS-40)

H.H. Hess Class (T-AGS-38)
 Displacement: 21,235 tons; Length: 536 feet;
 Beam: 76 feet; Power Plant: Steam turbine, two
 boilers and one shaft.

Built by National Steel & Shipbuilding
 USNS H.H. Hess (T-AGS-38)

Silas Bent Class (T-AGS-26)
 Displacement: 2,800 tons; Length: 285 feet;
 Beam: 48 feet; Power Plant: Diesel electric and
 one shaft.

Built by American Shipbuilding
 USNS Silas Bent (T-AGS-26)

Built by Christy Corporation
 USNS Kane (T-AGS-27)

Wilkes Class (T-AGS-33)
 Same as Silas Bent Class.

Built by Defoe Shipbuilding
 USNS Wilkes (T-AGS-33)
 USNS Wyman (T-AGS-34)

Chauvenet Class (T-AGS-29)
 Displacement: 4,200 tons; Length: 393 feet;
 Beam: 54 feet; Power Plant: Geared diesel and
 one shaft.

Built by Upper Clyde Shipbuilders (UK)
 USNS Chauvenet (T-AGS-29)
 USNS Harkness (T-AGS-32)

OCEAN SURVEILLANCE SHIPS (MSC)

Stalwart Class (T-AGOS-1)
 Displacement: 2,285 tons; Length: 224 feet;
 Beam: 43 feet; Power Plant: Four diesel
 generators and two shafts.

Built by Tacoma Boatbuilding
 USNS Stalwart (T-AGOS-1)
 USNS Contender (T-AGOS-2)
 USNS Vindicator (T-AGOS-3)
 USNS Triumph (T-AGOS-4)
 USNS Assurance (T-AGOS-5)
 USNS Persistent (T-AGOS-6)
 USNS Indomitable (T-AGOS-7)
 USNS Prevail (T-AGOS-8)
 USNS Assertive (T-AGOS-9)
 USNS Invincible (T-AGOS-10)
 USNS Audacious (T-AGOS-11)
 USNS Bold (T-AGOS-12)

Built by Halter Marine
 USNS Adventurous (T-AGOS-13)
 USNS Worthy (T-AGOS-14)
 USNS Titan (T-AGOS-15)
 USNS Capable (T-AGOS-16)
 USS Intrepid (T-AGOS-17)
 USS Relentless (T-AGOS-18)

Victorious Class
 (Small Waterplane Area Twin-Hull)
 Displacement: 3,380 tons; Length: 232 feet;
 Beam: 94 feet; Power Plant: Diesel electric.

Built by McDermott Shipyard
 USNS Victorious (T-AGOS-19)*



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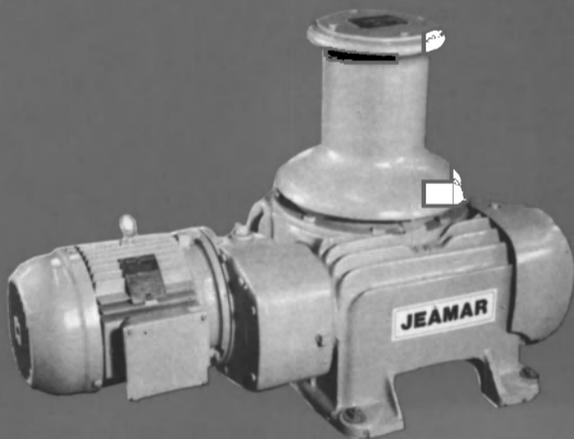
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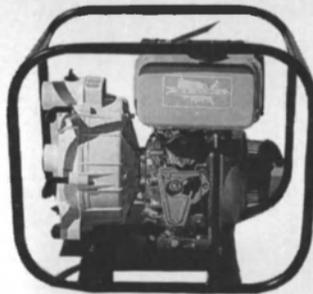
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USNS Loyal (T-AGOS-22)*

Built by American Shipbuilding
USNS Impeccable (T-AGOS-23)*

OILERS (MSC)

Henry J. Kaiser Class (T-AO-187)
Displacement: 40,700 tons; Length: 677-1/2 feet; Beam: 97-1/2 feet; Power Plant: Two Colt-Pielstick diesels and twin shafts.

Built by Avondale Shipyards

USNS Henry J. Kaiser (T-AO-187)
USNS Joshua Humphreys (T-AO-188)
USNS John Lenthall (T-AO-189)
USNS Andrew J. Higgins (T-AO-190)
USNS John Ericsson (T-AO-194)
USNS Leroy Grumman (T-AO-195)
USNS Kanawha (T-AO-196)*
USNS Pecos (T-AO-197)*
USNS Big Horn (T-AO-198)*
USNS Tippecanoe (T-AO-199)*
USNS Guadaloupe (T-AO-200)*
USNS Patuxent (T-AO-201)*
USNS Yukon (T-AO-202)*
USNS Laramie (T-AO-203)*
USNS Rappahannock (T-AO-204)*

Built by Tampa Shipyards

USNS Benjamin Isherwood (T-AO-191)*
USNS Henry Eckford (T-AO-192)*

Mispiration Class (Jumboized) (T-AO-105)

Displacement: 35,000 tons; Length: 644 feet; Beam: 75 feet; Power Plant: Geared turbines, four boilers and two shafts.

Built by Sun Shipbuilding

USNS Mispiration (T-AO-105)
USNS Navasota (T-AO-106)
USNS Passumpsic (T-AO-107)
USNS Pawcatuck (T-AO-108)
USNS Waccanaw (T-AO-109)

Neosho Class (T-AO-143)

Displacement: 26,840 tons; Length: 655 feet; Beam: 86 feet; Power Plant: Geared turbines, two boilers and two shafts.

Built by Bethlehem Steel-Quincy

USNS Neosho (T-AO-143)

Built by New York Shipbuilding

USNS Mississinewa (T-AO-144)
USNS Hassayampa (T-AO-145)
USNS Kawashimi (T-AO-146)
USNS Truckee (T-AO-147)
USNS Ponchatoula (T-AO-148)

PATROL COMBATANTS MISSILESHIPS (Hydrofoil)

Pegasus Class (PHM-1)
Displacement: 255 tons; Length: w/foils, 133 feet; w/o foils, 145 feet; Beam: 28 feet; Power Plant: Foilbourne, one GE gas turbine and waterjet units; hullbourne, two diesels and waterjet units.

Built by Boeing Marine Systems

USS Pegasus (PHM-1)
USS Hercules (PHM-2)
USS Taurus (PHM-3)
USS Aquila (PHM-4)
USS Aries (PHM-5)
USS Gemini (PHM-6)

REPAIR SHIPS

Vulcan Class (AR-5)
Displacement: about 16,270 tons; Length: 529 feet; Beam: 73 feet; Power Plant: Four boilers, steam turbines and two shafts.

Built by New York Shipbuilding

USS Vulcan (AR-5)

Built by L.A. Shipbuilding & Drydock

USS Jason (AR-8)

REPLENISHMENT OILERS

Wichita Class (AOR-1)
Displacement: 38,100 tons; Length: 659 feet; Beam: 96 feet; Power Plant: Three boilers, steam turbines and two shafts.

Built by General Dynamics-Quincy

USS Wichita (AOR-1)
USS Milwaukee (AOR-2)
USS Kansas City (AOR-3)
USS Savannah (AOR-4)
USS Wabash (AOR-5)
USS Kalamazoo (AOR-6)

Built by National Steel & Shipbuilding

USS Roanoke (AOR-7)

RESCUE, SALVAGE & TOWING SHIPS

Safeguard Class (ARS-50)
Displacement: 2,880 tons; Length: 255 feet; Beam: 50 feet; Power Plant: Four Caterpillar diesels and two shafts.

Built by Peterson Builders

USS Safeguard (ARS-50)
USS Grasp (ARS-51)
USS Salvor (ARS-52)
USS Grapple (ARS-53)

Edenton Class (ATS-1)

Displacement: 2,929 tons; Length: 282 feet; Beam: 50 feet; Power Plant: Four diesels and two shafts.

Built by Brooke Marine (UK)

USS Edenton (ATS-1)
USS Beaufort (ATS-2)
USS Brunswick (ATS-3)

Bolster Class (ARS-38)

Displacement: 2,045 tons; Length: 213 feet;

(continued)



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U.S. Navy Fleet

(continued)

Beam: 44 feet; Power Plant: Diesel electric and two shafts.

Built by Basalt Rock
USS Conserver (ARS-39)
USS Recovery (ARS-43)

Abnaki Class (ATF-96)
Displacement: 1,640 tons; Length: 205 feet;
Beam: 39 feet; Power Plant: Diesel-electric and

one shaft.

Built by Charleston Shipbuilding & Drydock
USS Paiute (ATF-159)
USS Papago (ATF-160)

SUBMARINE RESCUE SHIPS
Pigeon Class (ASR-21)
Displacement: 4,200 tons; Length: 251 feet;
Beam: 86 feet; Power Plant: Four diesels and two shafts.

Built by Alabama Drydock & Shipbuilding

USS Pigeon (ASR-21)
USS Ortolan (ASR-22)

Chanticleer Class
Displacement: 2,320 tons; Length: 251 feet;
Beam: 42 feet; Power Plant: Diesel electric and one shaft.
Built by Moore Shipbuilding & Drydock
USS Florikan (ASR-9)

Built by Savannah Machine & Foundry
USS Kittiwake (ASR-13)
USS Petrel (ASR-14)
USS Sunbird (ASR-15)

SUBMARINE TENDERS

L.Y. Spear Class (AS-36)
Displacement: 23,000 tons; Length: 644 feet;
Beam: 85 feet; Power Plant: Two boilers, steam turbines and one shaft.

Built by General Dynamics-Quincy
USS L.Y. Spear (AS-36)
USS Dixon (AS-37)

Emory S. Land Class (AS-39)
Same as L.Y. Spear Class.

Built by Lockheed Shipbuilding
USS Emory S. Land (AS-39)
USS Frank Cable (AS-40)
USS McKee (AS-41)

Simon Lake Class (AS-33)
Displacement: AS-33, 19,934 tons; AS-34, 21,089 tons; Length: 644 feet; Beam: 85 feet;
Power Plant: Two boilers, steam turbines and one shaft.

Built by Puget Sound Naval Shipyard
USS Simon Lake (AS-33)

Built by Ingalls Shipbuilding
USS Canopus (AS-34)

Hunley Class (AS-31)
Displacement: 19,000 tons; Length: 599 feet;
Beam: 83 feet; Power Plant: Diesel electric and one shaft.

Built by Newport News Shipbuilding
USS Hunley (AS-31)

Built by Ingalls Shipbuilding
USS Holland (AS-32)

Fulton Class (AS-11)
Displacement: 16,230 tons; Length: 530-1/2 feet; Beam: 73 feet; Power Plant: N/A.

Built by Mare Island Naval Yard
USS Fulton (AS-11)

Built by Moore Shipbuilding & Drydock
USS Orion (AS-18)

Proteus Class (AS-19)
Displacement: 19,200 tons; Length: 575 feet;
Beam: 73 feet; Power Plant: N/A.

Built by Moore Shipbuilding & Drydock
USS Proteus (AS-19)

TANK LANDING SHIPS

Newport Class (LST-1179)
Displacement: 8,450 tons; Length: 522 feet;
Beam: 69 feet; Power Plant: Six diesels and two shafts.

Built by Philadelphia Naval Yard
USS Newport (LST-1179)
USS Manitowac (LST-1180)
USS Sumter (LST-1181)

Built by National Steel & Shipbuilding

USS Fresno (LST-1182)
USS Peoria (LST-1183)
USS Frederick (LST-1184)
USS Schenectady (LST-1185)
USS Cayuga (LST-1186)
USS Tuscaloosa (LST-1187)
USS Saginaw (LST-1188)
USS San Bernadino (LST-1189)
USS Boulder City (LST-1190)-NRF
USS Racine (LST-1191)-NRF
USS Spartanburg County (LST-1192)
USS Fairfax County (LST-1193)
USS La Moure County (LST-1194)
USS Barbour County (LST-1195)
USS Harlan County (LST-1196)
USS Barnstable County (LST-1197)
USS Bristol County (LST-1198)

Footnote: Asterisks denote ships under construction.

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bronze or nickle
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ready to install

Meets: FS RR-T-650C Comp. C,D.
Treads, Metallic and Non-metallic, Skid Resistant

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variable sizes
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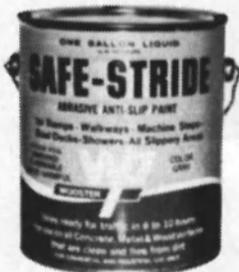
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MIL-W-5044C, Type IV

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Sperry Marine Inc. was chosen by the U.S. Department of Commerce, from among 120 firms, as one of the 20 U.S. companies included in the Department's Japan Corporate Program. We are the only company chosen from the marine industry.

The Japan Corporate Program is a new effort by the Commerce Department to assist U.S. companies selling in Japan. Sperry Marine was chosen for the program because of its proven marine products, demonstrated foreign marketing skills, and a strong commitment to succeed in a most challenging market.

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The Japanese Ministry of International Trade and Industry has offered its full support to the Japan Corporate Program initiated by the U.S. Department of Commerce. With this unprecedented support, the vibrant Japanese marine industry will soon demand more and more Sperry Marine Products.



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Circle 296 on Reader Service Card

U.S. FLAG OCEANGOING MERCHANT FLEET

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt	OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
AMERICAN AUTOCARRIERS, INC. c/o Wallenius Lines North America, Inc., P.O. Box 1232, Woodcliff, NJ 07675-1232						AMERICAN TRADING TRANSPORTATION COMPANY, INC. 555 Fifth Avenue, New York, NY 10017					
Faust	PCC	51,858	28,070	D-16,980	85	American Trader	Tanker	37,300	80,700	T-24,000	69
AMERICAN AUTOCARRIERS / NOSAC JOINT SERVICE c/o Wallenius Lines North America, Inc., P.O. Box 1232, Woodcliff, NJ 07675-1232						Baltimore Trader	Tanker	27,269	57,884	T-15,000	55/71
NOSAC Ranger	PCTC	16,568	17,631	D-18,600	78	Chesapeake Trader	Tanker	24,669	50,116	D-11,400	82
AMERICAN AUTOMAR INC. 1025 Thomas Jefferson Street, Suite 308, Washington, D.C. 20007						Delaware Trader	Tanker	24,669	50,057	D-11,400	82
Advantage	Breakbulk	12,755	21,990	D-14,000	77	Pennsylvania Trader	Tanker	20,046	34,124	T-13,750	62
American Cormorant	Semisub Hvyft	10,186	47,230	D-189,900	75/82	Potomac Trader	Tanker	24,669	50,057	D-11,400	83
American Eagle	Ro/Ro	15,952	20,450	D-21,600	81	Texas Trader	Tanker	19,734	40,631	T-26,500	57/80
American Kestrel	LASH	24,406	39,130	T-35,000	72	APEX MARINE CORPORATION 2001 Marcus Avenue, Lake Success, NY 11042					
AMERICAN HAWAII CRUISES 550 Kearny Street, San Francisco, CA 94108						American Heritage	Tanker	44,000	91,849	T-24,500	78
Constitution	Cruise	30,090	7,100	T-55,000	51/88	Charleston	Tanker	21,649	39,366	T-12,000	56/80
Independence	Cruise	30,090	7,100	T-55,000	50/88	Golden Monarch	Tanker	44,900	91,388	T-24,500	75
AMERICAN HEAVY LIFT SHIPPING CO. 15355 Vantage Parkway West, Suite 200, Houston, TX 77032						Gulf Farmer	Breakbulk	8,988	11,368	T-11,000	65
King	Tanker	20,138	34,723	T-13,600	57	Gulf Merchant	Breakbulk	8,988	11,368	T-11,000	65
Knight	Tanker	20,026	34,723	T-13,600	58	Gulf Shipper	Breakbulk	8,988	11,368	T-11,000	65
Solar	Tanker	18,116	30,806	T-13,600	59	Del Viento	Breakbulk	10,396	19,285	T-11,660	68
Spray	Tanker	18,150	30,806	T-13,600	60	ARCO MARINE, INC. (ATLANTIC RICHFIELD COMPANY) 300 Ocean Gate, Long Beach, CA 90802-4341					
AMERICAN OVERSEA MARINE CORPORATION 116 East Howard Street, Quincy, MA 02169						Arco Alaska	Tanker	83,675	188,436	T-28,000	79
2nd Lt. John P. Bobo	RO/RO	32,903	22,700	D-26,400	85	Arco Anchorage	Tanker	57,691	120,266	T-26,000	73
Pfc. Dewayne T. Williams	RO/RO	32,903	22,700	D-26,400	85	Arco California	Tanker	83,675	124,999	T-28,000	80
1st Lt. Baldomero Lopez	RO/RO	32,903	22,700	D-26,400	85	Arco Fairbanks	Tanker	57,691	120,319	T-26,000	74
1st Lt. Jack Lummus	RO/RO	32,903	22,700	D-26,400	86	Arco Independence	Tanker	117,515	262,376	T-35,000	77
Sgt. William R. Button	RO/RO	32,903	22,700	D-26,400	86	Arco Juneau	Tanker	57,691	120,266	T-26,000	74
*Lake	Cargo	9,259	12,476	T-12,100	61	Arco Prudhoe Bay	Tanker	35,646	70,278	T-20,000	71
*Pride	Cargo	9,252	12,412	T-12,100	60	Arco Sag River	Tanker	35,646	70,215	T-20,000	72
*Scan	Cargo	9,259	12,483	T-12,100	61	Arco Spirit	Tanker	117,515	262,376	T-35,000	77
*Southern Cross	Cargo	9,259	12,519	T-12,100	62	Arco Texas	Tanker	39,664	89,950	T-20,000	73/81
*Cape Carthage	Cargo	9,397	12,684	T-11,000	63	ATLANTIC TANKSHIPS, INC. 5 Koger Executive Center, P.O. Box 13348, Norfolk, VA 23506					
*Cape Catoche	Cargo	9,397	12,684	T-11,000	63	Sea Venture	Chemical Tanker	9,993	18,924	D-8,680	72/73
*Cape Canaveral	Cargo	9,397	12,684	T-11,000	64	BAY TANKERS INCORPORATED 270 Sylvan Avenue, Englewood Cliffs, NJ 07632					
*Aide	Cargo	7,846	10,986	T-13,750	61	*USNS Altair	SL-7	48,142	25,595	T-120,000	73
*Cape Ann	Cargo	11,309	12,728	T-18,150	62	*USNS Denabola	SL-7	48,142	25,595	T-120,000	73
*Cape Avinof	Cargo	11,309	12,728	T-18,150	63	*USNS Pollux	SL-7	48,142	25,595	T-120,000	73
*Curtiss	T-AVB	23,255	13,651	T-30,000	69	*USNS Regulus	SL-7	48,142	25,595	T-120,000	73
*Wright	T-AVB	23,255	13,651	T-30,000	70	*under contract from MSC.					
*under contract from MSC											
AMERICAN PRESIDENT LINES, LTD. 1111 Broadway, Oakland, CA 94607						BAY SHIP MANAGEMENT INC., AFFILIATE OF BAY TANKERS INC.					
President Adams	Conbulk	42,276	54,565	D-57,000	88	USNS Algol	SL-7	48,142	25,595	T-120,000	
President Arthur	Container	36,799	44,256	D-28,800	87	USNS Bellatrix	SL-7	48,142	25,595	T-120,000	
President Buchanan	Container	36,799	44,256	D-28,800	87	USNS Capella	SL-7	48,142	25,595	T-120,000	
President Eisenhower	Container	36,900	45,900	D-43,200	80/84	CENTRAL GULF LINES, INC. 650 Poydras Street, Suite 1700, Poydras Center, New Orleans, LA 70130					
President F.D. Roosevelt	Container	36,200	45,900	D-43,200	80/84	Rover	RO/RO	11,757	15,946	T-30,000	69
President Garfield	Container	36,799	44,256	D-28,800	87	Green Valley	LASH	28,487	46,908	T-32,000	74
President Grant	Container	26,700	37,300	D-32,000	71/78/83	Green Island	LASH	28,487	46,908	T-32,000	75
President Harding	Container	36,799	44,256	D-28,800	87	Green Harbour	LASH	28,487	46,908	T-32,000	74
President Harrison	Container	28,163	33,970	T-32,000	71/78	Green Wave	Cargo	9,521	12,487	D-10,000	81
President Hoover	Container	26,700	37,300	T-32,000	71/78/83	Green Bay	PCC	38,659	13,491	D-11,600	87
President Jackson	Conbulk	42,276	54,565	D-57,000	88	Green Lake	PCC	46,950	14,104	D-13,120	87
President Jefferson	Container	21,500	18,500	T-28,500	73	Green Ridge	Cargo	9,521	12,487	D-10,000	81
President Johnson	Container	21,500	18,500	T-28,500	74	Austral Rainbow	LASH	26,456	29,749	T-32,000	72
President Kennedy	Conbulk	42,276	54,565	D-57,000	88	CHESAPEAKE SHIPPING CO. c/o Prentice-Hall Corp., 229 S. State Street, Dover, DE 19901					
President Lincoln	Container	40,600	29,800	D-43,200	82	Bridgeton	Tanker	210,065	407,823	T-45,000	77
President Madison	Container	21,500	18,500	T-28,500	73	Chesapeake City	Tanker	44,313	82,572	D-17,000	81
President Monroe	Container	40,600	29,800	D-43,200	83	Ocean City	Tanker	55,620	82,572	D-17,000	81
President Pierce	Container	21,500	18,500	T-28,500	73	Sea Isle City	Tanker	55,454	81,283	D-12,720	81
President Polk	Conbulk	42,276	54,565	D-57,000	88	*Surf City	Tanker	44,542	81,283	D-12,720	81
President Taft	Container	17,800	17,500	T-24,500	67/72	*Seriously damaged in explosion, disposition pending.					
President Truman	Conbulk	42,276	54,565	D-57,000	88						
President Tyler	Container	26,700	37,300	T-32,000	72/78/83						
President Washington	Container	40,600	29,800	T-43,200	82						

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
CHEVRON SHIPPING COMPANY 555 Market Street, San Francisco, CA 94105					
Chevron Arizona	Product Carrier	16,941	39,207	GT/E-12,500	77
Chevron California	Tanker	35,588	70,213	T-20,000	72
Chevron Colorado	Product Carrier	16,941	39,213	GT/E-12,500	76
Chevron Louisiana	Product Carrier	16,941	39,167	GT/E-12,500	77
Chevron Mississippi	Tanker	35,589	70,213	T-20,000	72
Chevron Oregon	Product Carrier	16,941	39,218	GT/E-12,500	75
Chevron Washington	Product Carrier	16,941	39,167	GT/E-12,500	76

COASTAL TANKSHIPS USA
9 Greenway Plaza, Houston, TX 77046

Coastal Corpus Christi	Tanker	23,299	51,196	T-19,000	60
Coastal Eagle Point	Tanker	26,198	51,051	T-19,000	60
Coastal Manatee	Tanker	19,030	30,806	T-13,600	60
Mobile Bay	Tanker	18,810	31,828	T-14,850	54

COASTAL TUG & BARGE, INC.
8700 West Flagler Street, Miami, FL 33174

Port Everglades/Barge 101	ITB	17,634	36,846	15,200	81/79
Coastal Jacksonville/ Coastal 23	ITB	6,231	12,200	D-3,700	71/77

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
COVE SHIPPING INC. 200 Virginia Street, Mobile, AL 36603					
Cove Leader	Tanker	40,511	71,054	T-25,000	59/79/80
Cove Liberty	Tanker	33,596	69,306	T-22,000	54/74/81
Cove Trader	Tanker	28,310	49,339	T-15,000	59/79/82

CREST TANKERS
7930 Clayton Road, St. Louis, MO 63117

Chablis	Tanker	19,030	30,806	T-15,000	60
Montrachet	Tanker	18,407	30,806	T-15,000	59
Pomerol	Tanker	18,347	31,857	T-13,500	58
St. Emillion	Tanker	19,474	34,779	T-13,000	56

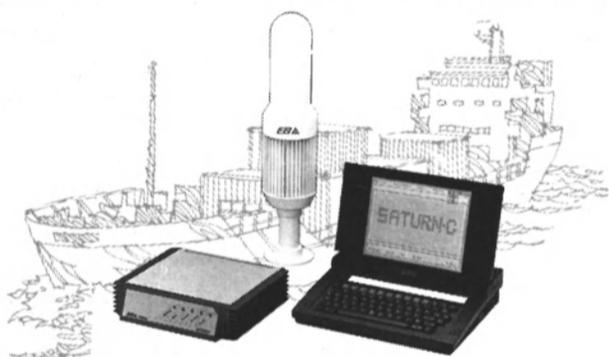
CROWLEY MARITIME CORPORATION
155 Grand Avenue, Oakland, CA 94612

Ambassador	RO/RO	13,412	9,900	D-10,000	80
Senator	RO/RO	13,498	9,900	D-10,000	81
American Condor	RO/RO-LO/LO	15,636	20,730	D-21,600	81
American Falcon	RO/RO-LO/LO	15,636	20,730	D-21,600	81
Sea Fox	CON-RO/RO	32,781	33,625	D-23,030	84
Sea Lion	CON-RO/RO	32,781	33,625	D-23,030	85
Sea Wolf	CON-RO/RO	32,781	33,625	D-23,030	84



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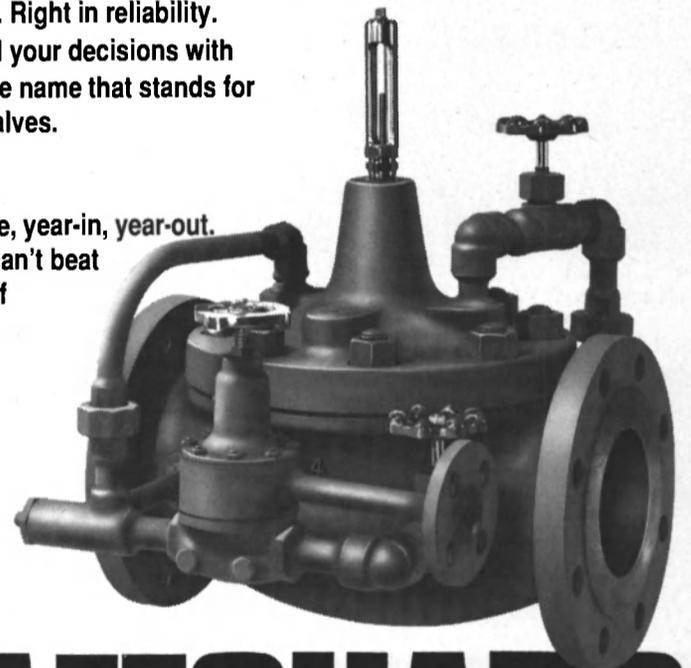
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Memorial Hwy.,
Holbrook, NY 11741
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Circle 292 on Reader Service Card

Circle 218 on Reader Service Card

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
DOCK EXPRESS CONTRACTORS 3 Stamford Landing, 46 Southfield Avenue, Suite 200, Stamford, CT 06902					
Strong American	ITB-RO/RO	NA	NA	NA	NA
Strong Texan	Hvyift/RO-RO	1,383	2,804	D-2,500	76
ENERGY TRANSPORTATION CORPORATION 1185 Avenue of the Americas, New York, NY 10036					
Energy Altair	Tug	262.6	—	D-4,800	82
Energy Ammonia	LPG Barge	11,438	12,110	—	82
LNG Aquarius	LNG	95,084	71,475	T-43,000	77
LNG Aries	LNG	95,084	71,466	T-43,000	77
LNG Capricorn	LNG	95,084	71,409	T-43,000	78
LNG Gemini	LNG	95,084	71,327	T-43,000	78
LNG Leo	LNG	95,084	71,409	T-43,000	78
LNG Libra	LNG	95,084	71,503	T-43,000	79
LNG Tarus	LNG	95,084	71,495	T-43,000	79
LNG Virgo	LNG	95,084	71,482	T-43,000	79
EXXON SHIPPING COMPANY P.O. Box 1512, Houston, TX 77001					
Exxon Baton Rouge	Tanker	34,266	75,783	T-19,000	69
Exxon Baytown	Tanker	32,136	57,720	D-17,000	84

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
Exxon Benicia	Tanker	75,272	149,900	T-26,700	79
Exxon Charleston	Products Tanker	27,798	48,075	D-17,000	84
Exxon Galveston	Tanker	12,769	26,923	D-7,000	70/78
Exxon Jamestown	Tanker	19,734	40,631	T-26,500	57
Exxon Long Beach	Tanker	95,000	211,469	D31,650	87
Exxon New Orleans	Tanker	32,035	72,056	T-19,000	65
Exxon North Slope	Tanker	75,272	149,900	T-26,700	79
Exxon Philadelphia	Tanker	34,266	76,192	T-19,000	70
Exxon San Francisco	Tanker	34,266	75,649	T-19,000	69
Exxon Mediterranean	Tanker	95,000	211,469	D-31,650	86
Exxon Wilmington	Products Tanker	27,508	48,011	D-17,000	84
FALCON SHIPPING GROUP 801 Travis Street, Suite 2000, Houston, TX 77002					
Falcon Champion	Tanker	17,735	33,542	D-14,500	84
Falcon Countess	Tanker	20,751	37,276	D-15,000	72
Falcon Dutchess	Tanker	20,751	37,276	D-15,000	71
Falcon Leader	Tanker	17,735	33,542	D-14,500	83
Falcon Princess	Tanker	20,751	37,276	D-15,000	72
Pride of Texas	Bulk	24,384	36,500	D-15,600	81
Spirit of Texas	Bulk	24,384	36,500	D-15,600	82
Star of Texas	Bulk	24,384	36,500	D-15,600	82

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A single 3/8 in. dia., high-tensile, stainless steel flexible shaft assembly

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AFFORDABLE

THE Model 12
(two components)
Designed for vessels with limited space

Sizes:
F-12 Filter:
12 1/2" x 12 1/2" h
D-12 Digester:
27" x 15" x 12" h
Weight:
40 lbs. dry, 115 lbs. wet
Power:
low draw
12 volt system
drawing 6 amps
or 110 volt
drawing 10 amps

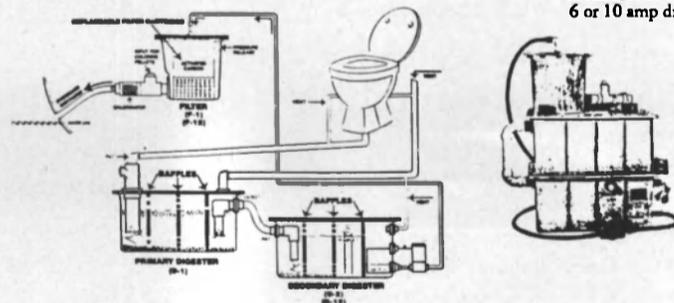
Unique Simple Process

Sewage flows from the head directly into the Digester(s) where it makes its way through a series of baffles. It is broken down and dissolved by natural bacterial action during this stage. The resulting liquid (effluent) is then pumped through the Filter and passes through the chlorinator, where the final stage of purification and deodorization takes place. Upkeep simply requires an addition of the Humphrey Activator flushed through the head periodically, a spot check on the chlorine pellets and filter. That's it, No Muss, No Fuss!

This compact Sewage Treatment system emits clear and odorless discharge better than the TYPE III, no discharge devices, which requires the use of pump out facilities that are inadequate across the country.

THE Model 10A
(three components)
Sizes:
F-1 Filter:
12 1/2" x 15" x 12" h
D-1 & D-2 Digester:
27" x 15" x 12" h
Weight:
66 lbs. dry, 225 lbs. wet
Power:
Available in 12V or 110V
6 or 10 amp draw

Models available for any crew size

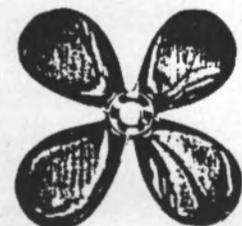


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Telex: 06-218073 KMDI

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
FARRELL LINES, INC. One Whitehall Street, New York, NY 10004					
Argonaut	Container	17,904	16,205	T-17,500	79
Export Freedom	Container	17,904	16,230	T-17,500	72
Export Patriot	Container	17,904	16,345	T-17,500	73
Resolute	Container	17,904	16,205	T-17,500	80

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
HVIDE SHIPPING INCORPORATED 2200 Eller Drive, Bldg. 27, Fort Lauderdale, FL 33316					
Seabulk America	Chemical Tanker	—	47,000	D-11,550	90
Seabulk Challenger/ STL 3901	ITB	20,982	39,345	D-14,000	75
Seabulk Magnachem/ SCC3902	ITB	18,671	39,344	D-14,000	77

INTEROCEAN MANAGEMENT CORPORATION
Three Parkway, Philadelphia, PA 19102

Brooks Range	Tanker	74,250	165,037	T-26,700	78
Thompson Pass	Tanker	74,250	165,037	T-26,700	78
U.S.T. Atlantic	Tanker	189,416	398,143	T-45,000	79
U.S.T. Pacific	Tanker	189,416	398,143	T-45,000	79
*Austral Lighting	LASH	26,406	29,800	T-28,000	71
*Cape Bon	Breakbulk	N/A	14,700	N/A	67
*Cape Ducato	RO/RO	N/A	13,800	N/A	72
*Cape Edmont	RO/RO	N/A	20,000	N/A	71
*Cape Nome	RO/RO	N/A	15,700	N/A	69
*Cape Henry	RO/RO	N/A	32,000	N/A	79
*Cape Horn	RO/RO	N/A	31,800	N/A	79
*Cape Hudson	RO/RO	N/A	31,900	N/A	79
*Cornhusker State	T-ACS	16,189	17,500	T-19,250	69/88
*Diamond State	T-ACS	16,189	17,500	T-19,250	89
*Equality State	T-ACS	16,189	17,500	T-19,250	89
*Flickertail State	T-ACS	16,189	17,500	T-19,250	88
*Gopher State	T-ACS	16,189	17,500	T-19,250	87
*Meteor	RO/RO	N/A	12,300	N/A	67

*under contract from MarAd.

LIBERTY MARITIME CORPORATION

1979 Marcus Avenue, Suite 200, Lake Success, NY 11042

Liberty Belle	Tanker	44,900	91,630	T-24,500	76
Liberty Sea	Bulk	33,784	63,739	D-12,300	84
Liberty Spirit	Bulk/Container	33,337	64,152	D-15,800	86
Liberty Star	Bulk/Container	33,337	64,152	D-15,800	86
Liberty Sun	Bulk/Container	33,337	64,059	D-15,800	86
Liberty Wave	Bulk	33,784	64,463	D-12,300	84

KEYSTONE SHIPPING CO.

313 Chestnut Street, Philadelphia, PA 19106

Atigun Pass	Crude/Products	74,251	173,380	T-26,700	77
Chelsea	Crude/Products	22,358	39,235	T-15,000	75
Cherry Valley	Crude/Products	22,385	39,230	T-15,000	74
Chestnut Hill	Crude/Products	44,875	91,295	T-24,500	76
Chilbar	Chemical Tanker	21,937	39,363	T-10,460	59/81
Coronado	Crude/Products	22,358	39,237	T-15,000	73
Energy Independence	Collier	24,901	38,234	T-12,000	83
Fredricksburg	Crude/Products	21,557	39,374	T20,460	58/80
Golden Gate	Crude/Products	27,899	61,952	T-20,000	70
Kenal	Crude/Products	60,385	123,113	T-30,000	79
Keystone Canyon	Crude/Products	74,251	173,380	T26,700	78
Keystoner	Chemical Tanker	11,369	18,384	T-7,700	53
Kittanning	Crude/Products	44,875	91,344	T-24,500	77
Prince William Sound	Crude/Products	60,084	121,000	T-30,000	75
Tonsina	Crude/Products	60,385	122,781	T-30,000	78
Valley Forge	Chemical Tanker	20,572	37,753	T-15,000	66

LYKES BROS. STEAMSHIP COMPANY

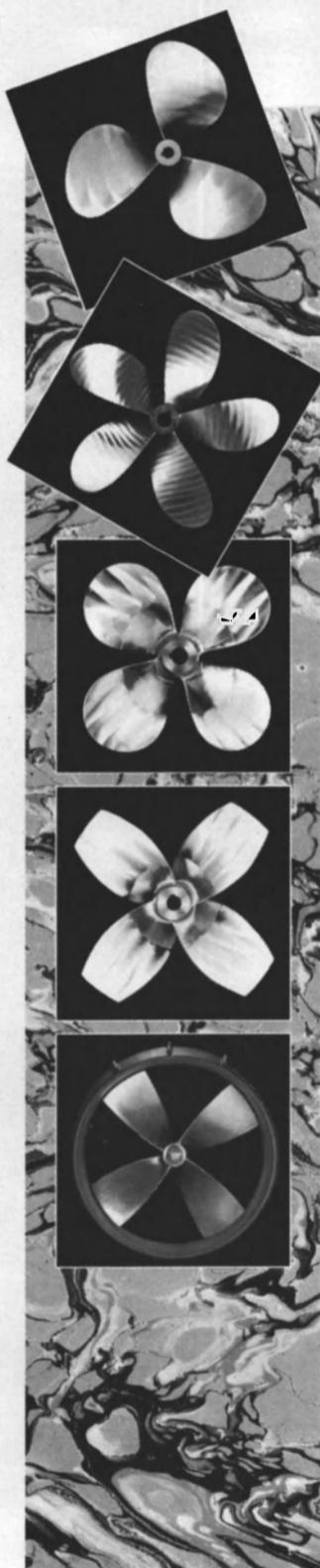
300 Poydras Street, New Orleans, LA 70130

Adabelle Lykes	Container	16,891	15,137	D-15,750	68/73
Allison Lykes	Cargo Cont.	14,082	15,295	T-19,000	64/82
Almeria Lykes	Container	17,802	22,316	T-24,000	68/72
Ashley Lykes	Cargo Cont.	11,892	14,302	T-11,000	63/73
Charlotte Lykes	Container	16,891	15,208	D-15,750	68/73
Elizabeth Lykes	General Cargo	10,955	15,302	T-15,500	65
Genevieve Lykes	General Cargo	10,955	15,302	T-15,500	68
Howell Lykes	Container	17,802	22,316	T-24,000	67/72
James Lykes	Cargo Cont.	11,892	14,302	T-9,900	60/72
Jean Lykes	Cargo Cont.	11,892	14,302	T-9,900	61/72
John Lykes	Cargo Cont.	11,892	14,302	T-9,900	60/72
Joseph Lykes	Cargo Cont.	11,892	14,302	T-9,900	60/71
Leslie Lykes	Cargo Cont.	11,892	14,302	T-9,900	62/72
Letitia Lykes	General Cargo	10,724	15,302	T-15,500	68
Louise Lykes	General Cargo	10,955	15,302	T-15,500	65
Lyra	RO/RO	12,160	14,874	D-18,972	77
Magallanes	Cargo Cont.	14,082	15,198	T-19,000	64/82
Mallory Lykes	Cargo Cont.	14,082	15,294	T-19,000	65/83
Margaret Lykes	Container	16,375	15,218	D-15,750	68/73
Marjorie Lykes	Cargo Cont.	11,892	14,302	T-11,000	62/73
Mason Lykes	Container	17,802	22,316	T-24,000	68/72
Nancy Lykes	Cargo Cont.	11,892	14,302	T-9,900	61/71
Ruth Lykes	General Cargo	10,955	15,302	T-15,500	66
Sheldon Lykes	Container	16,375	15,052	D-15,750	69/73
Stella Lykes	Cargo Cont.	15,949	22,221	T-24,000	69

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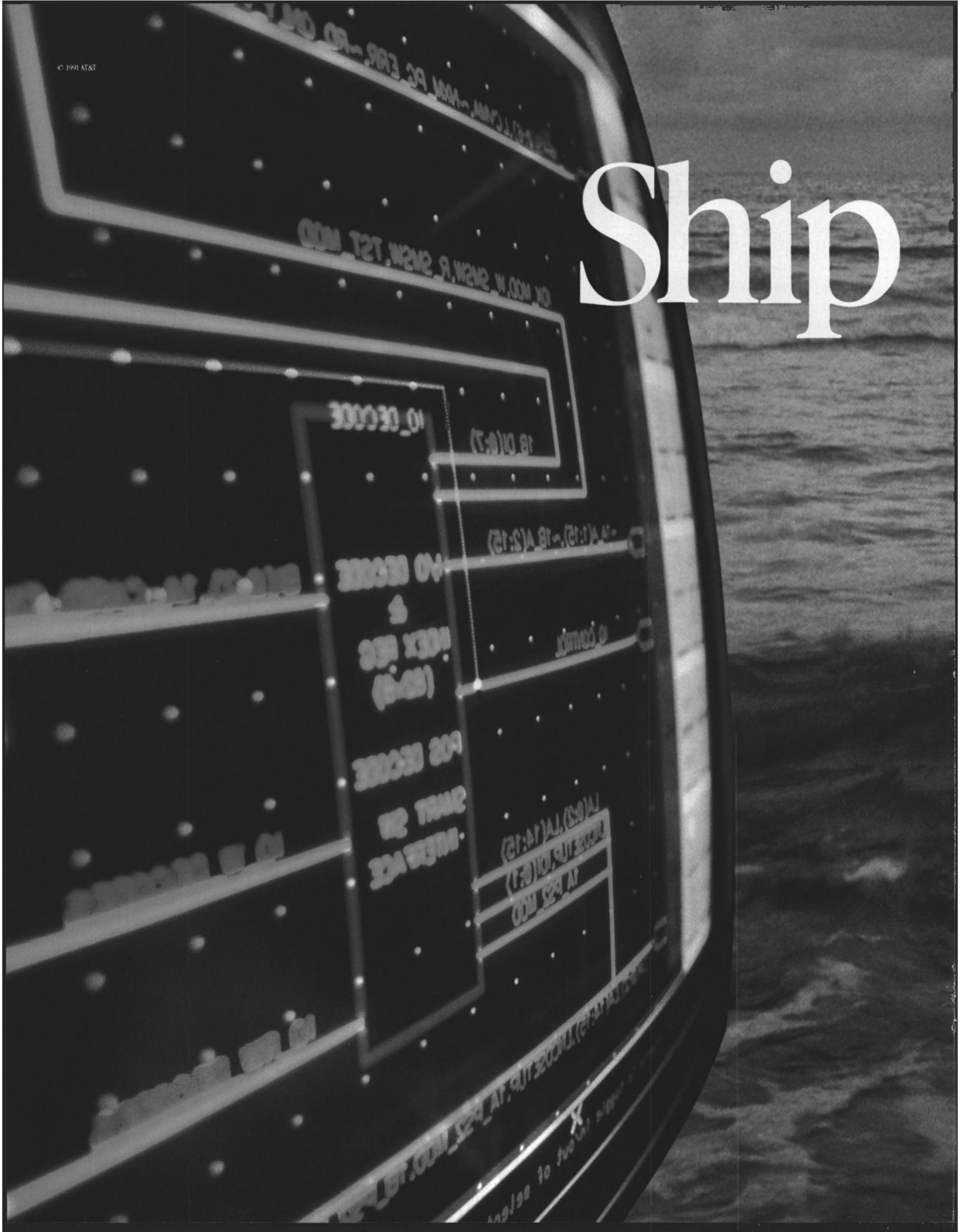
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OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
Sue Lykes	Cargo Cont.	15,949	22,221	T-24,000	69
Thompson Lykes	Cargo Cont.	11,892	14,302	T-9,900	60/71
Zoella Lykes	Cargo Cont.	11,892	14,302	T-9,900	60/71

MAERSK LINE, LTD.

Giralda Farms, Madison Avenue, P.O. Box 884, Madison, NJ 07940-0884

*Cpl. Louis J. Hauge Jr.	RO/RO	38,412	23,068	D-16,800	84
*1st Lt. Alexander Bonnyman Jr.	RO/RO	38,412	23,068	D-16,800	85
Maersk Constellation	RO/RO	21,799	29,750	D-16,500	80
*Pfc. William B. Baugh	RO/RO	38,412	23,068	D-16,800	84
*Pfc. James Anderson Jr.	RO/RO	38,412	23,068	D-16,800	85
*Pvt. Harry Fisher	RO/RO	38,412	23,068	D-16,800	85

*under contract to MSC.

MARINE TRANSPORT LINES, INC.

P.O. Box 1550, 150 Meadowland Parkway, Secaucus, NJ 07094-1550

B.T. Alaska	Tanker	83,650	188,099	T-28,000	78
B.T. San Diego	Tanker	83,650	188,099	T-28,000	78
Chemical Pioneer	Chemical Tanker	18,500	35,00	T-15,000	83
Marine Chemist	Chemical Tanker	20,237	35,949	T-15,000	70
Marine Duval	Sulfur Tanker	11,080	24,693	TE-7,000	44/70
Marine Floridian	Sulfur Tanker	11,150	24,838	TE-7,000	44/67
Marine Princess	Bulk Carrier	26,060	51,355	D-13,800	79

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
Marine Reliance	Pure Car Carrier	35,700	11,400	D-11,700	87
Cape Lambert	RO/RO	34,382	20,544	D-18,000	73
Cape Lobos	RO/RO	34,380	20,220	D-18,000	72/86
Cape Decision	RO/RO	23,913	23,865	D-27,000	73
Cape Diamond	RO/RO	23,911	23,725	D-28,890	72
Cape Domingo	RO/RO	23,911	23,725	D-28,890	73
Cape Douglas	RO/RO	23,972	22,880	D-27,000	73
Marine Glory/MBC#1	Chemical Tug/Barge	N/A	3,700	D-1,900	73
Marine Guardian/MBC#2	Chemical Tug/Barge	N/A	3,700	D-2,600	73
Brooklyn	Crude Tanker	103,900	225,281	T-50,000	73
Williamsburgh	Crude Tanker	103,800	225,281	T-50,000	74
Mission Buenaventura	Product Tanker	20,900	38,238	D-15,000	68
Mission Capistrano	Product Tanker	20,800	37,276	D-15,000	71

MATSON NAVIGATION COMPANY

333 Market Street, San Francisco, CA 94105

Haleakala	Container Barge	3,562	4,658	—	84
Islander	Container Barge	2,474	6,671	—	88
Kaimoku	RO/RO-Cont. Barge	17,525	14,551	T-30,000	76/90
Kainalu	RO/RO-Cont. Barge	17,513	14,976	T-30,000	74/89
Kauai	Container	24,550	26,308	T-32,000	80
Lurline	Container-RO/RO	24,901	22,220	T-30,000	73/82
Manukai	Container	23,786	26,616	T-32,000	70
Manulani	Container	23,786	26,674	T-32,000	70
Matsonia	Container-RO/RO	19,301	22,550	T-30,000	73/87
Maul	Container	24,545	26,623	T-32,000	78
Mauna Loa	Container Barge	3,562	4,658	—	84



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Manufactured in the USA



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Willard Marine introduces the Rigid Inflatable Boat (R.I.B.) that is engineered and constructed for the upmost in safety and versatility. The R.I.B.'s performance and control are unequaled and are used world wide by rescue and law enforcement agencies. These agencies and others have recognized the advantages of this unique design over soft bottom inflatables and standard fiber-glass hulls.

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The R.I.B.'s unique design make it a perfect craft for Off Shore Oil, Military, Coast Guard, Safety, Rescue, Patrol Fishery Protection and other Commercial and all-weather load carrying needs. Willard Marine's 30 years of experience allows custom design features to be manufactured at an affordable cost. Willard Marine's record of reliability includes the manufacturing of numerous R.I.B.'s for the U.S. Navy with proven on-ship and shore-based success.



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1250 N. Grove St., Anaheim, CA 92806 USA
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SCI MARITIME TRAINING

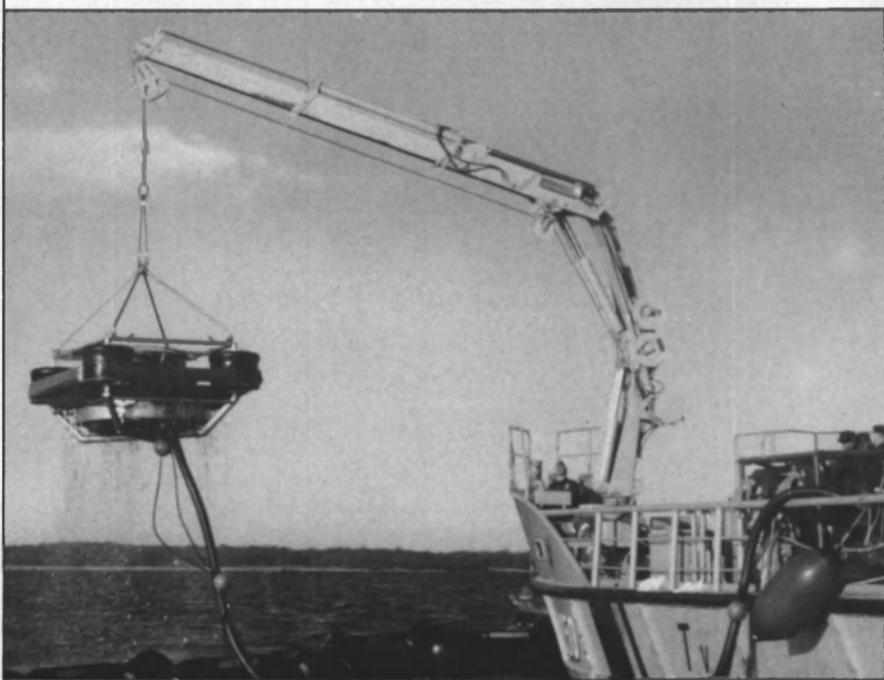
241 Water Street, New York, NY 10038 • (212) 349-9090
A Division of Seamen's Church Institute of New York & New Jersey
Circle 294 on Reader Service Card

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
MOBIL OIL CORPORATION 3225 Gallows Road, Fairfax, VA 22037-0001					
Seminole	Tanker	28,218	49,298	T-15,000	61
Syosset	Tanker	18,348	30,293	T-14,850	58
MORMAC MARINE TRANSPORT INC. Three Landmark Square, Stamford, CT 06901					
Mormacsky	Tanker	22,354	39,232	T-15,000	77
Mormacstar	Tanker	22,354	39,232	T-15,000	75
Mormacsun	Tanker	22,354	39,232	T-15,000	76
OCEAN SHIPHOLDINGS, INC. 13105 Northwest Freeway, Suite 700, Houston, TX 77040					
Paul Buck	Tanker	19,037	30,127	D-15,300	85
Samuel L. Cobb	Tanker	19,037	30,127	D-15,300	85
Gus W. Darnell	Tanker	19,037	30,127	D-15,300	85
Lawrence H. Gianella	Tanker	19,037	30,127	D-15,300	86
Richard G. Matthiesen	Tanker	19,037	30,127	D-15,300	86
Julius Hammer/ Oxy 4101	ITB	1,594	45,313*	D-9,100**	81
Frances Hammer/ Oxy 4103	ITB	1,594	45,313*	D-9,100**	81

*long tons; **metric.

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
OMI CORPORATION 90 Park Avenue, New York, NY 10016					
Courier	Product Tanker	21,572	35,100	D-14,000	77
OMI Champion	Product Tanker	20,858	37,874	T-15,000	69
OMI Charger	Product Tanker	20,877	37,807	T-15,000	69
OMI Columbia	Crude Tanker	67,856	136,507	D-27,300	74/83
OMI Dynachem	Chemical Tanker	32,328	50,852	D-14,100	81
OMI Hudson	Chemical Tanker	32,328	50,852	D-14,100	81
OMI Leader	Product Tanker	20,877	37,807	T-15,000	69
OMI Missouri	Bulk Carrier	26,800	48,890	D-11,100	83
OMI Sacramento	Bulk Carrier	26,800	48,890	D-11,100	83
OMI Star	Chemical Tanker	19,047	37,106	T-15,000	70
OMI Wabash	Product Tanker	20,884	37,853	T-15,000	69
OMI Willamette	Product Tanker	20,884	37,853	T-15,000	69
Patriot	Product Tanker	21,572	35,100	D-14,000	76
Ranger	Product Tanker	21,572	35,100	D-14,000	76
Rover	Product Tanker	21,572	35,100	D-14,000	77
OSG BULK SHIPS 1114 Avenue of the Americas, New York, NY 10036					
Overseas Alaska	Tanker	28,250	62,000	T-20,000	70
Overseas Alice	Tanker	20,900	37,800	T-15,000	68
Overseas Arctic	Tanker	28,250	62,000	T-20,000	71
Overseas Boston	Tanker	61,200	120,820	D-26,000	74
Overseas Chicago	Tanker	44,850	90,600	T-24,500	77

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Circle 203 on Reader Service Card

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
Overseas Harriette	Bulk	14,300	25,550	D-11,200	78
Overseas Joyce	PCC	48,017	16,141	D-13,150	87
Overseas Juneau	Tanker	57,700	120,500	T-25,000	73
Overseas Marilyn	Bulk	14,300	25,500	D-11,200	78
Overseas New Orleans	Tanker	21,447	42,954	D-11,200	83
Overseas New York	Tanker	44,900	90,400	T-24,500	77
Overseas Ohio	Tanker	44,850	90,550	T-24,500	77
Overseas Philadelphia	Tanker	21,447	42,595	D-11,200	82
Overseas Valdez	Tanker	20,900	37,800	T-15,000	68
Overseas Vivian	Tanker	20,900	37,800	T-15,000	69
Overseas Washington	Tanker	44,900	90,500	T-24,500	78

PACIFIC - GULF MARINE, INC.

401 Whitney Ave., Suite 211, Gretna, LA 70053; P.O. Box 6479, New Orleans, LA 70174-6479

American Cormorant	Semi-Sub	10,195	55,092	D-19,700	75/82
American Eagle	RO/RO	15,632	20,972	D-21,60	81
American Kestrel	LASH	24,406	39,130	S-35,000	72
Moku Oahu/HSTC 1	ITB	17,286	37,107	D-14,000	81
Nosac Ranger	RO/RO	17,646	16,568	D-20,500	78
Sugar Islander	Bulk Carrier	155,544	29,984	D-12,000	73

PUERTO RICO MARINE MANAGEMENT, INC.

212 Fernwood Avenue, Edison, NJ 08818

Carolina	Container	19,127	20,100	T-26,000	71
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OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
Fortaleza	RO/RO	15,135	13,969	T-32,000	72
Guayama	Container	18,877	20,600	T-26,000	69
Humacao	Container	18,765	22,200	T-26,000	68
Mayaguez	Container	18,878	20,600	T-26,000	68
Nuevo San Juan	Container	19,127	20,000	T-26,000	70
Ponce	RO/RO	17,513	16,943	T-32,000	68/81
Puerto Rico	RO/RO	14,770	14,090	T-30,000	75

RAINBOW NAVIGATION, INC.

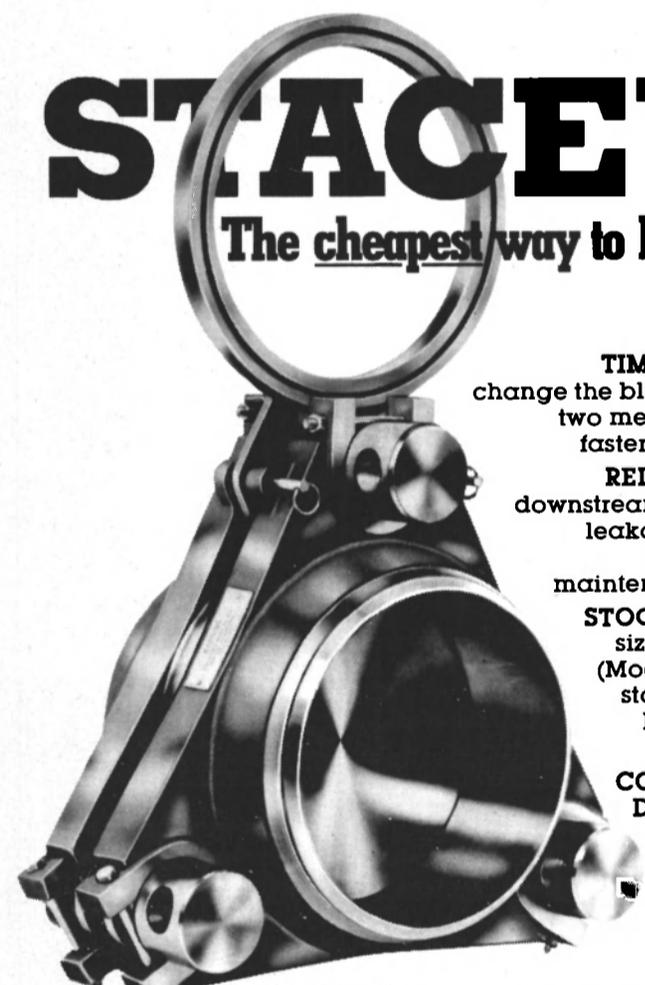
c/o American Ship Management, Inc., managing agents
2200 Veterans Blvd., Suite 211, Kenner, LA 70062

M/V Rainbow Hope	Con./Breakbulk	983	2,000	D-3,000	80
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SABINE TOWING & TRANSPORTATION COMPANY

P.O. Box 1528, Groves, TX 77619

Colorado	Tanker	16,822	30,590	T-7,240	44/72
Concho	Tanker	18,682	32,741	T-7,000	45/71
Guadalupe	Tanker	17,985	30,369	T-7,240	45/78
Neches	Tanker	20,066	34,930	T-15,000	58
Pecos	Tanker	17,291	28,749	T-13,750	50
Sabine	Tanker	20,020	35,018	T-15,000	57



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Circle 229 on Reader Service Card

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
SEALIFT, INC. 68 West Main Street, Oyster Bay, NY 11771					
Bravado	Tanker	2,110	4,400	D-2,880	77
Cleveland	Cargo	16,000	22,200	T-24,000	69
Inger	Bulker	14,192	23,977	T-7,240	45/62
Noble Star	Multi-Bulk	15,922	18,230	D-13,100	77

SEA - LAND SERVICE, INC.
379 Thornall Street, Edison, NJ 08837

Achiever	Container	57,075	58,892	D-28,000	84
Adventurer	Container	17,736	15,289	D-17,400	63/80
Anchorage	Container	20,965	20,833	D-22,540	87
Atlantic	Container	57,075	58,892	D-28,000	85
Challenger	Container	19,168	25,508	T-27,300	68
Commitment	Container	57,075	58,992	D-28,000	85
Consumer	Container	23,764	25,206	-32,000	73/74
Crusader	Container	18,389	24,938	T-27,300	69
Defender	Container	30,086	29,861	D-30,150	80/85
Developer	Container	30,086	29,818	D-30,150	80/85
Discovery	Container	18,876	20,269	T-27,300	68
Endurance	Container	30,086	29,738	D-30,150	80/85
Enterprise	Container	30,686	30,982	D-28,500	80/83
Expedition	Container	13,000	21,694	T-28,500	73/81
Explorer	Container	30,086	29,811	D-30,150	80/85
Express	Container	30,086	29,943	D-30,150	80/85
Freedom	Container	30,086	29,831	D-30,150	80/85
Galveston Bay	Container	57,075	58,992	D-28,000	85
Hawaii	Container	13,000	21,564	T-28,500	73/81
Independence	Container	30,086	29,790	D-30,150	80/85
Innovator	Container	30,086	29,862	D-30,150	80/85
Integrity	Container	57,075	58,992	D-28,000	84
Kodiac	Container	20,965	20,833	D-22,540	87
Leader	Container	17,736	15,298	D-17,400	62/80
Liberator	Container	30,086	29,764	D-30,150	80/85
Mariner	Container	30,086	29,903	D-30,150	80/85
Navigator	Container	30,990	30,610	T-28,500	72/84
Nedlloyd Holland	Container	57,075	58,992	D-28,000	84
Nedlloyd Hudson	Container	57,075	58,992	D-28,000	84
Newark Bay	Container	57,075	58,992	D-28,000	84
Pacer	Container	17,736	15,298	D-17,400	63/80
Pacific	Container	30,685	30,776	T-28,500	79/83
Patriot	Container	30,685	29,748	D-30,150	80/85
Performance	Container	57,075	58,992	D-28,000	85
Pioneer	Container	17,736	15,298	D-17,400	62/80
Producer	Container	23,764	25,206	D-32,000	74
Quality	Container	57,075	58,992	D-28,000	85
Raleigh Bay	Container	57,075	58,992	D-28,000	85
Tacoma	Container	20,965	20,833	D-22,540	87
Trader	Container	30,990	31,158	T-28,500	73/83
Value	Container	57,075	58,992	D-28,000	85
Voyager	Container	30,086	29,911	D-30,150	80/85

SUN TRANSPORT, INC. (SUN REFINING & MARKETING INC.)
P.O. Box 2224, Aston, PA 19014

Eastern Sun	Tanker	1,571	3,396	D-3,000	85
New York Sun	Tanker	19,500	34,400	D-14,200	80
Northern Sun	Tanker	1,533	2,654	D-1,900	80
Philadelphia Sun	Tanker	19,500	34,400	D-14,200	81
Texas Sun	Tanker	26,300	53,453	T-18,500	60

OWNER/OPERATOR Name of Ship	Type	GT	DWT	HP T=Turbine D=Diesel	Year Built/ Rebuilt
TEXACO MARINE SERVICES, INC. P.O. Drawer 1028, Port Arthur, TX 77641-1028					
Toledo Sun	Tanker	2,304	4,355	D-1,600	68
Tropic Sun	Tanker	20,177	34,700	T-13,600	57

Star Georgia	Tanker	16,514	25,156	T-13,600	64
Star Massachusetts	Tanker	16,515	19,364	T-13,600	63
Star Mississippi	Tanker	15,688	27,013	TE-7,000	44/64
Star Montana	Tanker	16,584	19,364	T-13,600	65
Star Oregon	Tanker	23,461	39,363	T-13,650	53/73
Star Rhode Island	Tanker	16,584	19,364	T-13,600	64
Valiant/Pennsylvania	ITB	194/12,591	28,500	D-7,780	81/80
Victory/Texas	ITB	194/12,591	28,500	D-7,780	81/80

TOSCO CORPORATION
P.O. Box 2401, 2401 Colorado Avenue, Suite 200, Santa Monica, CA 90406

Lion of California	Tanker	10,473	16,692	T-7,000	54
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TOTEM OCEAN TRAILER EXPRESS, INC.
500 Alexander Avenue, Tacoma, WA 98421

Great Land	RO/RO	17,527	18,115	T-30,000	75
Westward Venture	RO/RO	17,527	18,411	T-30,000	77

TRINIDAD CORPORATION
8182 Maryland Avenue, St. Louis, MO 63117

Admiralty Bay	Tanker	37,800	80,773	T-24,000	71
Aspen	Tanker	37,800	80,569	T-24,000	71
Glacier Bay	Tanker	38,400	80,968	T-24,000	70

UNION OIL COMPANY OF CALIFORNIA
911 Wilshire Boulevard, Los Angeles, CA 90017

Blue Ridge	Tanker	21,359	42,268	T-13,000	81
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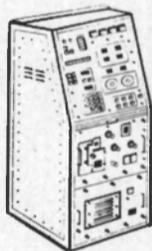
WATERMAN STEAMSHIP CORPORATION
120 Wall Street, New York, NY 10005

Major Stephen W. Pless	RO/RO-Container	29,091	25,073	T-30,000	83/85
Pfc. Eugene A. Obregon	RO/RO-Container	29,091	25,073	T-30,000	83/84
Robert E. Lee	LASH	32,269	40,921	T-32,000	74
Sam Houston	LASH	32,269	40,921	T-32,000	74
Sgt. Matej Kocak	RO/RO-Container	29,091	25,073	T-30,000	83/84
Stonewall Jackson	LASH	32,269	40,921	T-32,000	74

WEST COAST SHIPPING COMPANY
911 Wilshire Boulevard, Los Angeles, CA 90017

Coast Range	Tanker	21,257	39,990	T-13,000	81
Cornucopia	LPG/Tanker	21,688	21,717	T-13,600	58/78
Sensinena II	Tanker	35,634	71,459	T-18,200	71
Sierra Madre	Tanker	21,357	39,990	T-13,600	81

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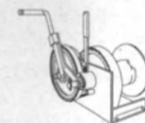
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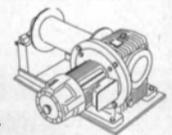
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Circle 211 on Reader Service Card

U.S. PARENT COMPANY FOREIGN FLAG SHIPS

(As of July 1, 1990)

PARENT COMPANY Direct Owner	Name of Ship	Class	GT / DWT	Year Flag Built	PARENT COMPANY Direct Owner	Name of Ship	Class	GT / DWT	Year Flag Built		
ALCOA STEAMSHIP CO. INC. Lib-Ore SS Co. Inc.	Marlin	Ore/Bulk/Oil	9,792/15,183	Lib. '77	Chevron International Ltd.	Chevron Ocean	Tanker	151,220/323,094	Lib. '74		
	Sentinel II	Bulk Carrier	34,353/47,503	Lib. '82	Chevron Zenith	Tanker	48,645/96,716	Lib. '72			
	Tarpon	Ore/Bulk/Oil	9,794/15,163	Lib. '77	Ocean Charters Corp.	D.L. Bowers	Tanker	71,080/152,383	Lib. '70		
	Pathfinder II	Bulk Carrier	34,353/47,560	Lib. '81	CHIQUITA BRANDS INTERNATIONAL	Chiquita King	Reefer	8,041/10,598	Bah. '80		
	Prospector II	Bulk Carrier	34,353/47,535	Lib. '82		Chiquita Queen	Reefer	8,041/10,600	Bah. '80		
AMERADA HESS CORP. Seal Island Shipping Corp. Serpentsea Corp. Swansea Corp.	Seal Island	Tanker	114,710/259,042	Lib. '73		Balboa Shipping Co.	Rio Ulua	Reefer	6,315/5,656	Hon. '80	
	Mt. Cabrite	Tanker	122,960/259,447	Lib. '71		Barrydale Ltd.	Barrydale	Reefer	6,513/5,818	Bri. '73	
	Saint Lucia	Tanker	122,960/259,447	Lib. '72		Bluestream Ltd.	Bluestream	Reefer	6,513/6,118	Bri. '73	
	AMOCO CORPORATION Amoco Congo Exploration Co. Amoco Ocean Tanker Co.	Enterprise I	Tanker	88,439/232,112	Lib. '73	Fleetway	Fleet Wave	Reefer	6,513/6,127	Bri. '72	
		Ocean Challenger	Tanker	24,584/39,729	Lib. '87	Skyrama Ltd.	Sky Clipper	Reefer	6,513/5,911	Bri. '72	
Ocean Conqueror		Tanker	24,584/39,729	Lib. '87	Telegraph Shipping Co. Ltd.	Cariban	Reefer	5,321/6,371	Bri. '83		
Ocean Explorer		Tanker	49,279/81,274	Lib. '88	CITIZENS TRUST CO. (Trustee)	Fulgur	Tanket	19,275/32,230	Lib. '74		
Ocean Leader		Tanker	49,279/81,274	Lib. '89		CONNECTICUT BANK & TRUST (Trustee)	Europe	Tanker	122,395/276,050	Lib. '75	
Ocean Navigator		Tanker	49,279/81,274	Lib. '88			Independence	Tanker	117,646/274,774	Lib. '76	
Ocean Victor		Tanker	50,169/81,283	Lib. '81			CONOCO INC. A.T. Sentinel Inc. Conoco Shipping Co.	Sentinel	Tanker	60,339/106,722	Lib. '86
Baltimore Sea		Tanker	38,715/79,314	Lib. '69				Constitution	Tanker	43,850/81,131	Lib. '78
Ocean Voyager		Tanker	35,315/72,347	Lib. '73	EQUILI COMPANY AND EQUITABLE LIFE			Kentucky	Tanker	42,175/79,996	Pan. '80
Texas City Sea		Tanker	39,246/78,696	Lib. '70		EQUILI COMPANY II U.S. Trust Co. of N.Y. (Trustee)		West Virginia	Tanker	42,175/81,279	Pan. '81
Whiting Sea	Tanker	76,472/155,703	Lib. '75	EQUITABLE LIFE ASSURANCE SOC.				John A. McCone	Tanker	71,080/152,404	Lib. '69
Yorktown Sea	Tanker	38,714/79,313	Lib. '69				EXXON CORPORATION Esso Australia Esso Finland Esso Int'l. Shipping Schiedam	Esso Gippsland	Tanker	15,579/24,489	Aus. '72
BANK OF CALIFORNIA N.A. (Trustee)	C.W. Kitto	Tanker	118,218/268,348					Lib. '74	Esso Finlandia	Chem. Tanker	4,370/6,954
	Charles Pigott	Tanker	118,221/268,373		Lib. '73			Esso Africa	Tanker	133,969/274,467	Bah. '75
	Chevron Copenhagen	Tanker	118,179/268,240		Lib. '74	Esso Albany		Tanker	12,806/22,678	Lib. '73	
	Chevron Feluy	Tanker	118,197/268,432	Lib. '73	Esso Atlantic	Tanker		247,160/516,895	Bri. '77		
	Chevron Nagasaki	Tanker	118,147/268,244	Lib. '74	Esso Bahamas	Tanker	123,126/256,715	Bah. '74			
	Kenneth T. Derr	Tanker	21,582/35,587	Bah. '82	Esso Bangkok	Tanker	12,994/21,414	Lib. '68			
	CSX CORPORATION Intersea Operation Inc. (Bahamas)	Sea Adventure	Container	17,618/15,417	Bah. '63	Esso Bayonne	Tanker	17,211/29,634	Lib. '74		
		Sea Leader	Container	17,618/15,417	Bah. '62	Esso Bayway	Tanker	31,677/50,915	Bah. '78		
		Sea Pioneer	Container	17,618/15,417	Bah. '62	Esso Bermuda	Tanker	123,126/256,715	Bah. '74		
		Marine RO-RO Feedships Corp.	Sea Lark	Container	8,654/12,085	Lib. '84	Esso Bombay	Tanker	12,994/21,452	Bah. '68	
Sea Link			Container	8,654/12,083	Lib. '83	Esso Caribbean	Tanker	218,447/456,368	Bri. '76		
Sea Link			Container	8,635/12,066	Pan. '83	Esso Demetia	Tanker	123,375/258,979	Bri. '73		
Seaward Bay			Container	8,635/12,067	Pan. '83	Esso Freeport	Tanker	122,967/256,712	Bah. '74		
Shelly Bay			Container	10,381/13,101	Sin. '78	Esso Geneva	Tanker	149,608/307,235	Bri. '75		
Sandy Steamship Co. SA Shelly Bay Ltd. World Feedship Inc.		Sea Legend	Container	10,382/13,101	Sin. '78	Esso Guatemala	Tanker	17,218/29,364	Lib. '73		
		Sea Lotus	Container	10,382/13,101	Sin. '78	Esso Hawaii	Tanker	139,150/283,276	Bri. '75		
	World Lynx	Container	10,385/13,562	Lib. '79	Esso Honolulu	Tanker	139,150/283,399	Bah. '74			
	CARNIVAL CRUISE LINES INC. Carnival Cruise Lines Inc. Carnival Cruise Lines Inc. Celebration Cruises Inc. Fairweather Corp. Festivale Maritime Corp. Jubilee Cruises Corp. Sunbury Assets Inc. Tropicale Cruise Inc. Hal Shipping Ltd. Holland America Line Inc. Holland America Tours N.V. Holland America Tours N.V. Wind Spirit Ltd. Windstar Cruises I Ltd. Windstar Sail Cruises Ltd.	Fantasy	Passenger	70,367/6,889	Lib. '90	Esso Kaohsiung	Tanker	54,537/91,829	Bah. '83		
		Mardi Gras	Passenger	18,261/9,551	Bah. '61	Esso Kawasaki	Tanker	149,608/307,432	Bri. '74		
Celebration		Passenger	47,262/6,405	Lib. '87	Esso Mediterranean	Tanker	218,447/457,062	Bri. '77			
Carnivale		Passenger	18,953/8,912	Bah. '56	Esso Mexico	Tanker	54,563/91,741	Bah. '82			
Festivale		Passenger	26,632/16,604	Bah. '61	Esso Nassau	Tanker	54,537/91,601	Bah. '82			
Jubilee		Passenger	47,262/6,453	Lib. '86	Esso Pacific	Tanker	247,160/516,423	Bri. '77			
Holiday		Passenger	46,052/7,186	Bah. '85	Esso Palm Beach	Tanker	31,677/50,801	Bah. '78			
Tropicale		Passenger	22,919/6,654	Lib. '81	Esso Providence	Tanker	12,536/19,683	Lib. '74			
Westerdam		Passenger	53,872/5,157	Bah. '86	Esso Puerto Rico	Tanker	21,961/38,721	Bah. '75			
Rotterdam		Passenger	37,783/7,801	Net. '59	Esso St. Petersburg	Tanker	12,537/22,691	Lib. '74			
Nieuw Amsterdam	Passenger	33,930/4,217	Net. '83	Esso Westernport	LPG Tanker	57,830/66,769	Bah. '77				
Noordam	Passenger	33,930/4,243	Net. '84	Esso Coral Gables	Tanker	19,568/38,691	Sin. '75				
Wind Spirit	Passenger	5,736/847	Bah. '88	Esso Jurong	Tanker	3,266/5,200	Sin. '81				
Wind Star	Passenger	5,703/922	Bah. '86	Esso Melbourne	Tanker	17,829/28,963	Sin. '74				
Wind Song	Passenger	5,703/920	Bah. '87	Esso Orient	LPG Tanker	50,235/99,980	Sin. '74				
CASTLE AND COOKE INC. OCP (Atlantic) Ltd.	Tropical Estoril	Reefer	6,882/9,735	Lib. '74	Esso Port Dickson	Tanker	12,994/21,117	Sin. '69			
	Tropical Sintra	Reefer	6,881/9,736	Lib. '74	Esso Yokohama	Tanker	12,994/21,106	Sin. '69			
	Limon	Reefer	6,709/7,244	Lib. '68	Esso Aberdeen	Tanker	58,273/112,834	UK '67			
	Tropical Queen	Reefer	4,662/5,270	Lib. '68	Esso Avon	Bitumen Tank.	1,599/3,134	UK '81			
	Tropical Sun	Reefer	4,662/5,384	Lib. '68	Esso Clyde	Tanker	12,317/20,776	UK '72			
Tropical Shipping Italiana SPA	Dole California	Container	16,488/11,613	Ita. '88	Esso Fawley	Tanker	11,064/18,377	UK '67			
	Dole Equador	Container	16,488/11,613	Ita. '88	Esso Fife	Tanker	75,536/125,457	UK '77			
CHAGENTS INC. Sarah Linden Shipping L.P. Rachael V Shipping L.P.	Sarah	Bulk Carrier	11,044/19,662	Lib. '71	Esso Inverness	Tanker	2,178/3,419	UK '71			
	Rachael V	Freighter	11,702/19,017	Lib. '72	Esso Mersey	Tanker	12,323/20,510	UK '72			
CHEVRON CORPORATION Chevron Tankers (Bermuda) Ltd.	John Young	Tanker	89,500/150,000	Lib. '90	Esso Milford Haven	Tanker	10,902/18,377	UK '68			
	Chevron Edinburgh	Tanker	118,179/268,333	Bri. '74	Esso Penzance	Tanker	2,178/3,402	UK '71			
	Chevron No. America	Tanker	207,897/412,616	Bri. '76	Esso Severn	Tanker	12,316/20,776	UK '75			
	Chevron So. America	Tanker	207,987/413,163	Bri. '76	Esso Tees	Tanker	12,683/21,116	UK '70			
	Chevron Transport Corp.	Alden W. Clausen	Tanker	21,582/35,587	Lib. '81	Esso Tenby	Tanker	2,170/3,429	UK '70		
		Carla A. Hills	Tanker	21,582/35,596	Lib. '81	Esso Slagen	Tanker	11,059/18,797	Nor. '68		
		Charles B. Renfrew	Tanker	44,840/78,236	Bah. '88	Esso Bahia Blanca	Tanker	12,806/22,861	Arg. '74		
		Chevron Antwerp	Tanker	122,627/276,796	Lib. '75	Esso Formosa	Tanker	1,944/4,684	Arg. '70		
		Chevron Burnaby	Tanker	122,627/276,775	Lib. '75	Esso Parana	Tanker	1,007/2,568	Arg. '60		
		Chevron Horizon	Tanker	60,491/123,969	Lib. '74	Esso Rio Grande	Tanker	11,503/15,450	Arg. '82		
		Chevron London	Tanker	96,523/151,894	Lib. '72	Esso Rio Negro	Tanker	19,568/38,711	Arg. '75		
		Chevron Meteor	Tanker	60,886/127,505	Lib. '77	Esso San Lorenzo	Tanker	1,944/4,850	Arg. '70		
		Chevron Pacific	Tanker	21,583/35,596	Lib. '83	Esso San Sebastian	Tanker	21,619/38,987	Arg. '76		
		Chevron Perth	Tanker	122,627/276,837	Lib. '75	Esso Santa Cruz	Tanker	21,619/38,987	Arg. '75		
	Chevron Sky	Tanker	77,588/154,932	Lib. '76	Esso Senpaku K.K. Esso Soc. Anon. Francaise	Esso Yoshino Maru	Tanker	1,360/2,962	Jap. '84		
	Chevron Star	Tanker	76,547/156,313	Lib. '77		Esso Languedoc	Tanker	126,186/256,726	Fra. '73		
	Chevron Stream	Tanker	61,172/130,348	Lib. '75		Esso Normandie	Tanker	137,578/274,333	Fra. '74		
	Chevron Sun	Tanker	76,547/156,299	Lib. '77		Esso Parentis	Tanker	13,544/22,697	Fra. '73		
	David Packard	Tanker	196,334/413,119	Lib. '77		Esso Picardie	Tanker	137,578/274,333	Fra. '76		
	Geo. H. Weyerhaeuser	Tanker	21,582/35,597	Bah. '81		Esso Port Jerome	Tanker	13,544/22,726	Fra. '72		
Kenneth E. Hill	Tanker	43,428/81,273	Bah. '79	FAIRFIELD-MAXWELL LTD. Eurus Maritime S.A.		Gafu	Freighter	5,548/7,036	Pan. '87		
R. Hal Dean	Tanker	44,840/78,656	Bah. '88			Keifu	Chem. Tanker	7,178/12,742	Pan. '87		
Samuel H. Armacost	Tanker	21,582/35,607	Bah. '82								
William E. Mussman	Tanker	43,428/81,273	Lib. '79								

U.S. Parent Company, Foreign - Flag Merchant Ships
(As of July 1, 1990)

Flag of Registry	TOTAL			FREIGHTERS*			BULK CARRIERS			TANKERS		
	No. Ships	Gross Tons	Deadweight Tons	No. Ships	Gross Tons	Deadweight Tons	No. Ships	Gross Tons	Deadweight Tons	No. Ships	Gross Tons	Deadweight Tons
	339	15,232,492	28,589,238	66	982,562	643,309	39	1,361,876	2,493,032	234	12,888,054	25,452,897
Liberia	160	8,071,913	15,497,987	21	403,904	314,800	21	657,150	1,194,081	118	7,010,859	13,989,106
British Dep. Ter.	28	2,921,083	5,841,622	5	31,373	30,345	9	506,851	942,766	14	2,382,859	4,868,511
Bahamas	41	1,847,026	3,128,391	15	286,851	128,638	1	71,208	128,320	25	1,488,967	2,871,433
France	7	709,920	1,402,261	-	-	-	-	-	-	7	709,920	1,402,261
Panama	15	384,281	744,038	6	37,410	50,784	2	19,233	36,126	7	327,638	657,128
United Kingdom	21	502,883	840,901	-	-	-	3	38,380	55,703	18	464,503	785,198
Singapore	9	139,659	244,784	2	20,763	26,202	-	-	-	7	118,896	218,582
Australia	3	126,409	200,899	-	-	-	-	-	-	3	126,409	200,899
Argentina	8	92,010	167,098	-	-	-	-	-	-	8	92,010	167,098
Netherlands	5	171,397	146,709	3	105,643	16,261	2	65,754	130,448	-	-	-
Norway	6	86,147	114,923	2	19,950	1,620	-	-	-	4	66,197	113,303
Isle of Man	19	54,010	95,360	-	-	-	-	-	-	19	54,010	95,360
Malta	1	32,759	60,763	-	-	-	-	-	-	1	32,759	60,763
St. Vincent	8	27,855	40,053	7	24,555	34,465	1	3,300	5,588	-	-	-
Italy	2	32,976	23,226	2	32,976	23,226	-	-	-	-	-	-
Honduras	3	19,137	16,968	3	19,137	16,968	-	-	-	-	-	-
West Germany	1	7,297	13,339	-	-	-	-	-	-	1	7,297	13,339
Finland	1	4,370	6,954	-	-	-	-	-	-	1	4,370	6,954
Japan	1	1,360	2,962	-	-	-	-	-	-	1	1,360	2,962

* Includes 20 passenger ships.

U.S. Parent Company Foreign Flag Merchant Ships Under Construction or On Order
(As of July 1, 1990)

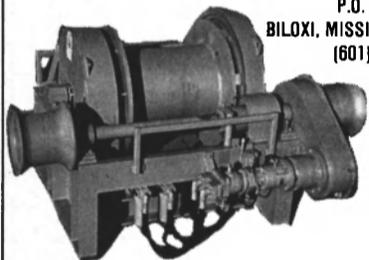
Flag of Registry	TOTAL			FREIGHTERS*			BULK & OIL CARRIERS			TANKERS		
	No. Ships	Gross Tons	Deadweight Tons	No. Ships	Gross Tons	Deadweight Tons	No. Ships	Gross Tons	Deadweight Tons	No. Ships	Gross Tons	Deadweight Tons
	13	731,000	1,061,650	5	220,000	44,000	-	-	-	8	511,000	1,017,650
Liberia	7	495,000	985,900	-	-	-	-	-	-	7	495,000	985,900
Panama	5	220,000	44,000	5	220,000	44,000	-	-	-	-	-	-
Australia	1	16,000	31,750	-	-	-	-	-	-	1	16,000	31,750

* Includes five passenger vessels
Source: Maritime Administration



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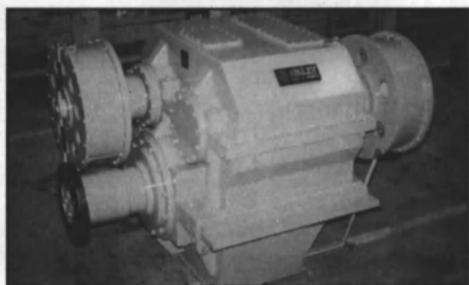
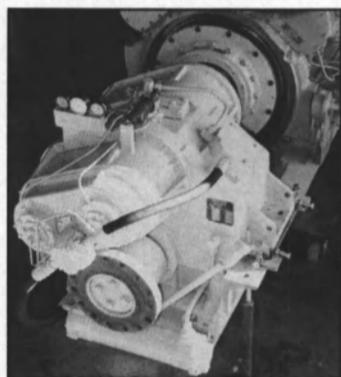
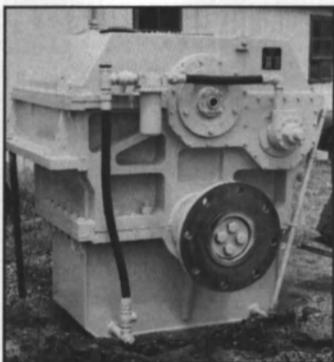
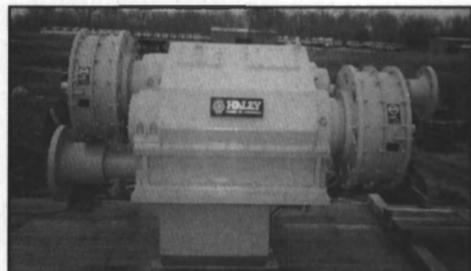
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PARENT COMPANY Direct Owner	Name of Ship	Class	GT / DWT	Year Flag Built
Great American Lines Inc.	Oahu Rex	Reefer	4,693/6,553	Pan. '86
	Otaru Re	Reefer	4,963/6,530	Pan. '86
	Shofu	Reefer	4,936/6,532	Pan. '86
	Sunbelt Dixie	Car Carrier	11,447/12,730	Lib. '78
FIRESTONE TIRE AND RUBBER CO. L&C II Ltd. L&C III Ltd.	Harbel Cutlass	Freighter	8,753/11,733	Lib. '80
	Harbel Tapper	Freighter	8,148/11,683	Lib. '81
GREYHOUND CORPORATION Merchant Ships Trustees Ltd. Noel Shipping Ltd. Premier Cruise Line Ltd.	Starship Atlantic	Passenger	19,337/5,473	Lib. '82
	Starship Majestic	Passenger	17,503/2,352	Bah. '72
	Starship Oceanic	Passenger	19,500/8,738	Bah. '65

PARENT COMPANY Direct Owner	Name of Ship	Class	GT / DWT	Year Flag Built	
INTERNATIONAL SHIPHOLDING CORP.					
Lash Carriers Inc.	Rhine Forest	Barge Carrier	31,386/44,799	Lib. '72	
	Acadia Forest	Barge Carrier	33,231/49,835	Lib. '69	
	Atlantic Forest	Barge Carrier	33,221/49,858	Lib. '70	
	Spruce	Barge Carrier	1,380/8,172	Lib. '75	
KAISER CEMENT CORPORATION					
Norman Shipping Inc.	Norman	Cement Carr.	3,771/5,939	Pan. '68	
LEVIN ENTERPRISES					
Hana Maui Corp.	Hana Maui	Bulk Carrier	15,742/27,112	Lib. '71	
LOTUS TRANSPORTATION					
	Fujikawa	Tanker	106,274/234,925	Lib. '75	
MANUBANK LEASING CORP.					
	Rio Sulaco	Reefer	6,417/5,656	Hon. '78	
MANUFACTURERS HANOVER TRUST OF CAL. (Trustee)					
	Georgia S.	Bulk Carrier	15,462/30,187	Pan. '81	
MANUFACTURERS HANOVER TRUST OF N.Y. (Trustee)					
	Star Africa	Tanker	126,974/274,597	Bah. '74	
	Texaco Baltic	Tanker	18,381/31,502	Nor. '76	
	Texaco Bergen	Tanker	18,379/31,502	Nor. '77	
	Texaco Stockholm	Tanker	18,378/31,502	Nor. '77	
MARINE TRANSPORT LINES INC.					
Oswego Chemical Carriers Corp.					
	Savonetta	LPG Tanker	9,942/10,744	Lib. '64	
	M.P. Grace	LPG Tanker	13,483/15,414	Lib. '67	
	William R. Grace	LPG Tanker	9,954/10,750	Lib. '64	
Rowbotham Tankships Ltd.					
	Astraman	Chem. Tanker	1,597/3,202	Isl. '73	
	Bridgeman	Tanker	3,701/6,310	Isl. '72	
	Cableman	Tanker	4,916/8,496	Isl. '80	
	Eastgate	Tanker	1,599/3,415	Isl. '79	
	Echoman	Chem. Tanker	3,759/6,125	Isl. '82	
	Guidesman	Tanker	1,421/2,162	Isl. '80	
	Helmsman	Tanker	3,705/6,165	Isl. '72	
	Humbergate	Tanker	1,579/2,893	Isl. '68	
	Northgate	Tanker	1,599/3,290	Isl. '80	
	Oarsman	Tanker	1,550/2,547	Isl. '79	
	Orionman	Tanker	3,623/6,176	Isl. '75	
	Pointsman	Tanker	2,886/4,694	Isl. '70	
	Polarisman	Chem. Tanker	1,597/3,202	Isl. '73	
	Quarterman	Tanker	1,226/2,135	Isl. '73	
	River Shannon	Tanker	1,567/3,232	Isl. '70	
	Tankerman	Tanker	5,881/10,500	Isl. '83	
	Tillerman	Tanker	7,308/12,800	Isl. '75	
	Westgate	Tanker	1,599/3,368	Isl. '79	
	Wheelsman	Tanker	2,897/4,648	Isl. '67	
MARU SHIPPING CO. INC.					
	Billie Fay	Bulk Carrier	17,959/30,853	Lib. '77	
MOBIL OIL CORPORATION					
Matco Tankers (UK) Ltd.					
	Matco Clyde	Tanker	54,172/81,944	UK '82	
Mobil Oil Australia Ltd.					
	Mobil Australis	Tanker	16,890/27,175	Aus. '72	
Mobil Oil Francaise					
	Athos	Tanker	140,745/276,221	Fra. '74	
	D'Artagnan	Tanker	140,745/275,225	Fra. '74	
Mobil Oil Reederie GMBH					
	Mobil Jade	Tanker	7,297/13,339	WGe. '75	
Mobil Oil Singapore PTE Ltd.					
	Mobil Singapore	Tanker	2,010/3,525	Sin. '79	
Mobil Overseas Shipping (Bermuda)					
	Mobil Acme	Tanker	72,540/136,304	Bri. '71	
	Mobil Falcon	Tanker	144,209/253,997	Bri. '75	
	Mobil Petrel	Tanker	139,092/280,428	Bri. '73	
Mobil Producing North Sea Ltd.					
	Matco Avon	Tanker	43,622/78,943	UK '64	
	Matco Thames	Tanker	51,472/89,398	UK '76	
Mobil Shipping & Transport Co.					
	Conastoga	Tanker	17,506/29,931	Lib. '72	
	Corsicana	Tanker	17,505/29,960	Lib. '73	
	Mobil Aladdin	Tanker	68,502/140,803	Lib. '74	
	Mobil Astral	Tanker	60,946/127,505	Lib. '75	
	Mobil Challenge	Chem. Tanker	22,587/39,371	Lib. '83	
	Mobil Courage	Chem. Tanker	22,587/39,776	Lib. '83	
	Mobil Enterprise	Tanker	19,580/38,452	Lib. '83	
	Mobil Flinders	Tanker	93,940/149,235	Aus. '82	
	Mobil Kestrel	Tanker	104,362/227,756	Lib. '71	
	Mobil Marketer	Tanker	18,258/31,102	Lib. '74	
	Mobil Producer	Tanker	18,258/31,102	Lib. '74	
	Mobil Swift	Tanker	119,969/272,494	Lib. '73	
	Mobil Valiant	Tanker	41,135/81,282	Lib. '82	
	Owl Transporter	Chem. Tanker	22,587/39,742	Lib. '83	
	Petros	Chem. Tanker	22,589/39,724	Lib. '84	
	Sacona	Tanker	19,580/33,187	Lib. '81	
	Samoset	Tanker	19,580/33,235	Lib. '82	
	Satucket	Tanker	16,861/30,397	Lib. '71	
	Saudi Glory	Tanker	122,297/276,368	Lib. '74	
	Saudi Splendour	Tanker	125,394/280,578	Lib. '75	
	Sequoia	Tanker	18,843/32,590	Lib. '73	
	Wabasha	Tanker	50,222/81,278	Lib. '75	
	Wapello	Tanker	41,135/81,283	Lib. '82	
	Mobil Lubchem	Chem. Tanker	2,080/3,310	UK '73	
Mobil Shipping Co. Ltd.					
MORTON-THIOLKOL INC.					
	Inagua Transports Inc.	Cecile Erickson	Salt Carrier	3,300/5,588	StV. '57
NICOR INC.					
Birdsall Shipping S.A.					
	Tropic Jade	Ro-Ro	1,813/2,496	StV. '78	
	Tropic Key	Ro-Ro	1,786/2,523	StV. '80	
	Tropic Lure	Freighter	1,795/2,563	StV. '83	
	Tropic Mist	Freighter	1,795/2,563	StV. '83	
Tropical Shipping & Constr. Co. Ltd.					
	Tropic Palm	Ro-Ro	1,471/4,734	StV. '78	
	Tropic Quest	Ro-Ro	7,948/9,793	StV. '83	
	Tropic Reign	Ro-Ro	7,947/9,793	StV. '84	
OCCIDENTAL PETROLEUM CORP.					
Oxy TCI Inc.					
	Armand Hammer	Chem. Carrier	32,759/60,763	Mai. '67	
OMI CORPORATION					
Connecticut Transport Inc.					
	Ocean Spirit	Tanker	39,534/55,000	Lib. '82	
Ebro Transport Inc.					
	Ebro	Ore/Bulk/Oil	39,167/71,882	Lib. '78	
Nile Transport Inc.					
	Nile	Tanker	33,932/64,716	Lib. '81	

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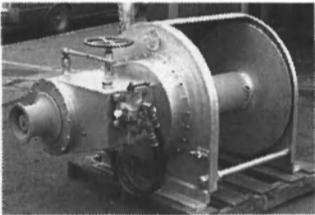


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PARENT COMPANY Direct Owner	Name of Ship	Class	GT / DWT	Year Flag Built	PARENT COMPANY Direct Owner	Name of Ship	Class	GT / DWT	Year Flag Built
Sokolica Transport Inc.	Sokolica	Tanker	76,883/145,648	Lib. '75	Third Products Tankers Inc.	Uranus	Tanker	22,946/39,451	Lib. '88
Tagus Transport Inc.	General	LPG Tanker	42,461/49,882	Lib. '75	Third United Shipping Corp.	Eastern Lion	Tanker	126,796/269,164	Lib. '73
Volga Transport Inc.	Volga	Tanker	33,932/64,652	Lib. '81	Tiber Carbulk Carriers Inc.	Argus Explorers	Bulk/Car Carr.	20,513/33,047	Lib. '75
OVERSEAS SHIPHOLDING GROUP					Timor Navigation Ltd.	Northern Light	Bulk Carrier	31,007/65,592	Lib. '81
Amity Products Carriers Inc.	Exemplar	Bulk/Ore	62,200/122,200	Bri. '90	Trader Shipping Corp.	Vega	Ore Carrier	31,814/66,136	Lib. '73
Anglomar Shipping Co. Ltd.	Julie N.	Tanker	18,965/29,994	Lib. '82	Vega Tanker Corp.	Venus	Tanker	22,972/39,710	Lib. '89
Ania Tanker Corp.	Tropical Lion	Tanker	122,960/256,387	Lib. '72	Venus Tankers SA	Venus V	Tanker	42,048/79,999	Lib. '81
Atlantia Tanker Corp.	Ania	Tanker	78,244/135,134	Lib. '89	PHILLIPS PETROLEUM CO.				
Canopus Tankers Inc.	Atlantia	Tanker	42,155/81,278	Lib. '79	Philtankers Inc.	Phillips Arkansas	Tanker	26,974/54,026	Lib. '80
Chrismir Shipping Corp.	Canopus	Tanker	18,402/31,000	Lib. '81		Phillips Mexico	Tanker	26,973/54,057	Lib. '79
Colombia Tanker Corp.	Chrismir	Tanker	31,243/61,203	Lib. '80		Phillips Oklahoma	Tanker	26,973/54,044	Lib. '79
Commonwealth Shipping Co. Ltd.	Columbia	Tanker	144,139/258,076	Lib. '89		Phillips Venezuela	Tanker	26,973/54,049	Lib. '79
Concord Tanker SA	Ulla	Bulk Carrier	17,228/29,399	Bri. '85	PHILLIPS PETROLEUM / USX-MARATHON				
Conti-OSG Associates III	Concordia C.	Tanker	61,111/132,594	Pan. '76	Arctic LNG Transportation Co.	Arctic Tokyo	LNG Tank.	44,089/32,878	Lib. '69
Conti-OSG Associates IV	Continental Reliance	Ore Carrier	30,151/65,224	Net. '83	Polar LNG Shipping Corp.	Polar Alaska	LNG Tank.	44,089/32,878	Lib. '69
Corrientes Ore Carriers Ltd.	Continental Spirit	Ore Carrier	35,603/65,224	Net. '83	SEABOURN CRUISE LINE A/S				
Delphina Tanker Corp.	Garden Green	Ore/Oil	81,263/169,140	Lib. '73	K/S Seabourn Cruise Line	Seabourn Spirit	Passenger	9,975/820	Nor. '89
Diane Tanker Corp.	Delphina	Tanker	22,972/39,674	Lib. '89		Seabourn Pride	Passenger	9,975/800	Nor. '88
Edinburgh Bulk Carriers Inc.	Diane	Tanker	38,241/64,140	Lib. '87	TEXACO INC.				
Enterprise Shipping Co. Ltd.	Endeavor	Bulk Carrier	64,552/122,933	Bri. '75	Texaco Panama Inc.	Star Alabama	Tanker	63,234/135,235	Bah. '71
Excelsior Bulk Carriers Ltd.	Enterprise	Bulk Carrier	64,741/117,955	Bri. '73		Star Bogota	Tanker	13,623/22,455	Bah. '60
First Aframax Tanker Corp.	Excelsior	Bulk/Ore	64,141/120,270	Bri. '90		Star Delaware	Ore/Bulk/Oil	71,208/128,320	Bah. '79
First Pacific Corp. and Second Pacific Corp.	Beryl	Tanker	52,518/84,406	Lib. '86		Star Houston	Tanker	65,287/136,100	Lib. '75
First Panamax Bulkcarriers Inc.	Pacific Hunter	Tanker	18,736/32,109	Lib. '79		Star Kansas	Tanker	55,973/115,826	Bah. '76
First Product Tankers SA	Meridian Sky	Bulk Carrier	36,042/64,293	Lib. '89		Star Louisiana	Tanker	55,973/124,987	Bah. '75
First Shipco Inc.	Lucy	Tanker	36,512/64,000	Lib. '86		Star Skandinavia	Tanker	13,222/21,540	Bah. '62
First United Shipping Corp.	Continental Friendship	Bulk Carrier	33,200/61,270	Lib. '77		Star Tulsa	Tanker	64,961/131,350	Lib. '71
Fourth Products Corp.	Western Lion	Tanker	126,795/269,117	Lib. '74		Texaco So. America	Tanker	130,959/268,535	Lib. '76
Glasgow Bulk Carriers Co. Ltd.	Neptune	Tanker	22,946/39,171	Lib. '89		Taboga	Tanker	2,978/5,723	Pan. '71
Intercont'l Coal Transport Ltd.	Trudy	Bulk Carrier	17,228/29,432	Bri. '85		Star Westminister	Tanker	49,809/79,999	UK '81
International Seaways Inc.	Equinox	Ore Carrier	76,449/138,820	Bri. '82		Texaco Windsor	Tanker	49,809/79,997	UK '80
Interocean Tankers Corp.	Continental Carrier	Bulk Carrier	14,925/26,450	Lib. '77	TEXACO COMMERCE BANK N.A. (Trustee)				
Jostelle Shipping Co. Ltd.	Southern Lion	Tanker	126,850/269,085	Lib. '75		Star Japan	Tanker	129,973/263,516	Pan. '75
Kaigai Shipping Corp.	Jostelle	Bulk Carrier	63,863/122,970	Bri. '75	USG CORPORATION				
Loire Carbulk Carriers Inc.	Jarah	Ore/Oil	82,786/164,990	Lib. '74	Gypsum Transportation Ltd.	A.V. Kastner	Bulk Carrier	12,702/19,075	UK '87
Marina Tanker Corp.	Argus Traveler	Bulk/Car Carr.	20,515/33,013	Lib. '75		Gypsum Baron	Bulk Carrier	12,839/18,314	UK '76
Matilde Tanker Corp.	Mary Ann	Tanker	38,241/64,239	Lib. '86		Gypsum King	Bulk Carrier	12,839/18,314	UK '75
Oleron Tanker SA	Matilde	Tanker	78,344/135,134	Lib. '89	U.S. TRUST CO. OF N.Y. (Trustee)				
Olympia Tanker Corp.	Vesta II	Tanker	42,048/81,278	Pan. '80		Fossarina	Tanker	19,275/32,230	Lib. '76
Overseas Coal Transport Ltd.	Olympia	Tanker	144,139/258,076	Lib. '90		Fossarus	Tanker	19,275/32,230	Lib. '76
Pluto Tankers Inc.	Esplanade	Ore Carrier	76,449/138,787	Bri. '82	WELLS FARGO LEASING CORPORATION				
Saturn Bulk Carriers Inc.	Pluto	Tanker	18,402/31,303	Lib. '81		Rio Cuyamel	Reefer	6,405/5,656	Hon. '78
Second Aframax Tanker Corp.	Saturn	Bulk Carrier	31,243/62,212	Lib. '80					
Second Panamax Bulkcarriers Inc.	Eliane	Tanker	52,524/84,323	Lib. '87					
Second Products Tankers Inc.	Caribbean Sky	Bulk Carrier	36,042/64,282	Lib. '89					
Second United Shipping Corp.	Suzanne	Tanker	36,512/64,000	Lib. '86					
	Northern Lion	Tanker	126,851/269,117	Lib. '74					

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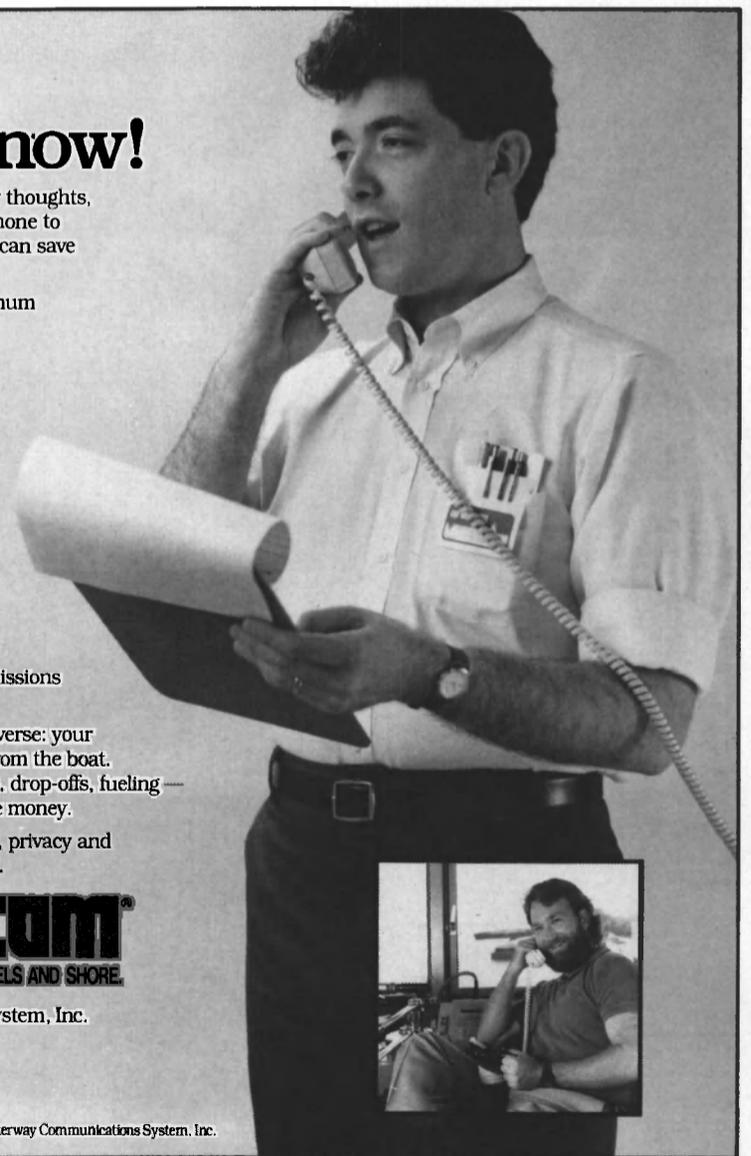
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Coastdesign Signs Worldwide Exclusive Deal With MastSystems

Coastdesign Inc. of Surrey, B.C., Canada, recently announced the addition of MastSystem4 (Ship Stability Program) to its growing pool of

software products. Coastdesign Inc., based in the Pacific Northwest develops and markets over 10 different software products, all aimed toward the ship design and building industry.

MastSystem4 was developed by MastSystems Ltd., a U.K.-based company specializing in ship design software for the last 10 years. Its

previous products have operated on Hewlett Packard Computers using proprietary HP and Unix Operating Systems. Two and a half years were spent writing the two megabytes of code that made up MastSystem4 designed for the DOS Operating System to run on the PC compatible range of computers.

For further information and free

literature on software products marketed by Coastdesign Inc.,
Circle 34 on Reader Service Card

Diamond Cruise To Order Second Twin-Hull Cruise Ship From Rauma Yards

The board of Diamond Cruise Ltd. has informed Rauma Yards of its intention to order a sister ship to the SSC Radisson Diamond twin-hull cruise ship currently under construction for about \$125 million at Rauma-Repola in Finland. The sister cruise ship is planned for completion in the spring of 1993. The contract is worth almost FIM 600 million (about \$150,000,000), and it further includes an option or order reservation for a third ship.

The Radisson Diamond, which will carry up to 354 passengers and will be one of the largest passenger swath (small waterplane area twin hull) vessels in the world, is set for launch in May 1992.

AT&T Completes Major Milestone In Navy's P-3C Update IV Program

AT&T recently announced the successful completion of a major milestone in the U.S. Navy's P-3C Update IV program.

During a demonstration at Bell Laboratories in Whippany, N.J., AT&T's SEM-E EMSP simultaneously processed 54 channels of Full-band DIFAR sonobuoy data—meeting the Navy's goal and exceeding its minimum threshold by a full two-thirds.

EMSP is the Navy's AN/UYS-2 standard signal processor. As the first true open-architecture, data-flow computer, it is critical to the next generation of acoustic antisubmarine warfare systems.

The demonstration of 54-channel capability took place during integration testing of a P-3C application program developed by AT&T under subcontract to Boeing. It was performed on a machine configured to include seven Arithmetic Processors, six Global Memory SEMs, and a 64-channel Input Signal Conditioner.

The capability to process 54 sonobuoy channels meets a major requirement of the P-3C weapon system. Update IV will replace the patrol aircraft's current avionics suite, enhancing its antisubmarine capabilities with a more than 10-fold increase in tactical capability.

"This demonstration of EMSP's throughput capabilities represents a major milestone," said **Curt Weaver**, director of AT&T's Navy Systems marketing. "What we promised to Update IV in 1987 has been delivered—a development program that's on time and on budget... deliveries that have met customer needs... and performance that meets Update IV's goals."

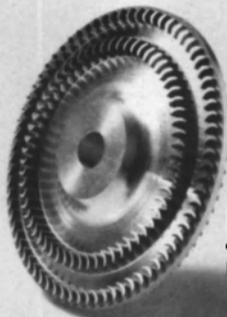
For further information and free literature from AT&T,

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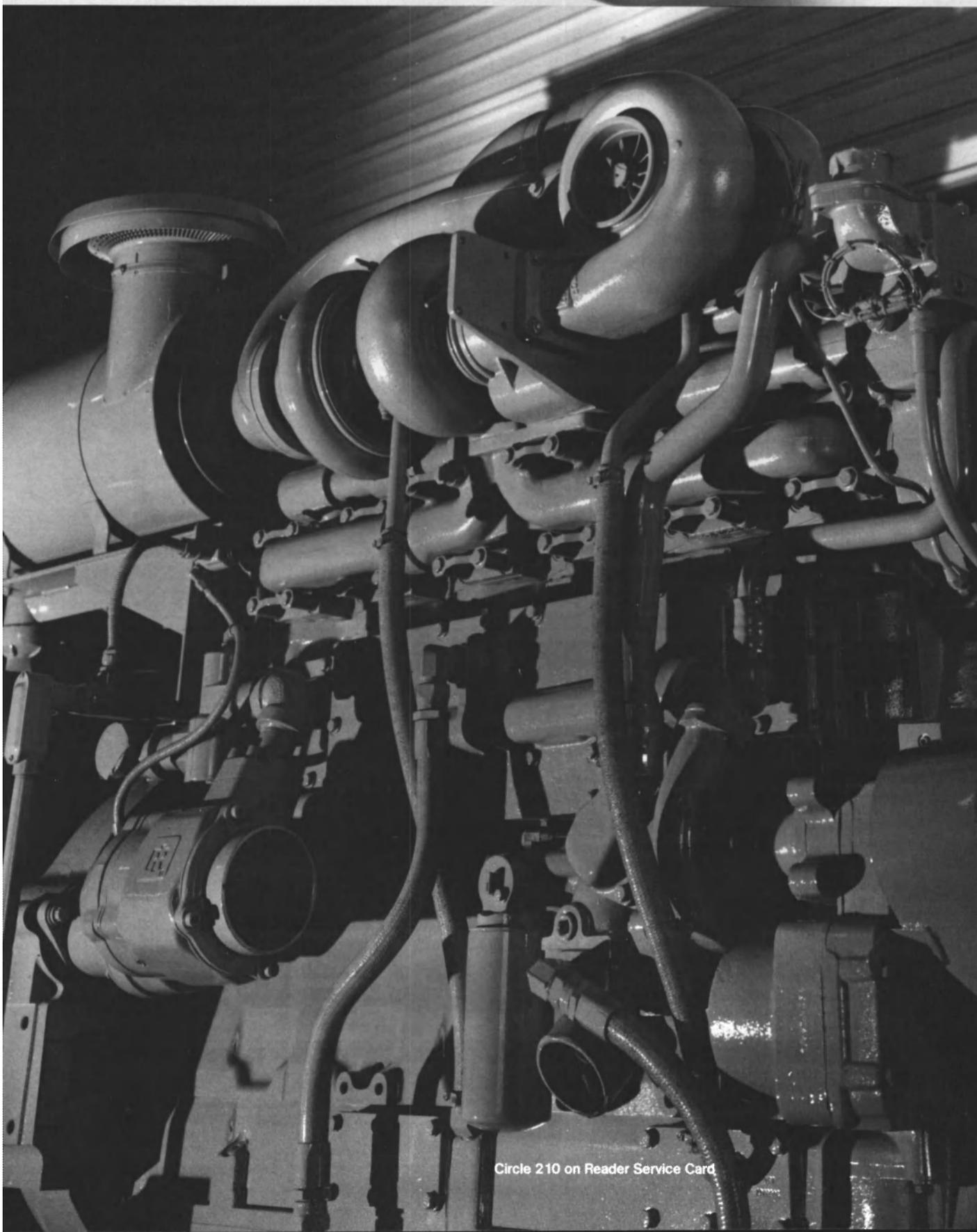
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Maritime Reporter/Engineering News

Call For Papers Issued For ASNE Day 1992

A call for papers has been issued for ASNE Day 1992, to be held April 30-May 1, 1992, at the Omni Shoreham Hotel, Washington, D.C. The theme of the meeting is "The Naval Engineer's Response to World Change."

Original unclassified papers on all naval engineering-related subjects are welcome, including papers from the academic, research and development, design, production, operation and support communities.

Possible topics include but are not limited to: battle force engineering; combat systems; logistics; acquisition management; maintenance; quality management; materials/composites; aviation and space systems; artificial intelligence; communications; submersibles; salvage; sealift; directed energy effects; propulsion innovations; ship design; auxiliary systems; high performance craft; environmental engineering; electronics design/production; electromagnetic engineering; marine engineering; ship maintenance; and acoustics.

A one-page abstract should be submitted prior to July 1, 1991, including the author's name, address, phone number and paper title on the page. Complete drafts are due prior to September 1991.

All abstracts and questions should be sent to Capt. **James E. Grabb**, USCG (ret.), ASNE Day Papers 1992, 1452 Duke Street, Alexandria, Va. 22314-3458, phone (703) 836-6727.

Coast Engine & Equipment Names Storck President

Marine industry veteran **Donald G. Storck** has been named president of Coast Engine & Equipment Company, Tacoma, Wash., it was recently announced by **LeRoy E. Wilkes**, executive vice president of Washington Corporations.

As general manager of Pacific Rim Diesel, Mr. **Storck** is most recently credited with starting up a prosperous machine shop and diesel rebuild firm in a two-year period during which he brought in three major OEM dealerships.

SEC Shipyard Building Large SES To Compete With Air Services

Italy's SEC Shipyard has begun construction of one of the world's largest passenger Surface Effect Ships (SES)—a 60-knot ferry for delivery in 1993.

An air-cushion-supported catamaran, the SES is being built to carry up to 800 passengers for routes likely to be between Rome (Civitavecchia) and Sardinia or Sicily. The intention is to compete with air services.

The design, originally developed at Sweden's marine development and testing agency SSPA Maritime Consulting, has been enlarged to carry double the number of vehicles.

The 298-foot-long vessel will be powered by two 25,000-bhp gas turbine engines. A double-stage fan system will be utilized to reduce noise problems which would have

been caused by a single-stage system in such a large vessel.

Sweden's SSPA admitted that SES vessels are sensitive to wave size and likely to be slowed down in heavy weather, but noted that the effects are lessened on larger ships. The agency added that if tests in 1993 prove successful, the next generation of Swedish Navy cor-

vettes could be SES vessels.

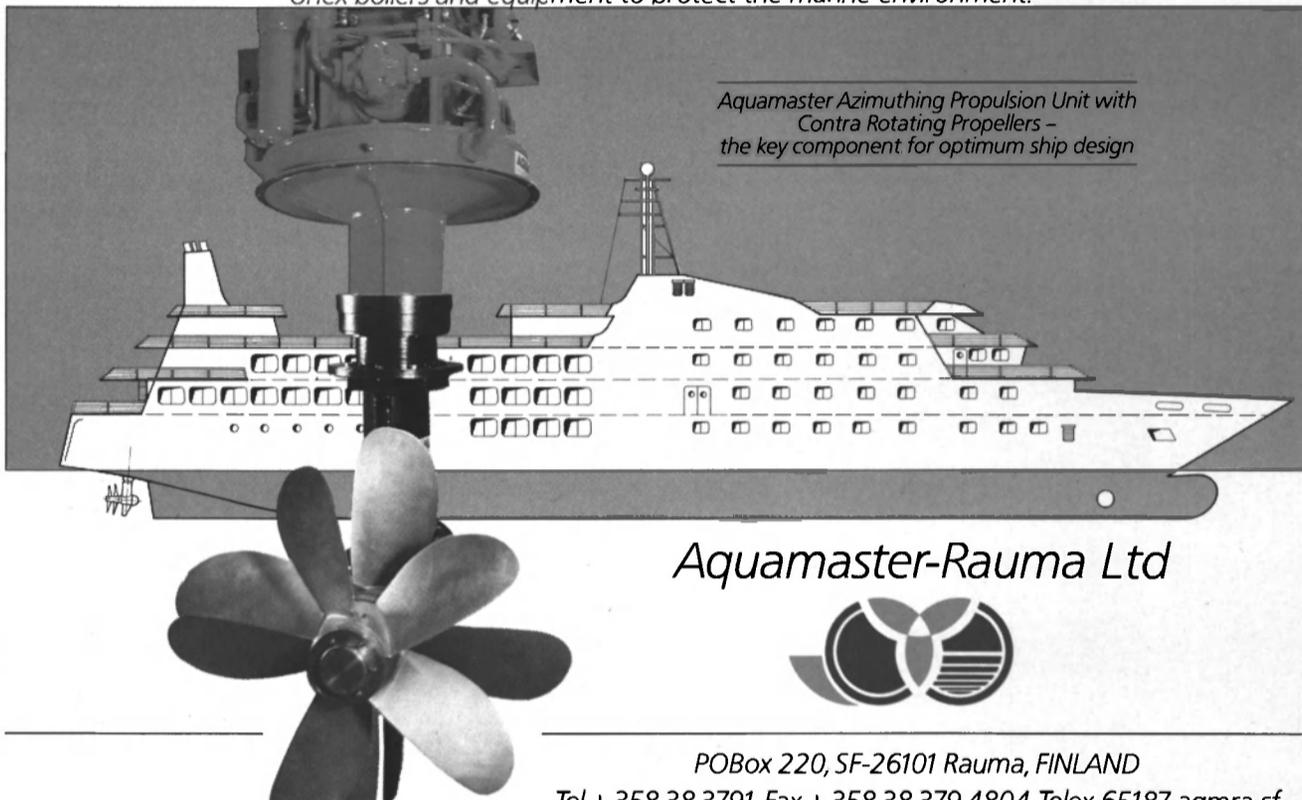
Because 80 percent of the lift force is created by the cushion and is distributed over the cross structure, SES vessels are claimed to have less structural problems than other multihull designs.

For free literature detailing SEC Shipyard,

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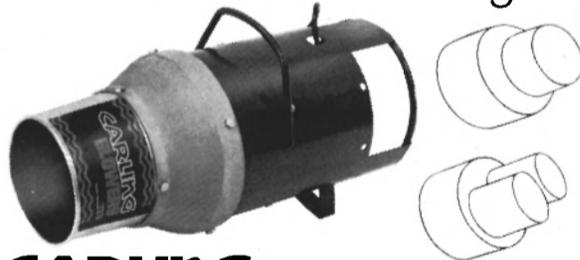
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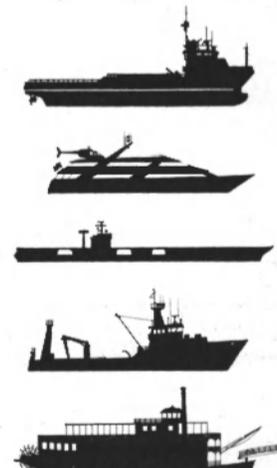
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Circle 223 on Reader Service Card

Viking Fender Moves To New Facilities

Viking Fender Company, one of the leading manufacturers of laminated marine fendering on the East Coast, has moved their manufacturing and office facilities to Sea Bright, N.J., from neighboring Long Branch.

The new facilities now include a new office complex, tire-cutting and

trimming plant, welding shop, layout and bar bending bay, as well as an expanded manufacturing plant.

Since the new location, which covers approximately three acres, is located on the Shrewsbury River, Viking now has dockside installation facilities.

The 1991 edition of Viking Fender Company's catalog is now available. For a free copy,

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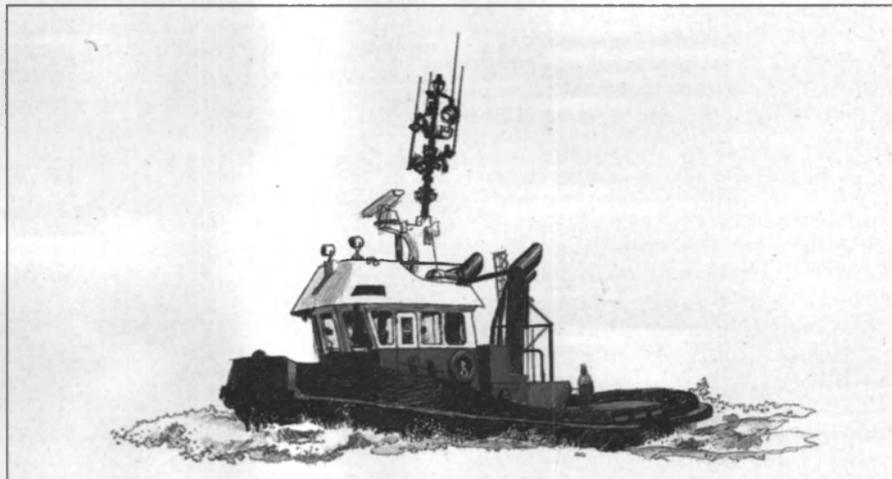
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Circle 344 on Reader Service Card

Propulsion Update



Artist's conception of the 43-foot, \$1.25 million tug Ken Mackenzie, newest addition to the Tidal Towing fleet and the first to be fitted with a ZF transmission.

Tidal Towing's Test Of ZF Transmissions 'Pays Off Handsomely'

Tidal Towing Ltd., an 11-tug company based at Port Coquitlam, B.C., calls its tests of the ZF marine transmission a "gamble which paid off handsomely."

Tidal Towing's primary business is moving log "sections" from the mouth of the Fraser River 20 to 30 miles upriver to the many saw mills that convert them to lumber. Barges bring the logs from the ports along the coast to the Strait of Georgia, between Vancouver Island and the mainland, at the mouth of the Fraser. They are picked up in the Strait by tugs after first being bound into 250-ton "sections."

The 43-foot tug Ken Mackenzie, the company's flagship, pulls 32 sections or 8,000 tons of logs up the Fraser. The newest member of the company's fleet, the Ken Mackenzie was the first Tidal boat to receive a ZF marine transmission. She is a \$1.25 million, 1,100-hp boat built by Progressive Marine in New Westminster, B.C., and delivered in 1989. The boat is powered by two turbo 12V92 Detroit Diesel engines and cruises at nine knots. Two high output cast iron ZF BW-191 marine transmissions, each with a 6.16 ratio, were mated with the diesels.

On the basis of the Ken Mackenzie experience, Tidal installed ZF transmissions on the 36-foot Harken, built in 1975 and recently repowered with two new 6V92 Detroit Diesels and ZF model IRM-320-1 transmissions with a 4.048 ratio. Cost for the package was \$75,000.

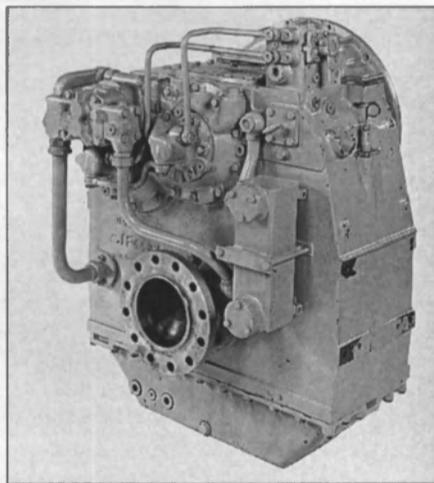
Marine transmissions in logging service have to be tough. Bridge clearances on the Fraser River are sometimes no more than 85 feet. Pulling a string of thirty-two 66- by 66-foot log sections upriver requires some tricky maneuvering.

"There is constant gear shifting," said **Tim Mackenzie**, Tidal's owner. "Sometimes that means that one engine is forward full-speed, while

the other is reverse full-speed, with constant shifting back and forth. With the Detroit Diesel-ZF power package, I can turn the Ken Mackenzie on a dime."

Mr. **Mackenzie** said he decided to try the ZF marine transmissions, "because I'm a bit of a gambler. I like to try something new on the chance that it will be better than what we have been using."

So far, the ZF has been a good move—a gamble that has paid off handsomely." The transmissions aboard the Ken Mackenzie have



A ZF model BW-191 high output cast iron marine transmission.

been operating for 13,000 hours with only routine maintenance—changes of fluid and filters."

Mr. **Mackenzie** said transmissions from other manufacturers have lasted an average of 11,000 hours in Tidal service and, in some cases, they have experienced failures in as little as 8,500 hours.

The full line of ZF marine transmissions is described in detail in an 84-page brochure titled "ZF Marine Transmissions Guide." For a free copy,

Circle 59 on Reader Service Card

Deutz MWM High-Speed Diesels Selected In Major Norship US Venture

Deutz MWM series TBD 604B V8 diesel engines have been selected as propulsion power for Norship luxury yachts in a new program to be launched at St. Augustine Shipyard in Florida. The south Florida yard was recently announced as the American facility for building a variety of custom and semi-custom yachts as well as high-speed commercial vessels under the umbrella of Norship International, Inc.

"The Deutz MWM engines were chosen for their high power-to-weight ratios, their extremely favorable fuel efficiencies, and their serviceability," said **Tom Erdhutter**, worldwide coordinator of yacht engine sales for the parent company, KHD.

First off the mark at St. Augustine will be a 103-foot cruising yacht, with two more similar yachts following at four-month intervals. Power will be supplied by twin Deutz MWM 604B V8 turbocharged diesels of 1305 hp each at 1,800 rpm.

The Deutz MWM HALLO-swirl engine design, available only on the 604B, has been hailed as a simple innovation that reduces noxious exhaust smoke in low-load and acceleration modes where it is most likely to occur in engines without this mechanism. An acronym for High And Low Load Optimized swirl, HALLO-swirl is a simple mechanical valve in an auxiliary intake duct which closes off the air supply under low load conditions, forcing all incoming air through the main channel. This higher-velocity air swirl forces fuel and air to mix more efficiently in the cylinder at low load to enhance optimal fuel combustion. As load requirements increase, the valve opens, and the auxiliary channel begins to admit air. The net effect is a near-perfect combustion curve which virtually eliminates noxious exhaust smoke. A smoother, more efficient response in terms of continuous power is evident throughout the entire operational range.

The Deutz MWM TBD 604B diesel engine series is available for 989 hp to 2,630 hp at 1,800 rpm.

In North America, the high-speed water-cooled sales division of Deutz MWM diesels is located in Fort Lauderdale. For more information and free literature,

Circle 49 on Reader Service Card

Baldt Awarded Contract For Mooring Chain And Hardware

Baldt, Inc., Chester, Pa., has been awarded a contract exceeding \$1,000,000 by the Naval Construction Battalion Center in Port Hueneme, Calif. The announcement was made by **Philip J. Carcara**, president of Baldt.

Baldt will manufacture approximately 250 shots of chain plus as-

sorted hardware to fulfill the contract and will supply chain in 1-3/4-inch, 2-inch, 2-1/2-inch and 2-3/4-inch sizes. Marine hardware in the accompanying sizes will include chain connecting links, anchor joining links, riser swivels and other assorted hardware.

Baldt is a leading manufacturer

and supplier of mooring system components for the marine and offshore industries, in addition to specialized industrial applications. Baldt makes grades 2, 3, oil rig quality, and marine/railway chain in sizes 3/4-inch to 4 inches.

All of Baldt's products are certified to meet regulations of the

American Bureau of Shipping, Lloyd's Registry, Det norske Veritas (DNV), the U.S. Navy and the American Petroleum Institute.

For more information and free literature on Baldt's products and services,

Circle 19 on Reader Service Card

Out here,



business depends on knowing the lay of the land.

AT&T High Seas Radiotelephone Service is the shortest distance from out here to back there. And that means it can help you take care of business better.

It's easy to check in from ship to shore. The *AT&T High Seas* operator can connect you to any telephone in the world. Quickly, reliably, economically.

And to reach a ship at sea to tell them the lay of the land, simply dial 1 800 SEA CALL.

*Use this number to book a call. The call itself is not free of charge.



AT&T

The right choice.

AVAILABLE AT ZIDELL

OCEAN DECK BARGES

Length	299'0"	302'0"
Beam	90'0"	76'0"
Depth	20'0"	20'0"
Deadrise	—	2'0"
Draft Light	2'7-1/2"	3'10"
Draft Loaded	15'10"	16'
Transverse Bulkheads	7	8
Length Bulkheads	3	1
No. Tanks	32	18
Rolled Bilge	—	24"
Curved Rake Bow	29'	49'
Long Flat Raked Stern	30'	50' Long Curved Rake
Deck Cargo		
Open Deck Area	25,284 S.F.	19,950 S.F.
Deck Load	2,050 P.S.F.	2,500 P.S.F.
D.W.T.	9,604 L.T.S.W.	7,236 L.T.S.W.

Maltese Cross A-1 Deck Barges



CRANES AND LIFT TRUCKS

Level Luffing Crane

Model & Type	50PB Level Luffing Crane
Manufacturer	Washington Iron Works
Capacity	50 Tons
Main Hoist	Certified Rating at 100,000 lbs.
(4 part rigging)	@ 30' Radius and 30,000 lbs.
	@ 90' Radius

Excellent Condition

Revolver Crane

Model & Type	305 American Revolver
Manufacturer	American Hoist & Derrick Co.
Capacity	125 Tons
Main Hoist	Certified Rating of 260,000 lbs.
	@ 50' Radius
Boom	140' - 160'

Whirley Crane

Model & Type	Clyde 37 DB-145-20 Whirley Crane
Manufacturer	Clyde Iron Works
Capacity	200 Tons
Main Hoist	Certified Rating of 400,000 lbs.
(16 Part Rigging)	@ 47' Radius; 150,000 lbs. @ 150' Radius
Whip Tackle	2 part, 40,000 lbs. @ all Radiuses to 160' Max.

Excellent Condition

Bridge Crane

Whiting 10 Ton Bridge Crane.
80' Span.
Completely overhauled and in excellent condition.

Two 30-Ton Container Cranes 70' Track Span New 1970-72

Priced at a fraction of today's new replacement cost.

Immediately available. From LASH Ships. Late Model. Manufactured by PACEO. Suitable for Ship, Barge or Land use. Manufactured to ABS and MARAD requirements
AC Power Input with Cable Reel
MG set: 250 HP AC-170 KW 230 DC.
200 HP DC Hoist Motor
100 HP DC Trolley Motor
2-40 HP DC Gantry Travel Motors
Trolley Travel 275 F.P.M.
Gantry Travel 100 F.P.M.
Hoist Speed: 30 LT @ 85 F.P.M.; 20 LT @ 100 F.P.M.; Empty Spreader 200 F.P.M.
32'0" Maximum Outstretch
Hoist, Trolley Travel and Gantry Motors are DC and have VSR and VSX regulation.
Other areas of possible use: Pipe and steel yards, Barge building, Concrete pre-fab plants

Two Taylor Lift Trucks, Model TE 220S

22,000 lbs. Basic Capacity at a 24" Load Center
Cummins Diesel Engine Model 6BT developing 151 HP at 2500 R.P.M.
Taylor 3-speed Power Shift Transmission. Seperate transmission oil cooler.
216" Lift Ultra View mast with an overall lowered height of 168".
84" Wide Hydraulic side shift with 10" of total shift.
Fully enclosed cab with heater, defroster and front wiper.

SPLIT TYPE SELF-DUMPING SCOWS



Length	180'0"
Beam	50'0"
Depth of Mid-Body	14'0"
Hopper Length	128'0"
Level Hopper Volume	1421 cu. yd.
DWT @ d = 10.22 ft.	1615 L.T.
Rake Lengths F. & A.	26'0"
Twin Skegs	
Stern & Fwd. Rake Decks Stepped up 2'0"	
Engine GM 671	

Hydraulic Pumps	12 GPM & 75 GPM
Time to Open	
(Fully Closed to Fully Open)	6 Min. 5 Sec.
Time to Close	4 Min. 34. Sec.
Hopper Angle Fully Open	53.78 degrees
Fuel Tank Capacity	445 Gal.
Hydraulic Cylinders	18" Diam. 120" Stroke
(2 Fwd & 2 Aft)	
Plating	Side, 9/16"
	Bottom, 5/8"
	Hopper, 5/8"



ZIDELL
MARINE GROUP

For additional information or to make an appointment to inspect, call or write:
Sam Replin or Jack Breshears
3121 S.W. Moody Avenue, Portland, Oregon 97201
Phone: 1-800- 547-9259, In Oregon (503) 228-8691 Fax: (503) 228-6750

FOR SALE OR CHARTER

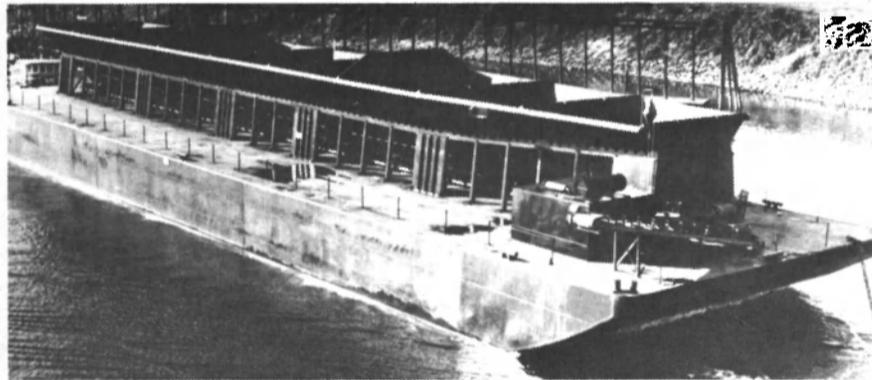
MALTESE CROSS A-1 OIL TANK BARGE

Length 296'0"
 Beam 60'0"
 Depth 22'0"
 Deadrise 6"
 Number of Tanks 12
 Total Tank Volumes at 95% 50,700 BBLS
 Cargo Pumps 3 Rotary Twin Screw, Allweiler 231
 Rating 1500 GPM, 150 PSI, 1200 RPM
 Location After Rake
 Diesel Engines 3 Detroit Diesel 8V-71, 233 HP @ 1800 RPM
 Location Engine Room on After Deck
 Fuel Capacity 1421.3 Gal. Diesel
 Fill & Discharge Connections 10" & 8"
 Heating Coils 2" Sch. 80 Pipe Coils for Shore Steam Supply
 Hull Plating Side Shell 1/2", Bottom 7/16", Deck 1/2"
 Deck Cargo Dwt. at Loadline 6761 LTSW



SELF-UNLOADING AGGREGATE BARGE

Billie-K Maltese Cross A-1 Ocean Aggregate Barge



Length 250'0"
 Beam 72'0"
 Depth 15'0"
 Draft Light 2'5"
 Draft Loaded 11'8-3/4"
 DWT 4603 LTSW
 Diesel Electric Set Cat 3406 Turbo, 260 KW Generators, Sullair Model 351 Air Compressor
 Hopper Capacity 3000 Yds.
 Hopper Unloading Gates 24 Unloading Gates, Pneumatic Operating Rams
 Main Unloading Conveyer Starboard Side Aft
 Transfer Conveyer 30" Belt Conveyers, 184' ea. P/S
 Hull Plating 1/2" Side, Bottom, Deck

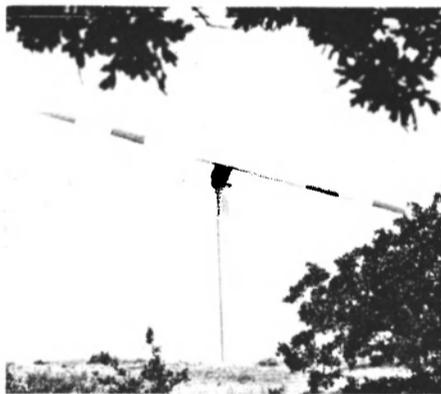
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Steel Skid-Mounted Liquid Storage Tanks

10 Available

Coast Guard Approved
 Capacity 475 BBLS
 Height 7'0"
 Width 2'0"
 Length 32'0"
 Piping Single fill pipe and distribution. Gravity Discharge. Valves and Manifold included.

WIND TURBINE



Three Wind Turbines

Rated Power Output 2.5 megawatts each
 Wind Speed Requirement 14/45 M.P.H.
 Computer Controlled
 Producing Power in 1986
 Prime Contractor Boeing Engineering & Construction

AMERICAN CRANE BARGE

Barge Data

Displacement Light 1,200 Tons
 Gross Tonnage 911
 Net Tonnage 911
 Length 151'6"
 Beam 60'0"
 Hull Depth 12'0"
 Flush Deck Area 6,000 Sq. Ft.
 Engine Room Area 412 Sq. Ft.
 Office & Eating Area 136 Sq. Ft.
 Diesel Fuel Tanks 36,000 Gal.
 Fresh Water Tanks 36,000 Gal.
 Bunker "C" Fuel Tanks 12,000 Gal.
 Ballast System None

Crane Data

Manufacturer American Hoist & Derrick Co.
 Model & Type 305 Revolver
 Capacity 125 Tons
 Boom (Certified Rating with 140' Length, 160' Available)
 20 Part Rigging 2,200', 7/8"C-6x36 I.P.S.
 4 Part Standing Bail 2-186', 1-3/4"C- 6x36 I.P.S.
 Main Hoist
 (Certified Rating: 58.5T @ 50' to 100', 8 part rigging)
 20 part rigging 3,250 ft., 1"C-6x36 I.P.S.
 Aux. Hoist (Certified Rating: 10.0 T @ 100') 15 T. Capacity
 2 part rigging 635 ft., 7/8"C - 6x66 I.P.S.



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For additional information or to make an appointment to inspect, call or write:
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 Phone: 1-800- 547-9259. In Oregon (503) 228-8691 Fax: (503) 228-6750

SpecTec's AMOS Software Package Selected For Use Aboard Crystal Harmony

John Avila, president of SpecTec General, Inc., Costa Mesa, Calif., recently announced that the AMOS maintenance software system will

be used by Crystal Cruises on its luxury cruise ship Crystal Harmony.

AMOS is a state-of-the-art computer-aided preventive maintenance and spare parts control system currently used by industry and the public sector for maintenance of equipment, facilities, and transportation fleets.

Mr. Avila stated: "Key factors in

winning the Crystal contract were the software's modular structure and user friendliness. It is only natural that the AMOS software program is being used aboard such an elegant ship.

The AMOS computerized maintenance management system was initiated during the 1950s as a manual system and was computer-

ized and greatly enhanced during the 1980s. Today, AMOS is tailored to the IBM-compatible microcomputer.

SpecTec General specializes in the fields of maintenance and maintenance engineering. The company offers a full line of preventive maintenance, inventory and purchase order control software, and has continuing support services for its programs.

SpecTec General, a private company represented around the world, can conduct pre-engineering studies to determine computerized maintenance management needs and offers turnkey installations along with the AMOS software package. Over 400 AMOS software systems have been installed worldwide in industrial, municipal, defense, and shipping market segments.

For free literature giving more information on SpecTec General,

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The Marine Industry's Best And Most Authoritative Newsletter...

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MHI To Develop Small-Bore Diesel

Mitsubishi Heavy Industries (MHI) has started the development of a new small-bore low-speed marine diesel engine, model UEC33LSII. The new engine will have a power output from 2,930 hp in a four-cylinder model to 5,870 hp in an eight-cylinder version. The first UEC33LSII engine will be completed in the spring of 1992.

U.S. Lifts Restrictions On Eastern Bloc Vessels

In a major revision of U.S. ports policy, President Bush recently announced that restrictions would be lifted on eastern European commercial cargo, passenger and fishing vessels calling at U.S. ports and that access would be granted to 12 U.S. ports previously off-limits on national security grounds.

Soviet vessels would still be excluded, he said, along with those of a number of countries such as Vietnam and Cuba, which are still on the U.S. political and economic blacklist.

Vessels from Bulgaria, Czechoslovakia, Romania, Poland, Hungary and Albania are now allowed access to all U.S. ports on the basis of 24 hours' notice of entry.

Twelve previously restricted ports were opened to vessels of the same countries. They are Charleston, Hampton Roads, Honolulu, King's Bay, New London and Groton, Panama City, Pensacola, Port Canaveral, Port St. Joe, Portsmouth, Port Hueneme and San Diego.

President Bush said the decision was taken in recognition of the progress these countries have made toward democracy and the rule of law.



The Decks Are Stacked For Fun.

 Kings, queens and one-eyed jacks are treated like Trumps aboard this plush, new pleasure vessel. The atrium mid-deck gives grand stairway access to the lower main deck where one might chance gambling, dancing or just shuffling about. Later, deuces go wild as the thrill of the open air upper-deck lends odds to a fun bar area and elegant restrooms. Finally, a full house of 600 enthusiastic passengers is dealt the winning hand by a fast-cruising catamaran hull offering a comfortable and safe ride. This kind of fun is more than just a lucky roll... it's another first from the 25 years of Gulf Craft excellence. So, Poker Face, call aces at Gulf Craft, Inc. now for more information at (504) 395-5254.



- The first 43 x 125 foot catamaran dinner boat in the industry
- U.S.C.G. Approved
- 600 passenger capacity
- 14-16 knots cruising - loaded
- Twin 3412 Caterpillar diesels
- Main deck - 4193 sq. ft.
- Mid deck - 3273 sq. ft.
- Sun deck - 2265 sq. ft.
- Other catamaran dinner boat designs by Gulf Craft
 - 80' x 40'
 - 100' x 43'
 - 110' x 43'
 - 145' x 43'
 - 160' x 43'
- Gulf Craft 4 decked catamaran gambling boat
240' x 60'

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WATERCOM Introduces Automated Vessel Tracking System

WATERCOM® has launched a new service that automatically tracks boats.

The Automated Vessel Tracking System can pinpoint a boat or fleet's position anywhere along the 4,000

miles of waterway WATERCOM serves. This system integrates WATERCOM and Loran C or CPS with newly developed software into a system that is both inexpensive to buy and easy to use.

The system uses automated or on-demand calling features so that the boat's position is displayed on a colorized computer monitor along with user points of interest along the river. Each software package is

unique to the user. The user also has the ability to zoom in on specific river segments for a more detailed view. The previous 100 positions are stored for each boat for easy reference. All of this is done without the vessel captain being disturbed. Everything is done by the office on shore.

The Automated Vessel Tracking System is being offered as a low-cost alternative to existing positioning

systems which require a \$3,000 to \$5,000 investment per vessel.

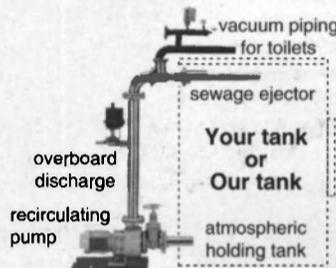
WATERCOM's direct dial telephone system offers voice, data, facsimile capabilities, credit card calling for crew members, low night rates, and other advantages.

For additional information and free literature on WATERCOM,

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ENVIROVAC sewage systems solve all your marine sanitation needs.

EVAC Vacuum Toilet System STANDARD DESIGN AND COMPONENTS - NO SPECIAL ENGINEERING



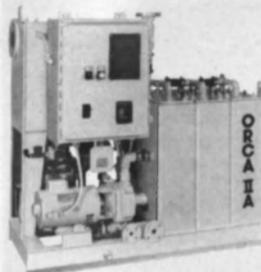
- Low volume fresh water flush toilet (2 pints/flush)
- Small diameter piping... 1-1/2" and 2"
- Reduces sewage volume by 90%
- Flexible piping layout... with vertical lift
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ORCA II Marine Sanitation Device SIZING TO FIT 12 TO 500 PEOPLE

- Microprocessor Control and Monitoring System
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ORCA IIA (12-36 People)

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MANOEUVRABLE,
VERSATILE,
ECONOMICAL**

The Bartell SPS - the first, and most reliable lightweight surface preparation equipment made in North America.

The system that gives you unequalled versatility and handling, with the proven durability and quality of all Bartell power products.

This multi-tool unit:

- mills surfaces on concrete and asphalt
- cleans and descales steel decking
- removes old surface coatings (everything from epoxy to rubber tile cement)
- efficiently removes traffic lines

Available in gas, electric or air drive units.

The Bartell SPS can solve virtually every known surface or coating problem faced by contractors.



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Circle 335 on Reader Service Card

1521—Magellan Circles Globe in 3 Years 1991—Baldt Continues 90-Year Voyage



After 90 years of serving customers around the world, the outlook from Baldt's helm is right on course. We're producing the highest-quality chains, anchors, and marine hardware for the Government, commercial and offshore industries.

A full line of marine hardware compliments our welded stud link chain ranging in sizes from 3/4" to 4" diameter. Our products are manufactured in accordance with ABS, Lloyds, API, DNV and MIL-C-24633 requirements.

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Chains ■ Anchors ■ Marine Hardware ■ Engineering Services

Circle 322 on Reader Service Card

Maritime Reporter/Engineering News

Niigata To Produce, Market Marine Jet Power Products In Japan And Korea

MJP Marine Jet Power AB, the Swedish manufacturer of jet propulsion systems (JPS) for high-speed vessels, has recently signed a license agreement with Niigata Engineering Co., Ltd. in Japan for the production and marketing of MJP products in Japan and Korea. Niigata Engineering Co. is well known in the marine field for the design and production of marine diesel engines, gearboxes, couplings, turbochargers and Z-type propulsion systems.

Gerard Torneman, managing director of MJP, said: "We see this agreement with Niigata as an acknowledgement of our advanced technology. In cooperation with Niigata, our position as one of the world's leaders in jet propulsion will be strengthened. The high quality of our products will be further developed and refined by complying with the strict Japanese quality requirements."

MJP has now sold 32 shipsets (totally 67 units) of their jet propulsion system all over the world. MJP has distributors/agents in North America, Europe, Australia and China/Hong Kong/Macau route. In the Hong Kong/China waters now 10 vessels equipped with MJP propulsion units are in operation.

The Niigata-MJP jet propulsion system will be marketed in an expanding Japanese ferry market where the operators require the high efficiency and maneuverability for which Niigata-MJP are well recognized. Niigata Engineering Co., Ltd. has nearly 100 years of experience in engineering and over 20 years of experience in production and sales of Z-type propulsion systems. They have an established sales and service network to support their products all over the world. The cooperation with MJP Marine Jet Power AB will further improve their position in the high-speed ferry market.

For free literature giving further information on MPJ products, Circle 11 on Reader Service Card

Bender Ship Awarded Work On Berthing Barge

Bender Shipbuilding & Repair Co., Inc., Mobile, Ala., was recently awarded a contract for the restricted availability work on the Navy berthing barge APL-32. Bender will perform the work at the Naval Air Station Pier in Pensacola, Fla., under a \$283,809 contract.

In addition, the Alabama yard was awarded a base contract worth \$131,000 for the maintenance, repair and rework of the ex-USS Shadwell, a U.S. Navy burn research vessel moored at Mobile Harbor.

New Wartsila Engines To Replace 25 Series

A \$1.1 million engine emission testing program which will feed into its next generation of power plants to be developed within the next five years is being carried out by Wartsila Diesel, a market leader in

medium-speed diesel engines. Wartsila Diesel is now about halfway through the testing program.

The Wartsila Nohab 25 series of main rig and auxiliary marine engines will need to be reviewed within a couple of years, according to the subsidiary of the Metra Group, founded this year from the merger of Lohja and Wartsila.

Carl Bjork, general manager in

charge of marketing marine engines, said that although Wartsila had only delivered the first two units of the line's latest model in September 1990, the 25 series cannot last more than another five years.

He added that the 25 program will have to be renewed in a couple of years.

For free literature, Circle 86 on Reader Service Card

There's a WESTFALIA system that answers every oil purification need

Highest oil purity
Westfalia Oil Purifiers remove water and sediment from heavy fuel oils at top efficiency. . . at densities up to 1010 kg/m³ and cat fines down to 1 ppm. Our exclusive two-stage UNITROL/SECUTROL system gives unmatched purity even under widely varying feed conditions.

UNITROL, with no ring dams, performs the basic oil/water/solids separation. SECUTROL assures maximum solids and water removal . . . while monitoring de-sludging intervals. Together, they provide the highest HFO quality now obtainable.

Top reliability.
Built-in ruggedness and sturdy design give Westfalia Oil Purifiers a record of reliability unmatched by any competitive system. . . perfect for tough marine service conditions.

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Westfalia systems allow monitoring of such vital functions as oil flow, oil temperature, increased

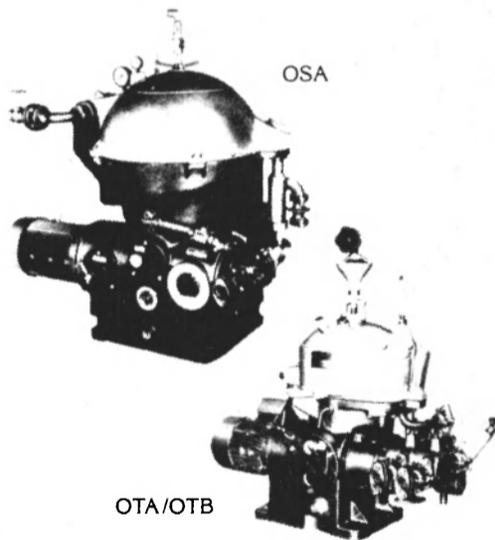
Whether your engines are powering a huge ocean-going cargo vessel or a small service boat, there's a Westfalia Oil Purification System that suits them best.

water discharge, oil break-over, failure to shoot, motor temperature, vibration, and excessive number of second-stage solids or water discharges. Control stations, with audible and visual alarms, can be located remotely and/or at the equipment site.

Preassembled modules.
Westfalia Oil Purifiers are available as single machines or as preassembled "Centri-Pack" modules, with heaters, pumps, strainers, controls, wiring, etc. installed and ready to go.

Rapid, expert service.
With every Westfalia Oil Purification System you get Centrico expertise, to help design, install, and service your equipment. At any port — Atlantic, Pacific, Gulf — skilled engineering advice and assistance, as well as parts, are usually available overnight — or sooner.

Westfalia systems and Centrico service. . . in any engine room, they're the best answer for your oil purification requirements.



Westfalia is proud to be part of the ongoing construction program of the new and growing U.S. Navy.



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Circle 287 on Reader Service Card

Double-Hull Alternatives Sought By Tanker Owners

The International Association of Independent Tanker Owners says that alternative ship designs may be just as effective as double hulls in protecting the marine environment from oil spills.

Tanker owners are looking at technical solutions in an effort to minimize exposure to a potentially bankrupting liability claim, now that full insurance coverage against the risks of a major oil spill in U.S. waters is no longer available.

The concept of a horizontal bulkhead dividing cargo tankers, in conjunction with rescue tanks that would be used to evacuate oil from

damaged tanks, could provide greater protection to the marine environment in event of an accident, the association believes.

Intertanko, in conjunction with Lloyd's Register of Shipping has demonstrated the performance of this type of construction in tests.

Intertanko argues that since the effectiveness of double-hull construction for a very large crude car-

rier is unproven, shipowners should have the choice of alternative designs.

The head of a leading Greek shipowning group said, however, that he would not order a tanker of horizontal bulkhead design until approval had been given by U.S. authorities. It would not make sense, he said, to build a ship whose trading potential was restricted and that would never be able to call at a U.S. port.

A tanker design concept based on a double-hull barrier and a mid-deck has already been submitted by the Japanese Government to the International Maritime Organization. Intertanko has enhanced the concept with the addition of rescue tanks.

It has been estimated by shipyards that a tanker built with a horizontal bulkhead would be about 2 percent cheaper than a ship of double-hull construction.

IFC Names L. Johnstone Chairman, President, CEO

Integrated Ferry Constructors Ltd. (IFC) recently announced the appointment of **Lucille Johnstone** as chairman, president and CEO of the corporation.

Mrs. **Johnstone** brings to IFC many years of experience in the marine industry of British Columbia, Canada. She was formerly president and CEO of the Rivtow Group.

IFC commenced business in October 1990, and has the primary contract to complete the S-Class 470 car/passenger vessel for the British Columbia Ferry Corporation. To date, 80 percent of the construction components have been awarded by IFC.

The vessel cost is approximately \$119 million and will generate an estimated 1,200,000 man hours of employment for British Columbians.

Department Of Defense To Reimburse Operators For War Bonus Payments

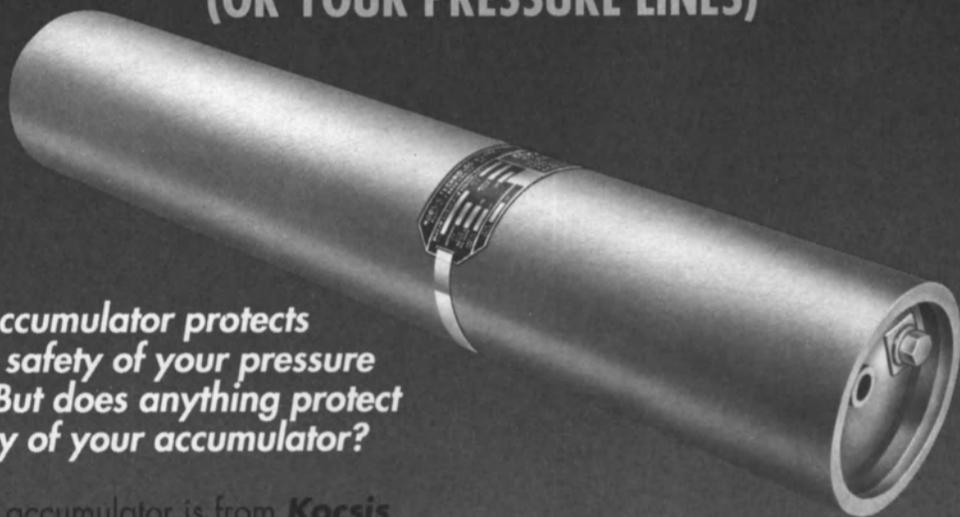
The Department of Defense recently announced that it would reimburse ship operators for paying war bonuses to civilian mariners sailing into a specified combat zone in support of Operation Desert Storm.

An agreement was reached by the Defense Department to reimburse companies who paid seamen up to a maximum of 100 percent of base wages. The amount of the bonus is based on a specific amount determined through negotiations between the companies and various maritime unions.

To qualify to receive the War Risk Bonus during Operation Desert Storm, a mariner must have sailed west of 53 degrees east longitude in the Persian Gulf after the beginning of hostilities, January 17, 1991.

THE ACCUMULATOR THAT NEVER BLOWS ITS TOP.

(OR YOUR PRESSURE LINES)



An accumulator protects the safety of your pressure system. But does anything protect the safety of your accumulator?

If your accumulator is from **Kocsis Technologies, Inc.**, the answer is **yes**. Because Kocsis accumulators are built with a special **Safety Seal** feature. This unique design permits the end cap seals to weather pressure variations by allowing for a limited degree of housing deformation. Fractures are avoided if pressures exceed safe operating limits. In addition, some of our more popular models feature end cap seals with split-ring locking to keep pressure inside the accumulator from unseating the end caps.

Hydro-pneumatic accumulators are available from Kocsis in a variety of sizes. Each uses a compact "floating piston" design to provide moderate piston deceleration. This eliminates severe hammering in the process, insuring long life and high efficiency at minimal maintenance costs.

Our accumulators operate over a wide temperature range, **-110° F to +200° F** (-29° C to +93° C). Their steel housings offer seamless cylinder construction with a built-in safety factor of 4 to 1! Other features, such as standard "T" seals and a recessed gas filler valve, make the Kocsis accumulator your best bet for smooth operation in a variety of applications:

- in systems that need high oil velocity
- in systems that store pressure for emergency use
- in hydraulic pressure systems
- for added shock absorption
- when system pressure maintenance is critical



KOC SIS TECHNOLOGIES, INC.

4527 Columbia Avenue, Hammond, IN 46327
Phone (219) 931-6763 Fax (219) 931-6739

DIVISION OF KOC SIS BROS. MACHINE CO.

Circle 25 on Reader Service Card

Teleflex Buys Wagner And Cetrek

Teleflex Inc. recently announced the acquisition of both Wagner and Cetrek, two of the world's best known autopilot lines.

By bringing together these two companies, Teleflex is now offering the finest in both commercial and recreational autopilots. The commitment to both service and support of the Wagner and Cetrek products is the first priority of Teleflex.

The existing Teleflex autopilot line, which is produced by Cetrek, will be integrated with the Cetrek program in the fall of 1991.

The Wagner product line and program will effectively remain as before while utilizing the strengths of its partners to help improve production, quality and market share.

For further information and free literature from Teleflex,
Circle 38 on Reader Service Card

Free COMSAT Literature Features Its Mobile Communications Services

COMSAT Mobile Communications, based in Washington, D.C., is offering free literature which features its mobile satellite communications services for both Inmarsat-A and -C, including vehicle and vessel tracking and dispatching operations, supervisory control and data acquisition (SCADA), communications for remote business operations, and D-GPS (Differential Global Positioning Service).

Also featured are applications for land transportable terminals where regular telecommunications cannot be accessed and its C-Link service, a store-and-forward data service that uses small, lightweight, Inmarsat-C terminals and is available to the land mobile and maritime communities.

"Businesses seeking cost-effective international communications in remote regions will be interested in COMSAT's approach to providing Inmarsat-A and Inmarsat-C services," said **George Zachmann**, COMSAT Mobile Communications' vice president of international relations. "COMSAT is the only Inmarsat service provider with dedicated operator assistance at both earth stations, 24-hours a day, 7-days a week," he said.

COMSAT Mobile Communications provides international land mobile, maritime and aeronautical satellite communications to customers around the world through its Inmarsat coast earth stations located in Southbury, Conn., and Santa Paula, Calif. COMSAT represents the U.S. in the 63-member Inmarsat and the 119-member International Satellite Organization (INTELSAT).

For further information and free literature on COMSAT's mobile communications services,
Circle 35 on Reader Service Card

Goltens Holds Three-Day Gala Celebrating Fifty Years Of Diesel Service

Goltens, New York, N.Y., a leading provider of diesel engine service around the world, recently celebrated its 50th anniversary in business by holding a three-day gala in New York City.

Invited guests, who came from all parts of the U.S., as well numerous countries throughout the world, were treated to events that included a sunset cruise, a formal dinner dance and an all-day excursion to Atlantic City.

Goltens provides a full range of repair and maintenance services including engine replacement, engine overhaul, main journal and

crankpin reconditioning, centrifugal reconditioning of any size bearing, and reconditioning of fuel injection equipment, pistons, piston skirts, cylinder heads, exhaust valves, seats, turbochargers and spare parts supply.

For further information and free literature on services provided by Goltens,
Circle 45 on Reader Service Card

Litton's Category I EPIRB Fulfills GMDSS EPIRB Requirements

"Marine Insurance No One Can Be Without"

If you are involved in a disaster at sea, there will be very little time. You must be located, identified, and rescued... immediately. There is no time to waste and no time for doubt. Your life and the lives of everyone on board depends on organized survival techniques and a swift rescue.

as a homing beacon for pinpointing your vessel. Add to this a high-intensity xenon strobe for visual detection, and you and your craft will no longer be a needle in the haystack.

It's common sense. And it's fast becoming a law.

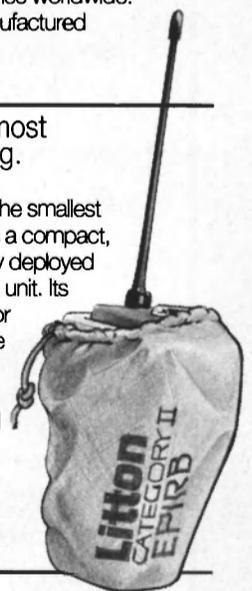
The Category I EPIRB is designed to release automatically, or manually when the situation permits. It can even be activated while wearing survival gloves. The hydrostatically released mechanism activates the EPIRB automatically when submerged in water 3-12 feet deep. This gives you more time to gather survival gear and prepare yourself and everyone on board for rescue. In a situation where lives are at stake, the hands free operation of the Litton Cat I EPIRB gives you one less thing to think about and more reason to feel confident.

Litton's satellite EPIRB (Emergency Position Indicating Radio Beacon) provides mariners the latest in position indicating technology. Litton's EPIRB broadcasts two signals. One transmits to the COSPAS/SARSAT satellites providing the identification of your vessel and other vital information to the ground based rescue stations. The other signal is also capable of being received by the satellites; however, it is primarily used by rescue ships and aircraft

- True global coverage. Using SARSAT/COSPAS satellite system.
- Six year battery storage life. 50% longer than most EPIRBs.
- Powerful xenon strobe for visual detection.
- Can be mounted at any angle.
- Four year limited warranty.
- Approved for use in the U.S., Canada and other countries worldwide.
- Designed & Manufactured in the U.S.A.

The CAT Is Almost Out Of The Bag.

The Cat II EPIRB, the smallest 406MHz EPIRB, is a compact, stowable, manually deployed version of our Cat I unit. Its small size is ideal for stowing in inflatable life rafts, life boats and for use on private yachts, and will be available soon.



Litton

Special Devices

To find out about your particular EPIRB requirements, call Litton at 1-800-328-0948 or Fax 1-215-328-4016 Mon.-Fri. 8:30 to 5:00 pm EST
 This product also distributed by KODEN International under their own name.

Circle 224 on Reader Service Card

NY State Recommendation To Close Maritime Academy Protested By Industry

A state recommendation that the nation's oldest maritime academy be closed to cut costs has drawn protests from maritime industry leaders and educators.

State Comptroller **Edward V. Regan**, in a preliminary report, recommends shutting down the State University of New York Maritime College and either integrating its programs into another SUNY campus or consolidating them with programs at other maritime schools in the region. The maritime college is one of four campuses the comptroller thinks should be axed to help

shrink a widening state budget deficit.

Alumni and college officials have attacked the proposal as shortsighted and unworkable. The school, which began training officers for the merchant marine in 1874, is part of the maritime tradition of New York, Capt. **James McNamara**, a 1964 graduate who is vice president and chief surveyor at the National Cargo

Bureau in New York, said.

According to **Ezra Schneier**, president of the Marine Index Bureau and a 1981 graduate of the college, the maritime college, which has the highest placement rate in the state university system, proved its need during the scramble to supply ship crews for the recent Desert Storm operation. "We have a shortage of trained merchant marine personnel. Any talk of cutting off the supply now is really nearsighted," he said.

The maritime college represents less than 1 percent of the state university budget. Since most graduates remain in the state, paying taxes on an average starting salary of \$34,800, the cost of their education is actually a bargain for New York, Adm. **F.H. Miller** president of the college, pointed out.

Texas Passes Tough New Oil Spill Legislation

In the wake of two major incidents last summer which threatened major environmental damage to the Texas coastline, Texas administrators have passed tough new oil spill legislation. Under the latest legislation, polluters could be liable to civil penalties of up to \$500,000.

When the Norwegian tanker **Mega Borg** suffered an explosion and fire last June, 4.6 million gallons of crude spilled some 57 miles east of Galveston. The second spill came a few weeks later when a Greek tanker collided with three barges under tow in Galveston Bay. Over 645,000 gallons of heavy oil was leaked by one of the damaged barges.

The aim of Oil Spill Prevention and Response Act is to have equipment, personnel and training in place in readiness for an incident. In the next three years, Texas plans to have in place one of the best oil spill plans in the U.S.

The Oil Spill Prevention and Response Act will involve establishing five regional response centers along the Texas coastline together with spill-fighting equipment and staff to audit the contingency plans of private companies.

National Safety Training Program Offered Operators Of Mobile Boat Hoists

Chemical Compliance Consultants of Marion, Mass., and Marine Travelift, Inc. of Sturgeon Bay recently announced a new training program which was developed jointly by the two companies. The certified program has been designed to provide national safety training on a local basis to operators of mobile boat hoists.

Skilled trainers, employed by Chemical Compliance Consultants, will be providing both classroom operating and maintenance programs in conjunction with hands-on equipment training.

For more information,
Circle 37 on Reader Service Card

How To Prevent A Part Attack.

When it comes to finding or selling marine parts and equipment, Inventory Locator Service, Inc. (ILS) can put you in touch with the world. We list the inventories of suppliers industry-wide on our data base for easy access by buyers in need of marine equipment.

Ship owners and managers use ILS to locate equipment around the clock, improve logistical support and reduce communication costs.

Marine industry suppliers use ILS to open new markets, find new customers, and increase sales.

As a subscriber to our service, you can search the inventories of marine industry suppliers worldwide in seconds with a single call. The ILS data base can tell you:

- Who has the equipment you need
- Quantity on hand
- Condition - whether it is new, used or overhauled

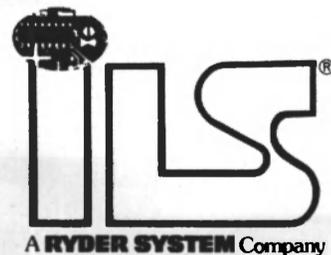
And we give you the information to contact the seller directly. As an independent provider of information, we do not take part in the sales transaction.

There's never been an easier way to find or sell marine parts and equipment.

Investigate now! Call or write:

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Circle 29 on Reader Service Card

Dick Lambert



Dick Lambert

Dick Lambert, sales manager of Orca Systems of Envirovac Inc., passed away on February 9, 1991.

Mr. Lambert died while traveling on business, and suffered no previous illness. After 12 years of dedication to Envirovac and the marine industry, he will be well remembered.

Mr. Lambert was a graduate of the University of Maine, with a B.S. degree in industrial engineering, and graduated magna cum laude.

Murdock RISIC Units Detailed Brochure

Murdock Engineering Company of Irving, Texas, is offering a six-page color brochure on RISIC units (Rubber Insert Sound Isolation Couplings).

RISIC units are described in the brochure as exceptionally reliable Lockseal flexible connectors for shipboard piping systems, providing sound attenuation, vibration damping, shock mitigation and piping system protection.

First shipped to the Navy in 1972, Murdock RISIC units have since been in continuous shipboard service. Their design simplicity makes them exceptionally reliable, and the advanced elastometric seal provides omnidirectional flexing between resiliently mounted machinery and associated piping. While protecting the piping system from shock loads, the flexible seal also attenuates sound and dampens vibration.

According to the company, Murdock RISIC's are qualified for new submarine service. They are used aboard SSN 688 (Los Angeles) and SSBN 726 (Ohio) class submarines and were recently selected for use on the SSN-21 Seawolf class submarine.

Typical applications for Murdock RISIC connectors include shaft seal cooling, reactor plant fresh water, brine systems, plumbing drains, distillation systems, feedwater, high-pressure air, auxiliary seawater, and trim and drain.

For more information and a free copy of the brochure on RISIC units from Murdock Engineering Company,

Circle 20 on Reader Service Card

Kiene Injector Nozzle Tester Eases Diesel Engine Trouble-Shooting

An injector nozzle tester that makes diesel engine trouble-shooting simple and cost-efficient for marine and agricultural maintenance programs has been introduced

by Kiene Diesel Accessories, Inc., Addison, Ill.

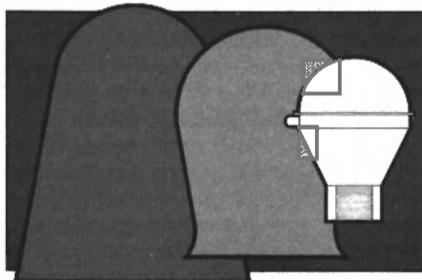
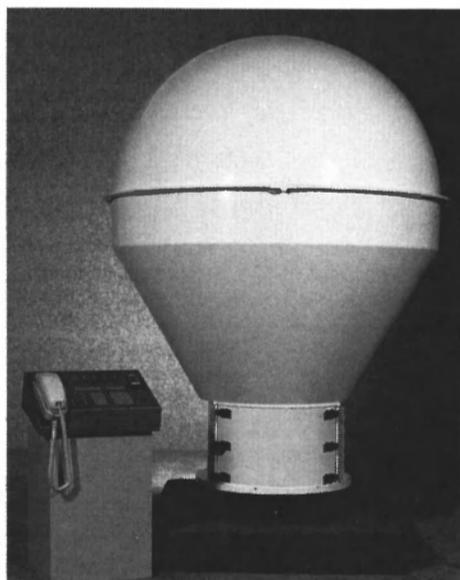
Many engine problems such as hard starting, smoking and low power are a result of faulty injectors. This economical tester eliminates the time and expense of sending out injectors for testing; equally important, it ensures that only faulty injectors are replaced.

Four simple tests may be per-

formed on-site, and in just minutes determine if nozzle injection is proper: spray pattern, leakage, chatter and opening pressure. Included with the unit are four test lines enabling the operator to test injectors of most major foreign and domestic engine manufacturers.

For further information and free literature,

Circle 46 on Reader Service Card



Small... Light... Reliable

...as important to worldwide telecommunications systems as to the racing shell that skims the water toward victory. The **MCS-9120** provides the compact, lightweight system you can depend on anywhere in the world.

The **MCS-9120**—fast, dependable communications:

- Built to survive any environment
- Low power consumption
- Lightweight
- Compact
- Economically priced

*Go the distance with the MCS-9120 from MTI—
A Stroke Ahead.*



For further information contact Shafiq Chaudhuri, Vice President, Marketing and Sales at (301) 590-8514.
300 Professional Drive
Gaithersburg, MD 20879
Telex: 901885
Fax: (301) 590-8558

Circle 349 on Reader Service Card

IMO Anniversary Marks 60 Years Of Dedication To Quality And Service

IMO AB of Sweden recently celebrated its 60th anniversary.

During its 60 years in business, the company has developed from an

experimental workshop on a Stockholm side street to one of the cornerstones of a multinational corporation.

Quickly establishing a reputation for quality and service, IMO has consistently delivered durable and reliable pumps.

To stay competitive, IMO opened subsidiaries in Switzerland and

West Germany, during which time they developed a positional indicator for the remote control hydraulic systems on large vessels. The company also began customizing a larger proportion of its pumps, helping customers to get the product that fit their needs.

In 1990, IMO received its largest single order ever for screw pumps.

The company will be supplying Australian Navy submarines with a wide range of pumps, some of which will be customized for the unique conditions of submarine operation.

IMO pumps can be found on every inhabited continent as well as onboard ships all around the globe. About 10,000 vessels and 100,000 elevators have IMO pumps today. In its 60 years in business, IMO has manufactured approximately 1,300,000 pumps in all.

For free literature giving full information pumps from IMO,
Circle 97 on Reader Service Card.

Reliable, efficient marine vacuum toilet systems

Jered now offers *STANDARD* Vacuum Toilet Systems in three sizes for marine applications.

Designed for highly reliable, energy efficient operation, these units are lightweight and compact, and interface with most types of treatment equipment.

Our standard Vacuum Systems offer a range of capability to suit the needs of any size installation.

Consider the benefits of a Vacuum Toilet System for your next project.

Consider Jered.

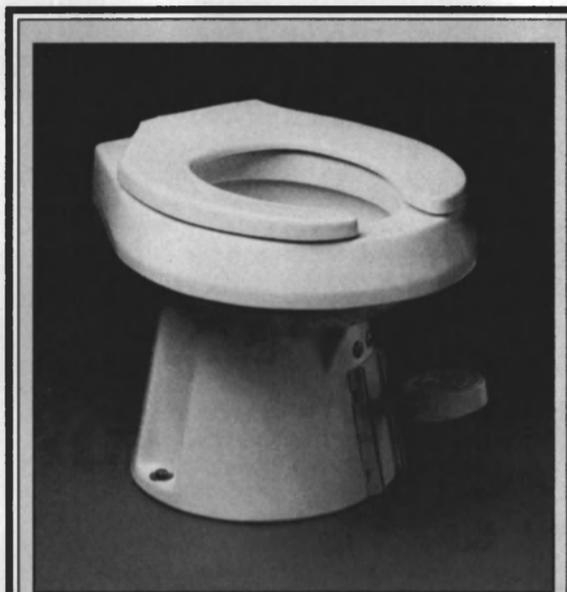


Jered Brown Brothers

90 years as a marine equipment supplier
20 years experience in providing Vacuum Toilet Systems

A member of the Vickers Marine Engineering Division which includes Brown Brothers, Stone Vickers, Michell Bearings and Advanced Programmes, U.K.; KaMeWa, Sweden; and Vickers Japan KK

56 S. Squirrel Rd., Auburn Hills, Michigan 48326 USA Tel: (313) 852-5114; Fax: (313) 852-5386



Model MVT-100

Reliable vacuum toilets

We believe simplicity in design is a key to reliability:

- Minimum of moving parts
- Continuously cycle tested for 250,000 flushes, failure-free
- All vitreous china bowl
- Simple to maintain, easily cleaned with normal domestic cleansers
- Absolutely safe to use (no electrical hook-up; no chance of vacuum lock)
- Rear exit discharge

Mitsui Acquires 25 Percent Of Gearbulk For \$180.9 Million

The Mitsui OSK Group recently acquired a 25 percent share in Gearbulk, a leading operator of open-hatch medium-sized bulk ships, for an estimated \$180.9 million.

The acquisition will provide Mitsui with 25 percent of the Gearbulk pool and the same percentage of the 35-40 ships owned by Jebsen, a Bergen, Norway, shipping company which took control of Gearbulk last month.

At present the Gearbulk pool contains 41 open-hatch bulk ships, with a total of 55-60 ships operated by the Gearbulk group.

According to a Mitsui spokesman, the acquisition enables the Japanese company to strengthen its tramp shipping operations.

STAL To Supply Provisions Cooling Onboard Five Cruise Vessels

The marine department of STAL Refrigeration AB, Norrkoping, Sweden, has won orders worth \$3 million for provisions cooling installations onboard five cruise vessels.

Three of the vessels are being built at the Fincantieri shipyard in Trieste, Italy, and delivery of the cooling installations will take place during 1991, 1992 and 1993. The customer is Holland America Line, a member of the Carnival Cruise Line group in Miami. The cruise vessels, each accommodating 1,200 passengers, will be used on the American West Coast.

The installations are designed to meet the stringent demands of the U.S. Public Health Service on chilling times and food hygiene. The air coolers are specially designed and manufactured of stainless steel.

In addition, STAL Marine has won an order for provisions cooling installations onboard two cruise vessels being built at Chantiers de l'Atlantique in France for Kloster Cruise Line. The vessels will be used in cruise traffic in the Caribbean and each accommodates 1,600 passengers.

For free literature on cooling systems from STAL Refrigeration AB,
Circle 24 on Reader Service Card



FERRIES AND SMALL PASSENGER VESSELS IN THE UNITED STATES

Forecast of Vessel Construction and Assessment of Future Equipment Requirements

Report No. 7118
June 1991

U.S. shipyards have delivered more than 2,000 ferries and small passenger vessels over the past ten years. Over 5,000 of these subchapter H, T and super T vessels are now operating in U.S. harbors, rivers and coastal waters. With 150 to 200 vessels ordered annually, this is one of the most dynamic sectors of the U.S. marine industry.

IMA has just completed the first in-depth study ever made of this business sector. In the study IMA:

- profiles the current inventory and documents building activity over the past ten years
- assesses developments impacting future vessel construction activity
- describes vessel building plans of major ferry and small passenger vessel operators
- examines future requirements for propulsion machinery, other mechanical systems, electronics, passenger access equipment, etc.

Vessel builders, equipment manufacturers, naval architects and others involved in ferry and small passenger vessel construction will find the information vital for business planning and maximizing market position.

* * * * * **OUTLINE OF REPORT** * * * * *

1. EXECUTIVE SUMMARY

- current fleet
- building plans
- future equipment requirements
- key buying influences

2. OVERVIEW OF CURRENT PASSENGER VESSEL AND FERRY FLEET

- types of services
- vessel types — subchapter H, T and super T
- age profile of current fleet
- dollar value of newbuilding orders

3. TEN YEAR HISTORY OF VESSEL CONSTRUCTION

- number and characteristics of vessels built each year between 1981 and 1990
- dollar value of newbuilding orders

4. FUTURE MARKET SITUATION

- continuing need to replace obsolete vessels
- increasing demand for commuter ferries
- gambling laws driving casino boat requirements
- likely trend in vessel construction costs
- effect of new subchapter T regulations
- continuing impact of Jones Act restrictions
- impact of Americans with Disabilities Act rules
- access to vessel financing sources — commercial, UMTA, MarAd, etc.

5. BUILDING PLANS OF FERRY OPERATORS

- Alaska Highway System
- Washington State Ferries
- Golden Gate Ferries
- Cape May-Lewes Ferry
- Staten Island-Manhattan Ferry
- Governor's Island Ferry
- Bridgeport-Port Jefferson Ferry
- Maine-Nova Scotia Ferry
- Black Ball Transport
- Vancouver Harbor Ferries
- Clipper Navigation
- Red & White Fleet
- Catalina-Long Beach Ferries
- Mississippi River Bridge Authority
- San Juan Ferries
- Arcorp Marine
- TNT Hydro Lines
- Boston Harbor Commuter Services
- other ferry systems — Black Island, Fisher's Island, Orient Point, Michigan-Wisconsin, etc.

6. BUILDING PLANS OF OTHER PASSENGER VESSEL OPERATORS

- coastal and river cruise vessels — Delta Queen, Alaska Tours, Clipper Cruise Line, etc.
- casino boats — Steamboat Casino River Cruises, JEC Enterprises, etc.
- dinner/excursion boats — Circle Line, Hornblower, Boston Harbor Cruises, etc.
- crew boats — Galaxie Marine, McCall Enterprises, Tidewater, etc.

7. ANTICIPATED CHANGES IN FERRY AND SMALL PASSENGER VESSEL TECHNOLOGY

- impact of Coast Guard rule changes on vessel design and equipment
- hull form options — conventional, catamaran, dynamically supported craft
- propulsion machinery — electric drive, cycloidal propellers, maneuvering thrusters, etc.
- other mechanical systems — pumps, gears, steering, etc.
- gensets and other electrical equipment
- control and monitoring systems
- navigation and communication electronics
- access ramps and accommodations — given enforcement of new ADA requirements
- deck machinery
- fire retardant materials — given liberalized USCG rules allowing commercial standards
- sewage treatment systems
- HVAC, other systems and equipment

8. VESSEL OWNER BUYING INFLUENCES

- product attributes sought
- after-sales service expected
- expected spares availability
- expected warranty
- pricing and other considerations

9. LISTING OF KEY PLAYERS

- major ferry and passenger vessel operators
- major sub T, super T and H vessel builders
- principal equipment suppliers
- naval architects

10. INVENTORY OF CURRENT FLEET

- vessel name and year built
- length, tonnage and passenger capacity
- propulsion system
- location and route
- managing director

* * * * *

The report is available for \$575.00. To order, please contact, International Maritime Associates, Inc. - 2600 Virginia Ave., NW - Suite 901 - Washington, DC 20037 - Telephone (202) 333-8501 - Fax (202) 333-8504. Telephone or fax orders will be accepted.

Circle 191 on Reader Service Card

Landmark Court Ruling Boosts U.S. Fishing Industry

A Federal District Court ruling on a lawsuit brought by the U.S. shipbuilding and fishing industries against the Coast Guard will limit commercial fishing in U.S. waters to U.S. company-owned vessels. As many as 35 foreign-owned factory trawlers and fishing processing vessels in the Pacific Northwest may lose their fishing licenses as a result of the ruling. This has been one of the most important issues facing the shipbuilding and fishing industries in the Pacific Northwest in years.

U.S. District Court Judge **John G. Penn** ruled in favor of an industry coalition, led by the American Waterways Shipyard Conference, in a lawsuit charging that the Coast Guard enforcement of the Commercial Fish Industry Vessel Anti-Reflagging Act of 1987 has been too lenient. The court found that the

Coast Guard's interpretation of the "grandfather" clauses has mistakenly allowed vessels owned by a U.S.-controlled corporation prior to July 28, 1987, to remain eligible for U.S. fishery licenses even if the vessels are sold to a foreign-controlled corporation.

The Anti-Reflagging Act prohibits issuing U.S. fishery licenses to foreign-owned vessels or vessels rebuilt or converted outside the "grandfather" clause in the act exempts vessels that already have a fishery license prior to July 28, 1987 or vessels that were already under contract before that same date to be rebuilt in a foreign country.

"The Court's ruling insures that the intent of Congress in passing the Anti-Reflagging Act of 1987 will be implemented. Since the law was passed, the Coast Guard has misinterpreted the intent of Congress to

eliminate foreign-owned vessels from U.S. fisheries," said **Robert O'Neill**, director of the American Waterways Shipyard Conference. "Judge Penn's ruling will set the right course in carrying out the Anti-Reflagging Act and keep the fishing industry firmly in the hands of U.S. interests," said Mr. O'Neill.

The court's ruling cited an October 25, 1990 General Accounting Office report which concluded that, as a result of Coast Guard enforcement, the provisions of the Anti-Reflagging Act have had little impact on increasing or ensuring American control of U.S. fisheries resources

(see MARITIME REPORTER's March 1991 issue, page 26, "Effects On The U.S. Fishing Industry By The Anti-Reflagging Act Of 1987"). Judge Penn stated that allowing noncitizen control of fishing vessels directly contradicts the Congress' purpose for passing the Anti-Reflagging Act.

The American Waterways Operators is a national trade association of the inland and coastal barge and towing industry and the small and medium-sized shipyards. The American Waterways Shipyard Conference (AWSC) is the shipyard arm of the association.

Simplex Wire Receives AT&T Research Contract For Fiber Optic Cables

Simplex Wire and Cable Company, Newington, N.H., has received a contract addition valued at about \$500,000 from AT&T Bell Laboratories, Holmdel, N.J. The added funding provides for continued research

and development on undersea fiber optic communication cables.

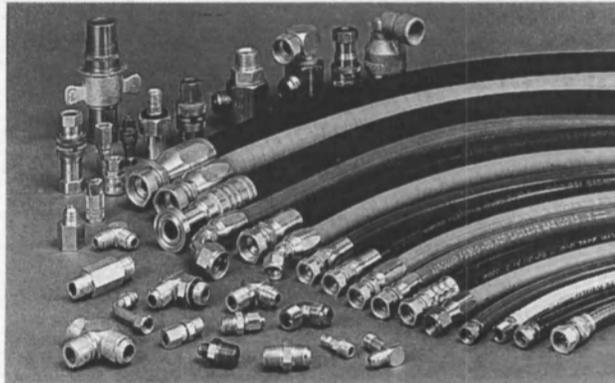
Undersea fiber optic cables made by Simplex for AT&T literally span the globe, with over 31,000 kilometers now in service, including spans of the Atlantic and Pacific Oceans, the Caribbean, and the South China Sea.

For free literature detailing Simplex undersea fiber optic cable, Circle 64 on Reader Service Card

WE STOCK THE AEROQUIP HOSE AND FITTINGS YOU NEED

And We're Ready to HELP you NOW

As an authorized Aeroquip distributor, we are your source for the complete line of durable, high quality Aeroquip hose, fittings, couplings and adapters. Together, we work with Aeroquip as a team to troubleshoot and solve your piping problems.



MIL-I-45208 QUALITY PROGRAM

WE TAKE GREAT PRIDE IN OUR INVENTORY WITH SAME DAY DELIVERY CAPABILITIES AND FAST TURN AROUND ON NON-STOCK ITEMS

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HS HARDWARE SPECIALTY COMPANY, INC.

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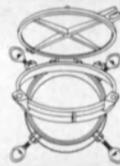
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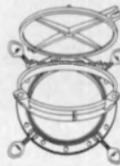
PORTLIGHTS



Cornell-Carr Company, Inc., maker of the world's finest marine windows and doors, is now manufacturing a full line of aluminum, bronze and steel portlights. With the aid of an in-house foundry operation we are able to produce a quality product with prompt delivery. Standard sizes are 12, 14 and 16 inches; other sizes are available upon request.



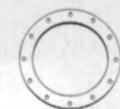
CC-7135
Weld-in Airport
with optional deadlight cover
and screen



CC-7136
Bolt-in Airport
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and screen



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Circle 198 on Reader Service Card

Maritime Reporter/Engineering News

ACI And DMI Form Global Strategic Alliance

Aalborg Ciserv International (ACI) and its American companies and DMI Norshipco USA, who have successfully operating an alliance for a number of years, have decided to expand that arrangement on a global basis.

The two parent companies, ACI and DMI, have agreed to formalize the cooperation on a worldwide basis and will promote and monitor this cooperation by a close followup. The goal is to further develop the reconditioning, in situ, and maintenance techniques with the aim to improve the overall economy of their customers, the shipowners and public utility companies.

ACI is a worldwide service organization operating in the field of engineering services, diesel, boiler and auxiliary equipment.

DMI is a worldwide organization operating in the field of specialized surface engineering technology, reconditioning, and spare parts supply to the marine and power generation industries.

For further information about the ACI/DMI cooperation,

Circle 28 on Reader Service Card

ABS Reports Upturn In 1990 Classification Activity

In his remarks to the annual meeting of the membership of the American Bureau of Shipping in New York City, **Frank J. Iarossi**, the ABS chairman and president, reported favorable increases in financial results and classification activity.

Noting financial results, he said: "As a result, largely of increases in both survey work associated with vessels in service and classification work connected with newbuildings, ABS operating revenues increased 17 percent over 1989 and totaled more than \$122,000,000. After operating expenses, primarily human resources related, net income from operations was over \$11,000,000. This surplus will be devoted to expanded research and development activities related to marine safety, advancements in telecommunications and technology resources, and restructuring associated with the ABS 2000 Strategic Plan."

ABS classification activity in 1990 expanded considerably over the prior year. In addressing this growth, Mr. Iarossi reported: "During that period, 469 new ships and offshore structures were classed totaling some 2,300,000 gross tons. This marks an increase over 1989 of roughly 33 percent in numbers, and 25 percent in gross tonnage. In fact the figures for new vessels classed in 1990 were the highest since 1984. As of the close of last year there were some 12,209 ships and offshore structures in ABS class of some 91,280,000 gross tons, representing 91 flags of registry."

Tanker Advisory Center Adds Oil Spill Data To Latest Safety Guide

The Tanker Advisory Center has decided to add new information to its latest guide as a result of increased public attention on oil spills and oil tanker safety since the Exxon

Valdez spill.

The guide now includes information on oil spills tankers were involved in and on tankers that were considered a total loss after an accident. All the world's tanker fleets and individual tankers are rated by the guide on the basis of their past safety records.

Also included in the 1991 guide is information on the size of each

tanker, the severity, date and character of any casualties it may have been involved in, along with its flag, and what classification society is contracted to perform each ship's regular inspections.

The center's address is 217 East 85th Street, Suite 259, New York, N.Y. 10028, telephone (212) 628-7686.



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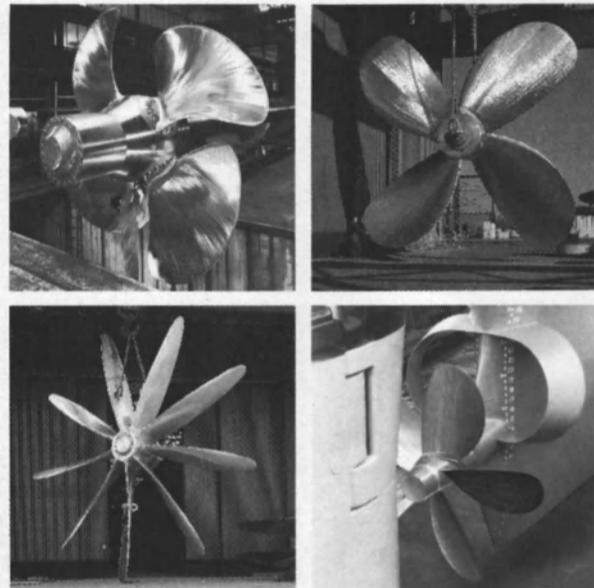
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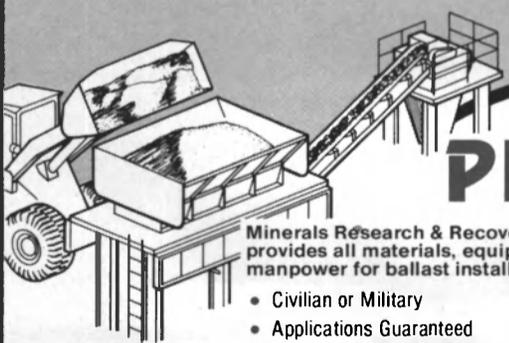
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Great Lakes Groups Unite To Boost Business, Gain Greater Political Clout

To bolster the Great Lakes shipping industry, a cross section of Great Lakes maritime, labor and shipping groups recently decided to work together, agreeing to a declaration of general principles and to a series of objectives encompassing a variety of political and economic issues.

Other Great Lakes organizations have, for years, advanced most of the objectives agreed to by the various groups, but by putting a united front on a broad spectrum of issues, the industry hopes to gain greater political clout.

Included in the objectives agreed to by the groups are extension of the St. Lawrence Seaway season to January 1 on a trial basis; modernization of the Soo Locks and construction of a second large-size U.S. lock; and modernization of the U.S. Coast Guard icebreaker Mackinaw.

Other general objectives agreed to include elimination of government subsidies that hurt the Great Lakes system; closer cooperation between Canada and the U.S. on Seaway operation; and the targeting of grain, coal and steel cargoes by the U.S. and Canadian Seaway agencies.

OPS Awarded Contract To Design And Install Tanker Offloading Facility

Oceaneering Production Systems (OPS), a division of Oceaneering International, Inc., has been awarded a contract by Walter International, Inc. for the design, procurement, and installation of a tanker offloading facility. The facility will be installed offshore Equatorial Guinea, West Africa, in 80 feet of water and will include a four-point tanker mooring system, pipeline and manifold (PLEM), and the offloading hose required between the PLEM and export tankers. This tanker offloading system will allow crude oil to be transferred from an onshore tank farm into tankers for transport to refineries.

Oceaneering International, Inc., together with its affiliate companies, is one of the world's largest underwater services companies.

For further information and free literature,

Circle 18 on Reader Service Card

SCA Moves Offices

The Shipbuilders Council of America (SCA), the trade association for U.S. vessel builders, recently moved its offices from Washington, D.C., to Arlington, Va.

SCA's new address is 4301 N. Fairfax Drive, Suite 330, Arlington, Va. 22203; telephone: (703) 276-1700; and fax: (703) 276-1707.

Sea-Land/Moller Plan To Provide Top-Level Trans-Pacific Service

One of the largest groupings in the trade was formed by the trans-Pacific partnership between Sea-Land and Denmark's A.P. Moller.

When the vessel-sharing plan came into effect on May 1, the partnership created a powerful force to counter newly formed groups in the Orient.

The service, which not only covers the major trans-Pacific trades between the Far East and North America but intra-Asia as well, is designed to offer the customer improved schedules and frequencies, and superior transit times. Sea-Land and Moller have worked closely on the plans for several months and say that the arrangement will provide an unparalleled level of transport service.

The agreement involves partnership in five trans-Pacific trades, and in conjunction with the intra-Asia services is said to give customers of both Sea-Land and Moller subsidiary Maersk the choice of 14 weekly services.

In addition to 11 feeders linking Thailand, Malaysia, Indonesia and the Philippines with Singapore, Hong Kong and Kaoshiung, two dedicated intra-Asia services are being established in the regional Asian segment—central and north Asia.

Sea-Land's and Maersk's extensive intermodal systems will support both the trans-Pacific and regional services.

There will be 104 weekly port calls in North America and Asia, the partners say, and the important Japanese lines Tokyo-Oakland and Yokohama-Tacoma will be achieved in eight days.

Circle Seal Controls Adds New Set Of Medium-Duty Quiet Relief Valves

Circle Seal Controls has announced the addition of a new set of medium-duty relief valves to their extensive line of fluid flow management products. Designated the 5100 Series Relief Valves, they offer dead-tight sealing in a chatter-proof package.

The 5100 Series Relief Valves are designed for liquids (including cryogenic) or gases with pressures ranging from 10 to 2400 psi. They utilize a metal-to-metal seat design to carry the spring load; an O-Ring provides final seal. Sealing efficiency increases as pressure increases to cracking point; zero leakage is experienced to within 2 percent of cracking pressure. Chatter is eliminated through the use of a friction damping device. Damping bars prevent the poppet from over-travel at initial cracking thrust.

The 5100 Series valves are available in a wide variety of configura-

tions, including in-line, right-angle, discharge to atmosphere, and manual override versions. They are easily installed and available in a choice of materials with either male or female connections for 1/8-inch pipe and 1/16-inch tubing.

For free literature giving full information on the new valves from Circle Seal Controls,

Circle 15 on Reader Service Card

Seacoast Electric Names Nancy Robinson Sales Director, Houston Branch

Seacoast Electric Company, an international distributor of military wire, cable and accessories to the defense industry, recently announced the appointment of **Nancy Robinson** as regional sales direc-

tor, based out of the Houston branch.

Ms. **Robinson** has over 15 years of experience in the wire and cable industry in various sales management capacities. Formerly, she held the position of acting branch manager for Seacoast, Houston.

Ms. **Robinson** will be focussing her efforts on the supervision of overall sales, operations and the implementation of major new customer and product programs.



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SHIP MAINTENANCE

The Navy's Fleet Modernization Program

The Congress appropriates billions of dollars to maintain and modernize the Navy's ships. The Fleet Modernization Program is the Navy's primary vehicle for updating the offensive, defensive, and operating systems installed on each of its ships.

U.S. naval forces must be prepared to conduct prompt and sustained operations at sea to ensure national security. The Navy invests large sums in each of its combatant and support ships to carry out these operations. Each ship is called on to serve in its front line deterrent role for extended periods. It is common for the Navy's ships to remain in the active fleet for 30 or 40 years or more. However, the offensive, defensive, and operating systems installed on each ship are subject to wear and obsolescence and must be continually updated and/or replaced to maintain an advantage over the ever-improving and ever-increasing threat posed by adversaries. The Fleet Modernization Program (FMP) is the Navy's primary vehicle for maximizing fleet readiness by maintaining ship systems and war-fighting capabilities.

The FMP involves planning, programming, budgeting, and installing military and technical improvements in ships of the active and reserve fleets. The program's goals are to (1) improve ships' capabilities and material condition, (2) increase fleet readiness by improving standardization of ships, and (3) improve the safety, reliability, reparability, and habitability of ships and equipment.

From fiscal years 1986 to 1990, the Navy's ship modernization budget totaled about \$6.7 billion. Modernization work for fiscal year 1987 included funds to plan and design the installation of new systems and install the equipment. Procurement funds, estimated at \$960 million for the fiscal year 1987 FMP, plus operations and maintenance (O&M) funds, totaled about \$2.5 billion. Procurement funds were used to purchase modernization equipment for the ships.

Until fiscal year 1990, funds for ship modernization were allocated to the Navy in two budget categories: procurement for purchasing modernization equipment and O&M

for the equipment's installation. Before that year, the Navy only identified the O&M funds needed to plan the installations and install the equipment as FMP costs; it did not include the procurement funds as part of the program. Procurement funds used to purchase FMP equipment were not identified separately from funds used to purchase equipment for other programs.

In fiscal year 1990, the Congress required that installation funds for all modernization items be transferred from the O&M to the procurement budget category. As a result, funds used to purchase equipment and funds used to design installation of the equipment and install it are now all part of the FMP. According to Navy program officials, a major impact of this change is that equipment may not be procured until the funds needed to install it have also been approved. However, it may be difficult for the Navy to estimate the installation funds needed because modernization equipment is often purchased 2 to 3 years before it is installed and as much as 5 years or more in advance for large, complex systems.

In fiscal year 1987, the program year selected by the General Accounting Office for the examination, funds for ship maintenance and modernization were appropriated as one line item of the Navy's O&M budget. (The fiscal year 1987 program was selected because it was the most recent year for which a sizable portion of the equipment had been installed.) The Navy allocated \$1.5 billion of a total O&M appropriation of \$24 billion to the fiscal year 1987 FMP. The majority of these funds were for the design and installation

of centrally funded, more complex modernization projects called "Title K" ship alterations (K-alt). Other projects funded by the FMP included alterations to nuclear power plants, ordnance equipment, and hull, mechanical, and electrical equipment; updates of modernization plans for certain classes of ships; and maintenance of the management information systems for the FMP.

The Navy's congressional budget request for the fiscal year 1987 FMP included funds needed to install 2,278 K-alt that totaled almost \$958 million. The K-alt ranged in size

from installing steam piping drains at an estimated cost of \$3,457 for 10 days of work to installing special hull treatment on submarines (rubber tiles used to quiet submarines) at a cost of almost \$15 million for 32,500 days of work. Figure 1.1 shows a breakdown of K-alt by type of ship.

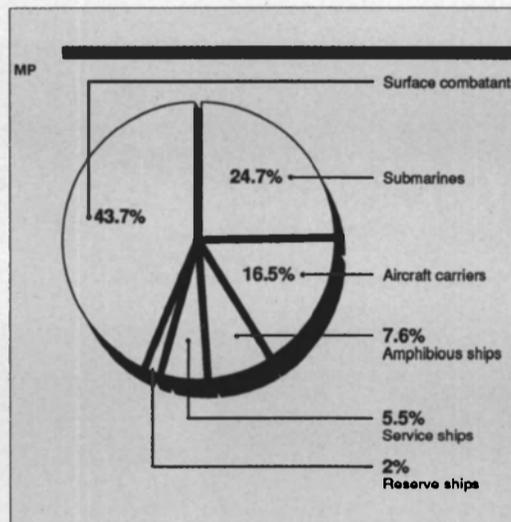


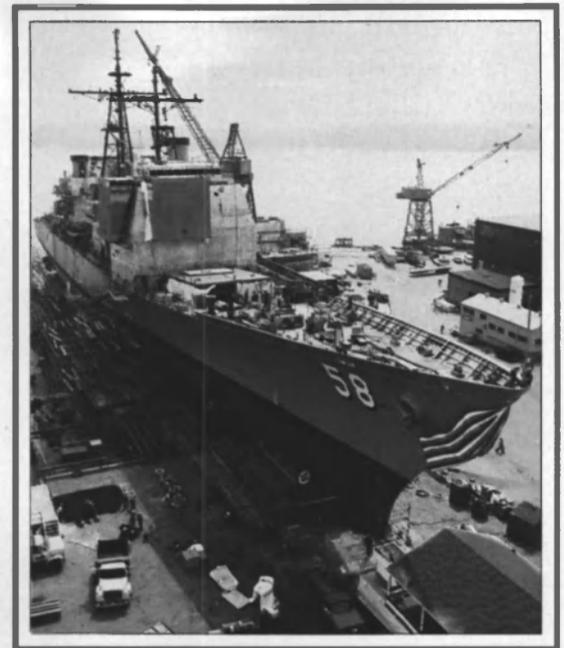
Fig. 1.1
Breakdown of the K-alt installations in the fiscal year 1987 FMP budget by type of ship.

Process for Modernizing Ships:

Planning and installing modernization projects is a lengthy, complex process involving many factors outside the direct control of the FMP managers. Installation design, from initiation to first installation of equipment, can take as long as 3 years. The entire process may involve actions that require 5 years or more. Navy FMP managers told the GAO it takes from 3 to 5 years to develop and plan most ship modernization projects.

Results of the Fleet Modernization Program

The Navy's total fiscal year 1987 budget request for the FMP was \$1.6 billion. This included about



\$958 million for 2,278 modernization projects (K-alt) to be installed on 244 ships. About 29 percent, or 666, of these projects, representing about 20 percent, or about \$193 million, of the funds budgeted, were not installed as part of the fiscal year 1987 program. All work on 32 ships was canceled or moved to another year's program. In addition, 53 ships, with K-alt totaling about \$125.6 million, were added to the program after the fiscal year 1987 budget was submitted. Navy guidelines discourage late additions to the FMP because of the extensive planning process necessary to prepare for successful installations.

Delays in completing K-alt contributed to deployment delays for about 13 percent, or 32, of the ships included in the fiscal year 1987 program, representing about 48 percent, or \$413 million, of the modernization funds budgeted. Over one-half of the delays were for periods longer than one month, and three ships were delayed more than 5 months. Nine frigates were decommissioned in fiscal years 1988 and 1989 after the Navy spent \$9.9 million installing new equipment on them. Some of this equipment was subsequently removed, at further cost to the Navy, when most of the ships were later leased at no cost to foreign navies.

Recommendations:

The General Accounting Office recommended to improve program oversight and add the needed program priority, the Secretary of the Navy should ensure that

- the program's management information system provides timely information to managers to support planning, programming, budgeting, executing, and evaluating the program and

- annual briefings on the results of the Fleet Modernization Program are provided to the Chief of Naval Operations' Executive Board, as required by Navy instruction.

New Survey Predicts Further Increase In World LNG Carrier Orders

A new survey of the natural gas fleet and ship availability predicts a further large increase in the number of liquefied natural gas (LNG) carriers on order around the world.

There are now 19 LNG carriers on order ranging from 18,800 to 137,500-cubic-meters capacity compared with only five last June, according to Barry Rogliano Salles's "World LNG Fleet."

A minimum of another 10 ships will probably be ordered in the next 12 months, the survey's authors state, and 16 ships are listed as pending orders.

The survey says that 12 orders are very likely for the 1994-2000 period, while 17 orders, probable yet uncertain, are forecast for 1995-2000. Experts project that between 13 and 34 ships will be ordered in the first decade of the coming century.

The new edition of the survey confirms the Moss containment system as the most popular design for both existing ships and those on order.

Of the 65 ships in service, half have Moss spherical containment, 22 have Gaz Transport and 11 Technigaz membrane systems.

In the last 11 months, of the 14 orders placed, seven were contracted in Japan, five in France, and two in South Korea.

Fluid Mechanics Appointed DUAP Agents For Their After-Market Sulzer Line

Fluid Mechanics, Inc. of Cleveland, Ohio, has been appointed as the DUAP agents for their after-market Sulzer line. DUAP of Switzerland, original equipment on most Sulzer diesels, has been the standard of quality for this fine line of diesels for many years.

Besides distributing low-speed diesel fuel equipment, Fluid Mechanics has the in-house capability to repair and calibrate back to original specs medium- and high-speed fuel systems of all makes.

For more information and free literature,

Circle 42 on Reader Service Card

Electro-Motive Division Names Power Products Sales Manager

Electro-Motive Division (EMD) of General Motors has recently announced the appointment of **R.L. Grajek** as power products sales manager. **Mr. Grajek** will be responsible for commercial activities for end product and after-market power products sales.

Shell And BP Disclose Major Oil Discovery In Gulf Of Mexico

A significant deepwater discovery in the Gulf of Mexico, which analysts believe has potential reserves of more than 700 million barrels of oil, has been disclosed by

Shell and BP

The find could herald the start of a new era of exploration and development activity in the Gulf of Mexico, U.S. analysts believe.

The operator of the field, Shell, said the discovery well on Mississippi Canyon block 763 found oil-bearing zones at between 14,500 feet and 18,100 feet. These zones have a combined thickness of around 440

net feet of oil-bearing sand.

The Mars prospect is located in approximately 3,100 feet of water about 130 miles southeast of New Orleans. Production from the Mars prospect could start within five years of a decision to proceed with development. Four wells have already been drilled on the blocks and a fifth is under way.



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Niigata Engineering Co., one of the largest manufacturer of four-stroke engines in Japan, has entered into a manufacturing agreement with MAN B&W Diesel, Holeby, for the production, assembling and testing of the 23 and 28

Series, with an output range from 500 - 4,000 kW.

MAN B&W Holeby GenSets, which are designed for HFO operation, ensures an optimal reliability in power-supply for vessels throughout the world - at unchallenged low operating and maintenance costs.

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Circle 171 on Reader Service Card

Sperry Marine Stages Live Vessel Traffic System Demonstration

During the first two weeks of March 1991, Sperry Marine Inc. set up a temporary vessel traffic system on an island in the middle of the entrance to the Chesapeake Bay.

The demonstration was held primarily to conduct operational testing of the advanced VTS equipment the company is under contract to install in the strategic Strait of Hormuz.

The event afforded an opportunity to demonstrate the highly sophisticated and improved Sperry Marine VTS to appropriate officials such as port authorities, state and

local government officials, pilot organizations, and others who have an interest in environmental protection, waterway safety, and port operations and who are involved in finding a cost-effective way to enhance the safety of ports and to safeguard the environment.

Sperry's VTS can simultaneously support waterside security, port planning, harbor navigation, envi-

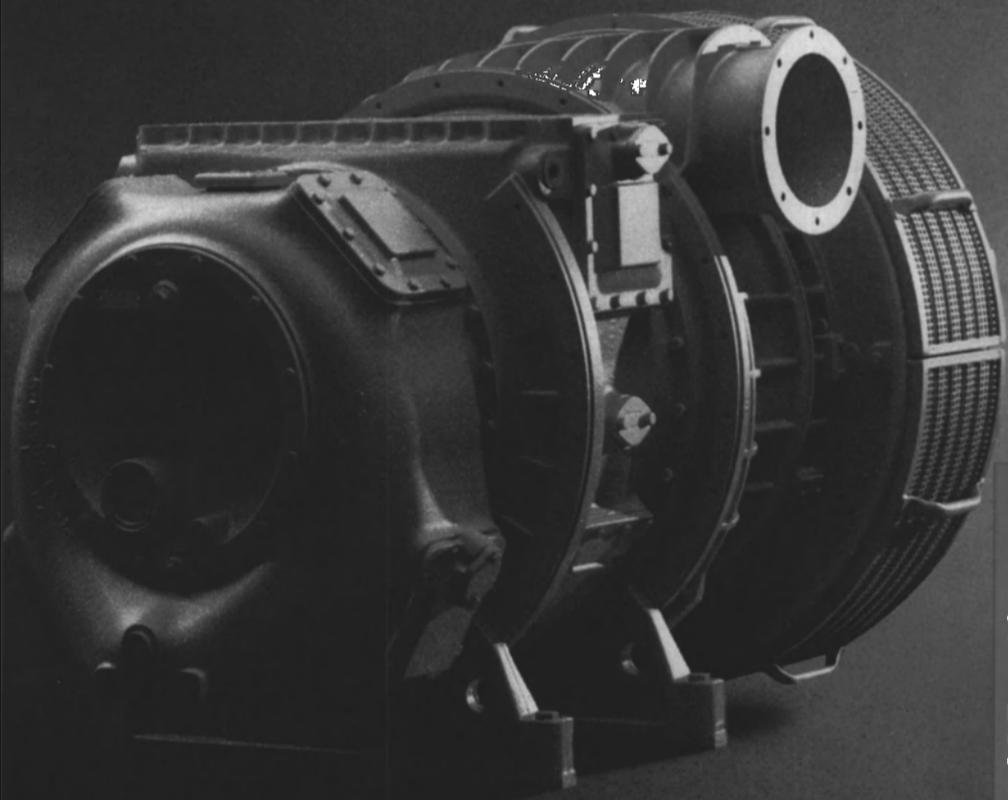
ronmental protection, search and rescue, anchorage area and buoy monitoring, traffic management, law enforcement, and a multitude of other requirements.

Sperry Marine Inc., a leading developer and manufacturer of marine electronic equipment, is headquartered in Charlottesville, Va. The company is a subsidiary of Newport News Shipbuilding, a Tenneco company.

For further information and free literature,

Circle 17 on Reader Service Card

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Circle 206 on Reader Service Card

ABB

ASEA BROWN BOVERI

ESL Announces Personnel Changes

Electro Signal Lab, Inc. (ESL) of Hingham, Mass., recently announced two personnel changes.

Chris Kitchenham has been promoted from national service manager to director of operations and field service for ESL. Mr. **Kitchenham** joined the company in 1976 and will continue to manage services for ESL's national accounts.

Debbie Peidl has joined ESL as manager of marketing new product development. Ms. **Peidl** was previously employed as merchandising manager for Arius and also as Northeast regional manager for Arrowhead Distribution.

Ramey Marine Deck Cranes Offers Standard Features, Many Options

Ramey, Incorporated of Roseburg, Ore., builders of the original hydraulic knuckleboom crane in the U.S., has over 35 years' experience in crane manufacturing and has built a reputation of highest quality and service.

Entirely built in the USA, its product line covers a wide range of sizes and load capacities in five major business fields: marine, timber, heavy industry, solid waste, and mining/quarry.

Ramey pedestal-mounted, hydraulic knuckleboom cranes are custom manufactured to the design specifications and requirements of each job application. Marine cranes include standard features such as hydraulic safety lock-out valves, fail-safe swing brakes and a three-part marine finish. Many options are also available.

Ramey also custom manufactures grapples, buckets and other attachments for specific material handling needs, offering greater speed and positive load control, all with the end result of reducing labor and increasing safety.

Turnkey Operations, Inc. of Roseburg, Ore., is the sole marketing representative for Ramey worldwide, offering knuckleboom marine cranes in 2-1/2-ton capacities and with boom lengths from 15 feet to 50 feet.

For free literature giving complete information on Ramey marine deck cranes,

Circle 23 on Reader Service Card

First for heavy-duty turbochargers.

Maritime Reporter/Engineering News

Texport Plan Put On Hold

The billion-dollar offshore oil port planned for the Gulf of Mexico has been delayed indefinitely following concern over President **Bush's** national energy strategy.

According to a spokesman for the group of 14 major oil companies which were planning the facility, called Texport, the project was put on hold because of the national energy strategy, which seeks to curtail imports and raise domestic production.

Initial plans for the facility, which would be located offshore Freeport, Texas, called for Texport to handle between one to two million barrels of imported oil daily. Cost estimates for the construction of the facility ranged between \$600 million and \$1.3 billion.

Diamond M And Reading & Bates Team Up In ODECO Bid

Reading & Bates and Diamond M, a subsidiary of the Loews Corporation, recently joined forces in a bid reportedly worth more than \$00 million for the drilling activities of Ocean Drilling & Exploration (ODECO), one of the world's largest drilling rig companies.

According to a brief statement, the deal will be funded partially with cash and Reading & Bates common stock.

ODECO is expecting an offer by Capercaille Holdings, an investment group which owns 40 percent of Reading & Bates, for its contract drilling operations.

Santa Fe Sends Rigs To Kuwait

U.S.-based Santa Fe International Corp. is sending drilling rigs to Kuwait as part of a post-war project with three Middle East companies, according to an industry source.

Santa Fe International, which is a Kuwaiti owned oil drilling contractor, will send the rigs as part of a project with Kuwait Petroleum Co., Kuwait Drilling Co. and Qatar Drilling Co.

Santa Fe will take over oil well drilling for future projects at the request of KPC.

Supreme Court To Review Classing Of Yard Workers

The Shipbuilders Council of America (SCA) recently filed an Amicus Curiae brief in support of Southwest Marine, Inc. vs. Byron Gizoni in a case to be considered by the U.S. Supreme Court.

SCA is seeking to resolve whether a shipyard employee is properly classified as a land-based maritime worker or a seaman. Land-based workers are entitled to workers' compensation benefits by the Long-

shore and Harbor Workers' Compensation Act and seamen are not. However, seamen are permitted to sue their employers for injuries arising out of the employers' negligence. The issue in this case is whether a shipyard worker covered by the LHWCA can also be a seaman entitled to bring a negligence action against his employer.

Byron Gizoni, a shipyard worker at Southwest Marine, Inc.,

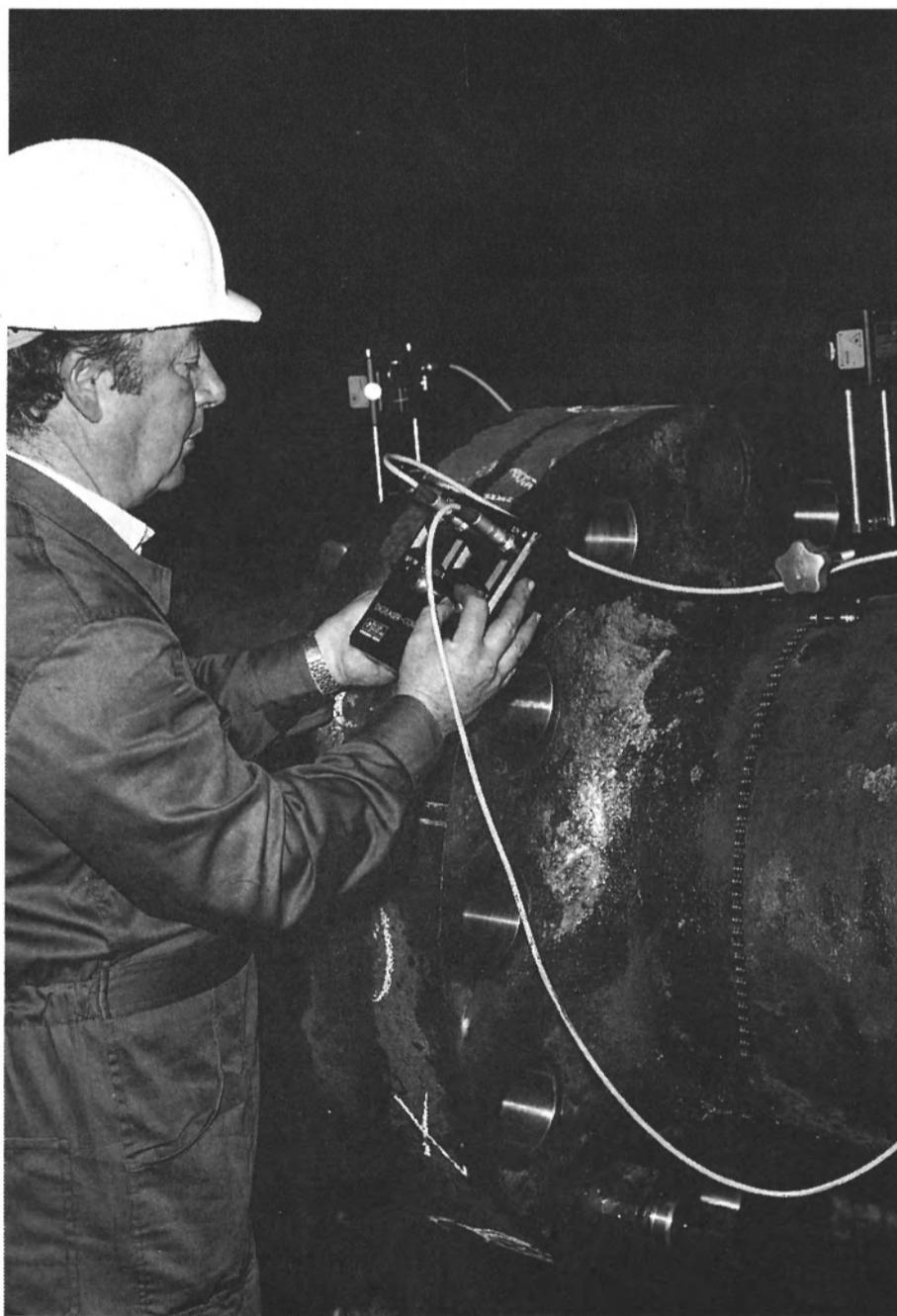
of San Diego, Calif., applied for and accepted LHWCA benefits for a work-related injury. Subsequently, Mr. **Gizoni** filed a negligence action against his employer under the Jones Act, part of the Merchant Marine Act, which provides legal remedies for seamen.

Although in the ensuing suit a California Federal District Court rules that the two statutes are mutually exclusive and threw out

Mr. **Gizoni's** claim, the 9th District Court reversed that decision and the Supreme Court has agreed to hear arguments filed April 11.

The decision by the 9th Circuit Court complicates the handling of LHWCA claims filed by shipyard workers. Shipyards were have to absorb heavy risk management costs to protect themselves from potential dual compensatory awards from injured shipyard workers.

Boosting your ships' LIFE CYCLE PROFIT that is our business idea



We do it by focusing on your **major planned repairs**.

We offer not only the largest drydocking facility in the Atlantic — on the world's busiest sealane — and unmatched resources for hull treatment and repairs, but also all the specialists needed and more than 50 years of shiprepair experience.

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P.O. BOX 2138 - 1103 LISBOA CODEX - PORTUGAL. FAX 276 4670. TELEX 18172 - 12649 - 16370 LISNAV P. TELFS: 2750811.

Japanese Group Planning High-Speed Craft Capable Of Cruising At 50 Knots

A research and development body set up by Japan's seven leading shipbuilders, the Technological Research Association for the Techno-Superliner, believes that it will soon be able to construct a radio-controlled miniature model of a high-speed

vessel capable of cruising at a speed of 50 knots.

The association is comprised of Mitsui Engineering & Shipbuilding (Zosen), Kawasaki Heavy Industries, Mitsubishi Heavy Industries, Hitachi Zosen, Ishikawajima-Harima Heavy Industries, NKK Corp and Sumitomo Heavy Industries.

The Ministry of Transport, under a five-year program which began in

the 1989 financial year, is sponsoring the proposed vessel, which would have a capacity of 1,000 tons of cargo in airline-type containers and a cruising range of 930 kilometers.

The Ministry of Transport is hoping the vessel will provide a technological lead for Japan's shipbuilders and seize a substantial proportion of the trans-Pacific high-value trade currently carried by airlines.

The seven companies involved in

the project have been split into two groups. Mitsui Zosen and Mitsubishi are responsible for the hull design, incorporating air-pressurized lifting systems similar to those employed in hovercraft. The other five companies are in charge of developing a wing floating system.

Currently, a 4-meter-long model, one-twentieth of the actual size, is being developed by the partners. The model will be tested by Akashi Ship Model Research Institute, a joint venture between Kawasaki and Hitachi.

Construction of the prototype is planned by Mitsui and Mitsubishi during the 1992 financial year, and a blueprint for commercial development of the vessel is scheduled for the 1993 financial year. A commercially viable craft would be available in the latter part of the 1990s.

Transit time between Japan's major ports will be halved by the first commercial vessel, but the main potential for the high-speed liner is expected to be in deepsea trades.

BUYING OR SELLING A COMMERCIAL VESSEL?

At Diversified Marine Brokerage, Ltd., we presently maintain an exclusive worldwide database of over 25,000 prospective buyers and sellers of commercial marine vessels. This represents the largest available audience of its kind anywhere.

Our customer base includes all types of vessels from Barges, Tugs, Dry Docks, Passenger Boats, Ferries, Crew Boats, Supply Boats, etc ... to the largest Ocean-Going vessels.

Present market conditions have created a growing demand. So whether you are considering buying or selling, now is the time to contact us to discuss your needs.



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Telephone: (516) 365-5650 Fax: (516) 627-5329
Contact: Gil Castro - President

Crowley Maritime Awards Contracts For Containers, Valued Over \$20 Million

Leo Collar, president and COO of Crowley Maritime Corporation, Oakland, Calif., recently announced the awarding of contracts for the construction and purchase of 4,000 forty-foot-long, 8-1/2-foot-high steel dry-cargo containers, valued in excess of \$20 million, for delivery into the company's equipment inventory over the next year.

Crowley Maritime is a major worldwide provider of marine transportation and related industry services.

UK Operator To Start High-Speed Channel Link Using Large Hovercraft

A new high-speed Channel service using two large Italian-built hovercraft is being planned by an unidentified British ferry operator.

The Italian yard Societa Esercizio Cantiere, which is currently building a prototype, has developed the design for this 91-meter-long surface effect ship.

Specifications call for the craft to carry 180 vehicles and up to 800 passengers. The first craft is scheduled to be delivered in early 1993, with the second due the following year.

Power will be provided by two 25,000 gas turbines which may be linked to water jet propulsion.

A specially developed fan system for the air cushion helps reduce noise levels, a critical factor in sensitive port areas of the type round on both sides of the Channel.

Though there have been many attempts to operate high-speed services across the Channel, only the SRN4 link between Dover and Calais and Boulogne have lasted. As the wave-piercers are introduced, these craft are due to be phased out.

Michael Kent To Head Marketing Effort At Oceandril

Oceandril, Inc. recently announced that **Michael Kent** has joined the company in the capacity of rig marketing and research.

Mr. **Kent** began his oil field career with Houston Offshore working rigs in the Gulf. Since 1985, he has been employed by Shell Oil buying oil and gas leases for their Rocky Mountain Division.

Oceandril is a privately owned Texas corporation that provides management services to the offshore industry. The company is currently refurbishing the Norwegian K/S-owned jackup Bigfoot II and operating the Gulf of Mexico jackup Nueces under a bareboat charter contract with Gabring A/S.

Parmatic's 'Elinca' Units Protect Seawater Systems Against Marine Growths

Parmatic of Wayne, N.J., builder of one of the world's largest ranges of military and commercial marine filters and separators, is offering free literature on Elinca® systems which, according to the company, provide safe, effective, low-cost control of marine growth in seawater systems.

Marine growths such as barnacles and mussels foul the internal surfaces of seawater systems, resulting in clogged pipes and valves, lower heat exchanger efficiency, fouling of firefighting equipment, increased fuel consumption and other system problems.

Elinca, a product of Parmatic, brings a new dimension to this important problem by protecting seawater installations by the use of sacrificial anodes with an impressed current, the pipe or surface to be protected serving as a cathode.

Elinca systems, which are used successfully in a wide variety of onshore and offshore applications throughout the world, are backed by a high level of engineering, manufacturing and service support capabilities.

For more information and free literature on Elinca systems from Parmatic,

Circle 21 on Reader Service Card

Bollinger Delivers 2nd Tug To Hawaiian Tug & Barge

Bollinger Machine Ship & Shipyard, Inc., Lockport, La., recently delivered the second 117-foot tugboat built for Hawaiian Tug & Barge Corporation of Honolulu.

Rey Jonsson, vice president of Hawaiian Tug & Barge, accepted

the vessel, the T/B Hoku-Ke'a (Southern Cross), at ceremonies hosted by Algiers Iron Works, a Bollinger subsidiary located at the crescent of the Mississippi River in New Orleans.

Robert Clarke, chairman of the board of Hawaiian Electric joined Bollinger's chairman and CEO Boysie Bollinger as keynote speakers to guests from both companies.

The vessel is powered by two EMD 16-cylinder 745 E-6 engines. Gears are Reintjes Model 196, 5:1 ratio vertical float.

The tug joins the first Bollinger-built tug, Hoku Loa (Morning Star), which was delivered in January 1991. They will serve as the backbone of the tug and barge fleet that transports goods throughout the Hawaiian Islands and the South

Pacific.

The Hoku-Ke'a is the third 117-foot-long tug built by Bollinger within the last 12 months. The T/B Doc Candies was delivered last fall and is owned and operated by Otto Candies, Inc. of Des Allemands, La.

For free literature on the facilities and capabilities of Bollinger,

Circle 53 on Reader Service Card

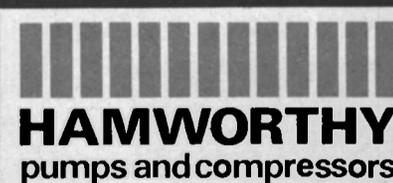
Trust.

At sea, what could be more vital?

A hostile, unpredictable environment constantly demands the best from man and machine alike. Hamworthy equipment has, over many years, consistently proved itself equal to the task.

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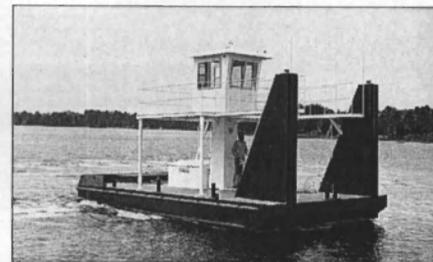
Marine Inland Delivers Detroit Diesel-Powered Fleet Repair Vessel

Marine Inland Fabricators of Panama City, Fla., recently delivered a fleet repair vessel to Cargo Carriers, a division of Cargill Marine and Terminal, Inc. The vessel

will be used to transport equipment and supplies to barges in need of repair in Cargo Carriers' reserve fleet on the Mississippi, near New Orleans.

The boat is 35 feet long by 18-foot beam and is powered by a single GM 6-71 Detroit Diesel engine. A Borg-Warner Velvet Drive 2.66:1 reduction turns a 30-inch by 28-inch propeller. The hull is built of 5/16-inch

plate with some 1/2-inch plate over the wheel and is segmented into four watertight compartments by transverse bulkheads. So that the operator can make up the boat to empties as easily as loads, there are two separate and complete control stations, one on the main deck and one in the pilothouse. The bridge deck, which surrounds the pilothouse, is at the correct height to



Fleet repair vessel, built by Marine Inland Fabricators, is powered by a single GM 6-71 Detroit Diesel engine.

allow easy transfer of pumps and equipment from the boat to the decks of empty barges.

Marine Inland Fabricators builds pushboats and deck barges for the barge and construction industries. For free literature on the facilities and capabilities of the yard,

Circle 51 on Reader Service Card

Further South Korean Orders For Krupp Atlas NACOS Systems

Four container vessels under construction at South Korea's Hanjin Heavy Industries yard for delivery to Hanjin Shipping Company during the course of this year and next are to be equipped with Krupp Atlas Elektronik NACOS 20 integrated navigation command systems. A further system has also been ordered for installation on a 51,800-dwt container being built by Hyundai on behalf of Malaysian International Shipping.

Worldwide sales of NACOS now total 107 systems, with over 50 being fully operational aboard "Ship of the Future," research and conventional newbuilding vessels.

For further information on NACOS,

Circle 98 on Reader Service Card

Ashland To Sell Cleveland Tankers To Patriot Shipping

Ashland Oil, Inc., Ashland, Ky., recently entered into an agreement to sell the assets of its Cleveland Tankers, Inc. subsidiary to Patriot Shipping, Inc., a private U.S. shipping company.

Terms of the transaction were not disclosed. The agreement is subject to approval by the U.S. Maritime Administration.

If the deal is approved, Patriot Shipping will acquire two double-hulled petroleum tankers and a barge with a combined capacity of 170,000 barrels.

Once the transaction is completed, Patriot will operate the assets from Cleveland, Ohio, using the Cleveland Tankers name and current organization. Patriot will transport heavy fuel oil, asphalt, gasoline, distillate, petrochemicals, commodity chemicals and fertilizers.

Patriot is expected to long-term time charter the two tankers with Enerchem USA, a subsidiary of Enerchem Transport Inc.

TODAY'S MARINE BEARING ENVIRONMENT DEMANDS POLLUTION-FREE RELIABILITY



Some things never change, and the need for propeller shaft bearing system reliability remains one of a shipping owner's highest priorities.

Historically, "operational" stern tube lube oil "consumption" has been

an accepted aspect of shipping. Ever increasing concerns for the environment however, combined with tougher government regulations make pollution free operation vital.

Thor-Lube bearings are a marriage of time-proven Thordon XL water lubricated bearings with our new bio-degradable polymer based "Thor-Lube" lubricant.

Four years of carefully monitored performance on early vessels have shown excellent performance, matching lab test predictions. Currently, a complete Thor-Lube system is being fitted to a twin shaft Antarctic ice breaker. These 25 inch, 640 mm bearings will provide reliable pollution-free service for this sophisticated research vessel.

Thor-Lube bearings work with conventional seals and fit the same space as other oil lubricated bearings. Bearings and lubricants are competitively priced and

our systems are designed to replace present oil or open systems or for easy integration into new designs; that means you can now take advantage of fail-safe Thor-Lube for your next project with guaranteed pollution-free lubrication.

For more information or an installation feasibility assessment contact us today. If it's urgent, we'll be back to you later the same day.



Attn: David Read, General Manager
Thordon Bearings

Tell me more about pollution free reliability.

- Thor-Lube bearing/seal system
- Thordon's complete bearing line
- Contact me immediately for an assessment

Name _____ Title _____

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Philadelphia Resins Offers Brochure On Coefficients Of Thermal Expansion

A newly issued brochure from ITW Philadelphia Resins, Montgomeryville, Pa., details the coefficients of thermal expansion (CTE) for concrete, steel and epoxy resin machinery grouts.

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The brochure also reviews exotherm curves, the temperatures reached by epoxy machinery grouts when curing. Knowing how materials perform when curing is important to minimizing thermal stress which causes cracking of the epoxy.

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The company offers in-depth technical service and field support

For a free copy of Brochure 638 from ITW Philadelphia Resins,
Circle 36 on Reader Service Card

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Choosing the Right Abrasive is Simply Matching the Tool to the Job.

Clean Up to Twice as Fast With GMA Garnet. Sometimes getting a job done fast is as simple as choosing the right tool. On many jobs, cutting faster — 20%-50% faster — is as simple as choosing **GMA Garnet**. That's what two shipyards and several refineries found when they tested **GMA Garnet** against slag.

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Choosing **GMA Garnet** over other abrasives is like choosing a chainsaw over an axe. It's only logical.

Find out for yourself.
Call or write for the distributor nearest you.

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For more information and a free copy of the new 20-page brochure from MARCO,

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Vessel Description:

- 65 Ft. Steel Research Vessel (90 gross tons), newly refitted August, 1990.
- Strong, Stable, Reliable, Fully Equipped Sea Boat, U.S.C.G. Documented & Inspected for 49 passengers + 2 crew and All-weather Coastwise Service to 20 miles.
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- Design specifications: Built to U.S.C.G. and ABS. Certified. Full set of drawings available.
- Complete Bridge of New Navigational Electronics, plus Global HF Communications, Cellular Telephone, WeatherFax, Color TV (200 mi), and CD/Stereo System. Current FCC ship inspection.
- Access: Watertight hatches and doors throughout. Interior companionway from pilot house, over engine room, to aft cabin. Full standing headroom and walkways in engine room for excellent service accessibility.
- 30 Ton Cargo Hold: 18'x25" Foredeck. Fully equipped with stern bitts and quadrant for deployment of towed arrays or vessel towing operations. Metal halide floodlights fore and aft.
- Electric generators for 220/110 VAC 50/60 HZ 1 Ph.; 24 VDC, 280A; 12 DC.
- Full Galley in aft cabin for Hot Meals at Sea; Real Flush Toilets and Category II M.S.D. Sleeping accommodations: Can accommodate 4-16 berths in 2 compartments. Oil-fired hot water heating system with radiators throughout vessel; full insulation.

Performance Data:

- Cruising speed: 10 knots @ 1600 rpm.
- Fuel consumption: 9 gph @ 1600 rpm.
- Fuel capacity: 1000 gal.
- Range: 1100 nautical miles
- Sewage treatment system: Continuous usage 6-10 persons, overboard discharge certified.
- Fresh water: 250 gal.
- Cargo capacity: 30 tons.
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For more information and a free copy of the new 20-page brochure from MARCO,

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Phillyship Elects Corporate Officers

The board of directors of Philadelphia Ship Maintenance Company, Inc. (Phillyship), Philadelphia, Pa., recently announced the election of corporate officers to serve during 1991.

Joel H. van Diepen has been elected chairman of the board, president and chief executive officer. **Hugo J. Affannato** has been elected senior vice president and chief operating officer. **Richard J. Heidt** has been elected senior vice president and chief financial officer. Ms. **Marion J. van Diepen** has been elected executive vice president.

In addition, **Richard E. Venuti** and **Richard W. Stout** have been appointed manager, commercial marine division, and manager, commercial and industrial division for the company, respectively.

Phillyship, serving the maritime and industrial community for three decades, has representatives in over 30 countries around the world.

For further information and free literature on Philadelphia Ship Maintenance Company,

Circle 11 on Reader Service Card

Sea-Land Launches New Service Linking U.S. With Honolulu And Japan

Marking a major commitment to the Hawaii community, U.S.-flag carrier Sea-Land Service Inc. has introduced a new, four-vessel service linking the U.S. West Coast with Honolulu and Japan. With the addition of this new service, Sea-Land doubles its capacity and frequency of service to Honolulu with two weekly calls.

The four new vessels include two SL-18 containerships, the Sea-Land Producer and Sea-Land Consumer, each having 832-FEU capacity, as well as the Sea-Land Reliance and Sea-Land Spirit, with capacities of 1,050 FEUs and 850 FEUs, respectively.

Litton Names Frank Olson President, New Solid State Division In Santa Clara

Frank A. Olson has been named president of Litton's New Solid State division based in Santa Clara, Calif.

The division, a unit of Litton's Electronic Devices and Materials group, has been formed by combining Litton's Solid State Operation in Milpitas, Calif., with the Solid State Operation recently acquired from Varian Associates, Inc.

The new Litton division develops and produces products with microwave and millimeter-wave applications for the defense electronics, aerospace and communications markets.

Bender Awarded Contract For USNS Vega Overhaul

Bender Shipbuilding & Repair Co., Inc. was recently awarded a \$2,084,515 contract for the regular overhaul and drydocking of the USNS Vega (T-AK 286). The Vega

is a 483-foot-long supply and support ship for Trident submarines operated by the Military Sealift Command, Bayonne, N.J., for the U.S. Navy.

The vessel arrived in Mobile in May with a crew of 70, including seven Navy personnel. Bender is completing the overhaul in 45 days, employing 65 workers.

Bender drydocked the Vega on the Pete B, its newest and largest drydock. The Pete B has a lifting capacity of 17,500 long tons, is 545 feet long and measures 124 feet between its wingwalls.

For free literature on the facilities and capabilities of Bender Shipbuilding & Repair.

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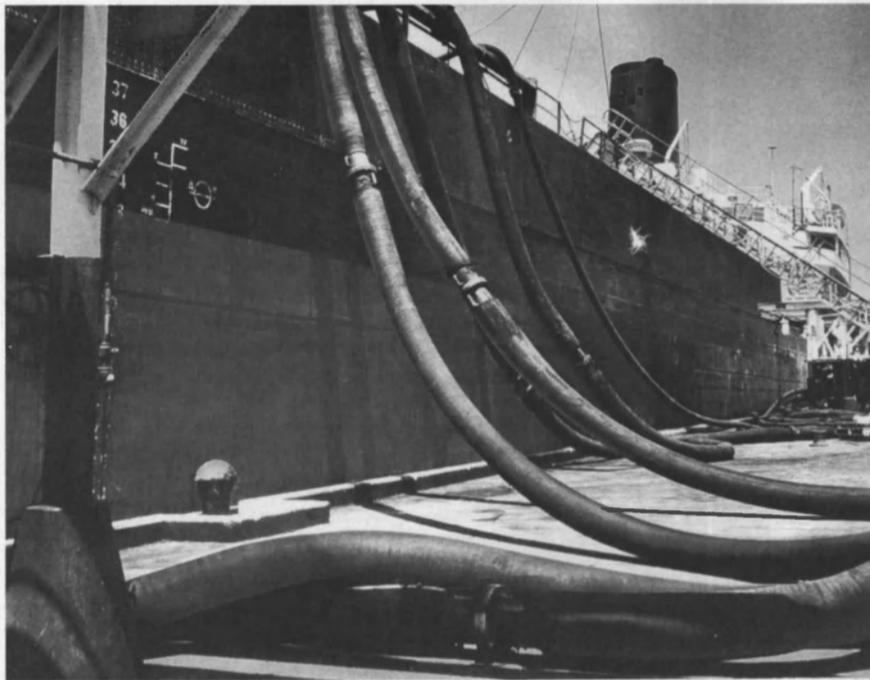
Circle 221 on Reader Service Card

Literature Offered By IMC On Marine Consultancy Services

International Marine Consultants, Inc. (IMC) of Mineola, N.Y., provides comprehensive management and consultancy services to all areas of the maritime industry.

These services include: oil spill prevention and audits including vessel and terminal inspections, cargo loss control and expediting, vessel and cargo surveys and technical engineering assistance.

For more information on these and other IMC services, contact **John O'Conner** at (516) 741-2700, or write to IMC, Inc., 22 Jericho Turnpike, Mineola, N.Y. 11501.



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Circle 247 on Reader Service Card

Astilleros Seville Yard Delivers AESAMAN B&W-Powered Reefer 'Del Monte Quality'

Astilleros Espanoles (AESAMAN), Seville yard, recently delivered the 580,000-cubic-foot reefer *Del Monte Quality* to its shipowner, Del Monte Fresh Fruit International.

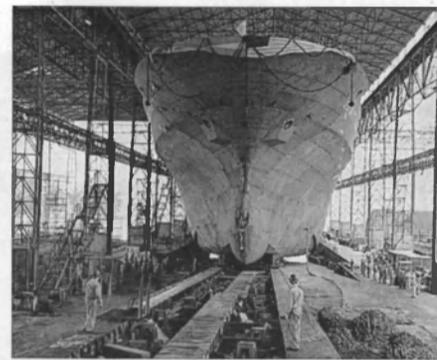
The 519-foot-long by 77-foot-wide ship is the second of a series of three 180,000-cubic-foot reefer sister ships built in the Seville shipyard of Astilleros Espanoles for this shipowner. The first, *Del Monte Pride*, was delivered in January; the third, *Del Monte Spirit*, is scheduled to be delivered before next May.

In addition, four 370,000-cubic-foot reefer vessels built in the Seville shipyard and two 580,000-cubic-footers with similar characteristics built in Puerto Real shipyard were delivered to the same owner during 1989 and 1990.

The *Del Monte Quality* is powered by AESAMAN B&W main engines, model 6L60MC, six cylinders, of 13,750 bhp (derated) each turning a Navalips fixed-pitch propeller, allowing for a normal service speed of 20 knots to the full load draft. Auxiliary engines are four Bazan MAN B&W Holeby of 1,400 bhp each.

The reefer will be able to carry either goods put into containers or palletized refrigerated cargo of all kinds, including bananas, pineapples, citrics and frozen meats, at any temperature between +150 C and -250 C, in her four refrigerated holds.

The vessel, which carries ABS classification, is designed to comply with ACCU-class. Control of the



The *Del Monte Quality* being launched into the Guadalquivir River from the roofed yard at Astilleros Espanoles, Seville.

refrigerating plant, propelling machinery, auxiliary machinery and generating plant is carried out by an integrated computer system. Watch and control of the different parameters is carried out means of cathodic ray monitors with menu controls located in different places of the ship.

Two sets of twin-mounted cargo cranes, built by Fabrica San Carlos under license from Hagglands, with equalizers and spreader incorporating powered rotation, twist-lock operation and hydraulic open/close gravity point adjustment provide for easy handling of containers.

The *Del Monte Quality* incorporates in her design those characteristics that allow sailing with a crew of only 16.

For free literature detailing the facilities and capabilities Astilleros-Espanoles,

Circle 54 on Reader Service Card

IDB Aero-Nautical Opens Regional Offices In N.Y., Houston, London

IDB Aero-Nautical Communications, Inc. (IDB-A), a supplier of mobile communications services via Inmarsat satellite, has announced the opening of regional sales offices in New York, Houston and London to service the maritime industry.

IDB-A's New York office is headed by **John Marra** as director of maritime sales, Northeast region. Mr. Marra brings over 28 years of sales and operations experience servicing the maritime industry to IDB-A. He joins the company after heading John Marra Associates, Inc., a maritime consulting and services concern, for six years. IDB-A's New York office is located at 260 Madison Avenue, 17th Floor, New York, N.Y. 10016; telephone: (212) 953-0070.

Peter Coffman joins IDB-A as director of sales, Gulf Coast region in the new Houston office. Mr. Coffman has over 24 years of telecommunications experience in commercial, industrial and institutional markets. He joins IDB-A from

Louisiana General Services, where since 1989, he served as a management consultant charged with identifying and developing acquisitions and new ventures in telecommunications. IDB-A's Houston office is based at 4723 Aftonshire, #13, Houston, Texas 77027; telephone: (713) 960-9064.

IDB-A has also announced a presence in the United Kingdom, with the opening of an office in Essex, England. IDB-A's exclusive representative in Europe is **George Mochrie**, a 30-year veteran of the maritime industry, and a specialist in mobile communications systems. IDB-A can be reached in Europe at P.O. Box 1396, Frinton-On-Sea, Essex C013 ONN, United Kingdom; telephone: 0255-850319.

IDB Aero-Nautical Communications, Inc., based in Rockville, Md., markets ship-to-shore satellite communications services to maritime users, including commercial shipping fleets, fishing vessels, pleasure cruise lines, oil rigs and tankers.

For free literature detailing the communication services of IDB Aero-Nautical,

Circle 65 on Reader Service Card

USCG Will Not Yield On Tanker Requirements

Adm. **William J. Kime**, U.S. Coast Guard commandant, said recently at the annual meeting of the Marine Index Bureau Inc. in Washington, D.C., that despite complaints from the maritime and insurance industries, the Coast Guard will not compromise on requirements for financial responsibility certificates covering oil tankers and barges.

Admiral **Kime** said that even though some of the protection and indemnity clubs (marine insurance groups) have said they won't write policies covering oil transport in U.S. waters, don't expect the Coast Guard to alter their position. "Congress has not given us a lot of latitude," he added.

The certificates, required under the Oil Pollution Act of 1990, are designed to insure that oil transportation companies can pay the cost of cleanups should spills occur.

Adm. **Richard A. Applebaum**, Commander of the National Pollution Funds Center, the Coast Guard unit that will enforce much of the 1990 oil pollution law, told the Marine Index Bureau meeting that the Coast Guard had completed work on the rules implementing the certificate requirement. The regulations will require one of four criteria to establish financial responsibility: the vessel owner must be insured for liability, have liability self-insurance, a surety bond, or have tangible assets as collateral. The Coast Guard will have discretion in interpreting these requirements, Admiral **Applebaum** said.

New Rules For Tankers Operating In Spanish Waters

New stricter rules for the movement of tankers in its territorial waters were recently implemented by the Spanish Government following the Haven accident off the Italian coast.

The new rules require that tankers anchored within the 12-mile limit of Spanish territorial waters must report to authorities their destinations and cargo, as well as pay strict attention to safety measures. Part of the new rules calls for owners to have tugs standing by to assist in case of emergency. Additionally, tankers at anchor must report in every 4 hours, while ships transiting must report the vessel's position every 15 minutes.

The new rules will have a great impact on tankers which normally anchor in the Gulf of Cadiz awaiting orders.

The regulations are a reaction to the environmental damage caused by the recent accidents which involved the VLCC Haven, which exploded off the coast of Genoa, and the AGIP Abruzzo, which caught fire after colliding with the passenger ferry Moby Prince in the waters near Livorno.

Sable Maritime Offers New Software Package For IBM PC/AT Compatibles

Sable Maritime Limited (SML) of Calgary, Alberta, Canada, producer of engineering software for the marine industry, is offering a new software package for IBM PC/AT compatibles that permits shaft align-

ment calculations to be executed quickly and easily.

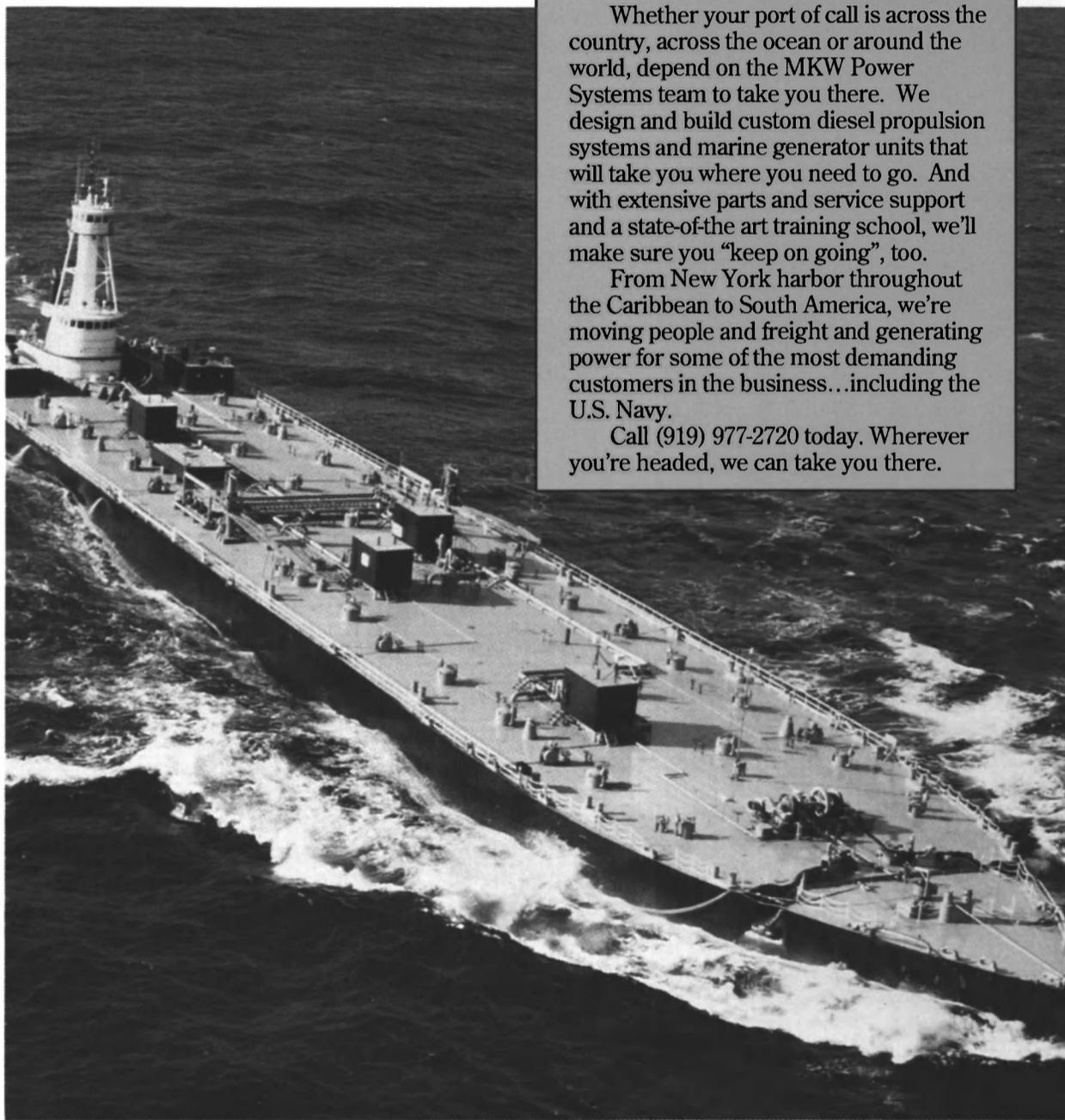
According to SML, SHAFT-STAT is indispensable in the marine design office. Its exceptionally user-friendly, color graphics, menu and mouse-driven operation permits calculation and display of bearing loads, shaft displacements, offsets, slopes and deflections in marine propulsion trains.

Suitable for use during design and installation, this software produces reports in a format accepted by classification societies.

This package is the first of a series of marine propulsion modules from Sable Maritime Limited.

For further information and free literature on the new marine software package from SML,

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Circle 271 on Reader Service Card

Defense And The Shipbuilding Industrial Base

Editorial by John J. Stocker
President of the Shipbuilders Council of America

The recent Navy award of the SSN-22 to General Dynamics' Electric Boat, while welcome news to the yard, does nothing to minimize the long-term consequences of the Navy's shipbuilding account. The Navy has plans to build 58 ships over the next six years; a number sufficient to support only a 300-ship Navy, rather than the 450-ship fleet that has been publicly stated as the long-term objective. These cutbacks have serious implications for America's shipyards.

Earlier this year, Secretary of the Navy **H. Lawrence Garrett, III** and Assistant Secretary of the Navy (Research, Development, and Acquisition) **Gerald Cann** expressed concern over the Navy's ability to support the shipbuilding industrial base as Navy shipbuilding declines to an average of ten new ships per year through fiscal year FY) 1997.

The Navy leaders noted that they could no longer support America's shipyards through their own programs, and said they recognized that a national strategy had to be put in place in order to sustain the industry through the remainder of this decade and into the 21st Century. Earlier, Mr. Garrett and Mr. Cann had pointed to Navy Department studies that showed the industry would see capacity reduced by 50 percent if the industry continued to rely only on government contracts for their sole workload.

As the Shipbuilders Council has explained repeatedly, there are three steps that the Navy and the DoD *could* take to support the American shipbuilding industry:

- Work with industry to develop an industry/government partnership to export American-built warships—including non-nuclear powered submarines—to Allied Navies.

- Support the development of a Sealift program to meet the surge shortfalls so amply highlighted in Operation Desert Shield.

- Provide vigorous support to the U.S. Trade Representative's efforts in disciplining foreign shipbuilding subsidies, and, if an international agreement is not achieved, support Congressional efforts to impose trade sanctions.

The implementation of these steps could provide the U.S. shipbuilding industry with enough work to sustain itself and to be available if the Defense Department and the Navy ever need to expand or modernize force structures in the future. Surely, the three recommended steps are reasonable. Given the rhetoric of Navy leaders before Congress, these steps should get the full support of the Pentagon. In reality, however, that has not been the case.

Export Of Non-Nuclear Powered Submarines

Because of the reduced number of submarines to be built for the fleet (eight SEAWOLF-class subs from fiscal years 91 through 97 are in the Navy's plan), the jobs of over 20,000 people skilled in the building of nuclear submarines will be lost by 1996. Since the Navy has been unable to afford a shipbuilding plan to support the submarine industrial base, one would expect that it would be keenly interested in the development of alternative markets not only for these two companies that currently have submarine construction capability, but, for the industry as a whole. Yet that has not been the case.

For example, there is a substantial market for the export of American-built non-nuclear submarines for the navies of some of our closest allies. But the U.S. Navy's consistent response has been to take a position against developing the export potential for this market, citing concerns over inadvertent technology transfer. These concerns can be dealt with through mechanisms that insulate U.S. submarine technology, joint venture licensing of foreign designs/technology, and other means. But the Navy refuses to work with industry on this issue, preferring instead to simply block market access.

Export Of Other Surface Combatants

A number of American shipyards have responded to indications that there is a viable international market in building less-sophisticated surface combatants for allied na-

vies. For example, many people are aware that Taiwan has been in the market for a new, small frigate for some time, and a number of American shipyards have been talking to the Taiwanese about differing approaches to meet their needs. The Navy is aware of these activities. Now it appears that the Taiwanese Government has expressed informal interest in no-cost leasing six to eight U.S. FF 1052 class frigates when they are retired from U.S. Navy service. If the Taiwanese formally request such a transfer, and it is approved by the U.S. Navy, the opportunity to develop a U.S. production base for export frigates will be further delayed.

In another case, the Greek Government appears to be interested in acquiring four used DDG-2 class ships. U.S. yards have been in the lead in responding to Greek new construction requirements for a small frigate. We expect that the DDG-2 transfer will delay Greek new-construction opportunities.

Sealift

The DoD's slow response to the Congressional Sealift initiative has been widely publicized. Acquisition documents have yet to be issued, despite the fact that DoD has had authority and appropriations for two years to execute this program. Now General **Hansford T. Johnson**, Commander, U.S. Transportation Command, has proposed that 20 foreign-built, foreign-flag roll-on/roll-off ships be acquired, despite the fact that old ships laid up in the Ready Reserve Force (RRF) proved to be our weakest link in the lift equation during Operations Desert Shield/Storm. (Twenty percent of the cargo was carried by 71 RRF ships, while ten percent of the cargo was carried on only seven Fast Sealift Support ships.)

Acquisition of these ships would, in effect, be a reward to those owners who bought ships in subsidized foreign shipyards and would lead these owners to place new orders (with U.S. taxpayers' dollars) in subsidized foreign shipyards. Thus, General **Johnson** has proposed that the United States Government indirectly subsidize foreign shipyards.

Subsidy Negotiations

In the two years since the Shipbuilders Council started the trade process on foreign shipbuilding subsidies, the Defense and Navy Departments have been conspicuously absent from the process. A single lower-level bureaucrat was a member of the inter-agency planning committee in the early days, but participation has been limited of late. In short, despite the pervasive subsidy practices in the international market and the detrimental effect those practices have on American shipyards, DoD has experienced *no* interest in seeing market access provided to American yards.

Unfortunately, it is quite clear that the Navy and DoD are not backing up their rhetorical concern for the industrial base with concrete actions. In fact, it appears, that there is little coordination among the diverse interests within the Pentagon that would aid the industry in its pursuit of export markets. This is a classic case of the right hand not knowing what the left hand is doing.

Our international competition is well-organized. Governments work closely with their industries to ensure that economic vitality can be sustained through these troubled economic times. The Council's proposals do *not* require Government to re-institute subsidies. But, our proposals do require a degree of innovation and creativity not heretofore seen. Unless there is the development of clearly-defined government-industry partnership in alternative shipbuilding markets here in the United States, our international competition will triumph.

DoD has got to recognize that we are now in an economic war. If there is no clear understanding of the conditions faced by American yards in the marketplace, there will be no American industry left to build the naval forces of the future. We need action that understands the game, not platitudes that keep Congressional delegations mesmerized.

Shipbuilders Council of America
4301 N. Fairfax Drive, Suite 330
Arlington, VA 22203
Tel.: (703) 276-1700

More Consolidation Seen Within International Support Vessel Market

More consolidation within the international support vessel market over the next few years is expected by U.S. vessel owner Tidewater as more companies are forced into mergers and acquisitions.

John Laborde, Tidewater chief executive, said in an interview that the company was putting effort into achieving consolidation in the market.

Tidewater is still in negotiations over a deal worth up to \$500 million to purchase Zapata Gulf Marine in a move which would create one of the world's largest support vessel fleets. A merger of the two firms would create tremendous economies-of-scale in management and administration.

Zapata's market share of the world's offshore fleet is put at nearly 12 percent, while Tidewater currently has between 10 percent and 11 percent.

International vessel utilization, Mr. Laborde said, had risen to 90-95 percent and day rates for supply vessels had gone up to \$3,000-\$3,200 per day over the last six to eight months. At the same time, vessel usage in U.S. waters was around 85-93 percent with rates dropping from around \$3,000 per day down to \$2,500 per day.

FMC Soon To Present Judgment On Japanese Dock Labor Dues

Judgment on its investigations into dock labor dues in Japan will be presented by the U.S. Federal Maritime Commission (FMC) by the middle of August. The investigation was launched by the FMC under the terms of the Foreign Shipping Practice Act (FSPA).

The charges, imposed by the Japan Harbor Transportation Association, are paid into the Japan Harbor Management Fund.

Introduced in 1989, the fund is allegedly used to ensure a stable and regular supply of dock labor at Japanese ports and to update and provide import distribution centers.

The FMC investigations, which coincide with similar moves by the European Community Commission, have so far concentrated on whether U.S.-flag carriers should be responsible for funding the Japanese centers and what benefits they derive from the fund.

New LPG Tanker Design Developed By Polish Yard

Polish shipbuilder Gdynia, after over a decade's absence from the gas tanker market, is introducing a new 75,000-cubic-meter-capacity liquid petroleum gas design.

Little details of the new design called the B56 are available except that the propulsion machinery would include a Cegielski-built Sulzer RTA76 low-speed six-cylinder diesel engine, with an output of 23,400 bhp.

The last gas carriers delivered by Gdynia were of three 75,000-cubic-meter-capacity LPG tankers for Bergeson in 1978 and 1979.

New Thaxton Brochure Features Wide Selection Of Pipe Stoppers

Thaxton, Division of Hy-Tech Machine, Mars, Pa., is offering a new free brochure that features a wide selection of pipe stoppers to be used in the hydro-test of pipe, tub-

ing or O.E.M. equipment, such as tanks, boilers and heat exchangers.

Stoppers feature a unique expanding "grip" that increases the holding power as the pressure increases.

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USS Mississippi (CGN 40) Official U.S. NAVY photograph

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Circle 232 on Reader Service Card

SCA Stresses Need To Build Sealift Ships At U.S. Shipyards

John Stocker, the outspoken president of the Shipbuilders Council of America (SCA), recently testified before a subcommittee of the House of Representatives, of the importance of U.S. shipyards con-

structing new sealift ships, instead of purchasing secondhand tonnage from abroad.

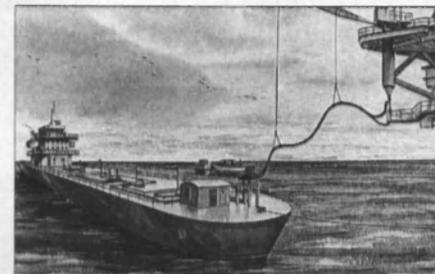
During a hearing of the Armed Services Seapower and Strategic Materials Subcommittee, Mr. Stocker said, it is in the Navy's best interests that U.S. shipyards are successful in winning multiyear contracts for the Military Sealift Command (MSC).

Congress has allocated \$1.3 bil-

lion over the last two fiscal years for the upgrading of sealift capability.

Plans have been put forth by some government officials, one by Gen. Hansford Johnson, Commander-in-Chief of the U.S. Transportation Command, and one by Warren Leback, who heads the Maritime Administration, for the purchase of secondhand tonnage from abroad or construction of sealift ships in foreign yards.

TANO To Provide Control Systems For Sulfur Carriers



Artist's conception of one of the two sulfur tankers for which TANO Marine Systems of New Orleans will supply the centralized monitoring and control systems.

TANO Marine Systems, Inc. has received a contract from Eastern Shipyards of Panama City, Fla., to supply the centralized monitoring and control systems for two 401-foot self-propelled sulfur tankers to be used in a sulfur mining project by Freeport-McMoRan Inc. of New Orleans.

TANO is providing its TNS-2 distributed monitoring system for the carriers. Under the contract, TANO will supply the engine room console, bridge console, watchcall system, cargo monitoring and handling system, and alarm panels for each vessel.

TANO is scheduled to deliver its equipment for the first barge in the third quarter of this year, with the second shipset to follow at year-end.

A subsidiary of TANO Corporation, TANO Marine Systems designs and manufactures computer-based automation and control systems for commercial and military ships.

For more information and free literature from TANO,

Circle 89 on Reader Service Card

Spartan Synthetic EP Gear Oils Effective In Wide Temperature Range

The Spartan Synthetic EP line of industrial gear oils, formulated by Exxon Company, USA, is designed to provide excellent lubrication under demanding conditions, especially in the industrial and marine environments where drastic temperature fluctuations are common. High-quality polyalphaolefin-base stock helps keep viscosity stable over a wide range of temperatures. The viscosity index for Spartan Synthetic EP gear oil ranges from 150 to 167, allowing superior flowability at low temperatures and enhanced lubrication protection at high temperatures.

All Spartan Synthetic EP lubricants meet or exceed stringent EP gear oil requirements of AGMA, U.S. Steel (224), Cincinnati Milacron and David Brown.

For further information and free literature on Exxon's line of Spartan Synthetic EP industrial gear oils,

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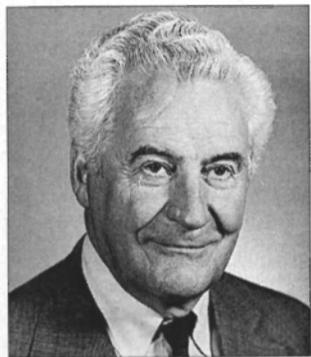


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Circle 257 on Reader Service Card

Hagglunds Denison Names Rune Back President



Rune Back

Rune Back has been appointed president of Hagglunds Denison, Marysville, Ohio, a leading manufacturer of hydraulic components and systems worldwide.

In this position he has full responsibility for Hagglunds Denison's U.S. and Canadian marketing and manufacturing operations. The Marysville plant is the company's sole hydraulic piston pump and motor manufacturing facility.

Kockumation Develops Computerized Shipboard Management System

Chiefplan-MASP, a system for the efficient shipboard management of any type of ship, is now available in an advanced computerized form that includes integrated cost control systems and satellite communication ship-to-shore.

Developed by Kockumation, the Malmo-based marine computer specialists, Chiefplan-MASP is a PC-based system which is designed for onboard maintenance and spare part control, thereby allowing the ship to carry the optimal range of spare parts and ensuring the efficient planning of preventive maintenance.

It is also designed to give personnel on the ship far greater control over day-to-day onboard operational decision-making.

For further information on the Chiefplan-MASP system,
Circle 70 on Reader Service Card

MACM '92 Conference Issues Call For Papers

The fourth international conference on Marine Applications of Composite Materials (MACM '92) is scheduled to be held in Melbourne, Fla., March 24-26, 1992. The conference will provide a forum for exchange of state-of-the-art marine FRP technology.

Innovative papers pertaining to marine composites and the following topics are invited: Materials, Design, Fabrication, Testing, In-Service Performance, Commercial Applications, Military Applications, and Technology Transfer From Other Industries.

Abstracts should be approximately 200 words in length and

should be submitted no later than July 31, 1991, with title of paper, author name(s) and short biography, and mailing address for the main and corresponding author. The abstracts will be reviewed and selected papers will be announced by August 30, 1991.

For further information, contact: MACM '92, PO Box 130, Melbourne, Fla. 32902, phone (407) 728-1305.

Plans For Another Box Terminal Considered At Port Of Halifax

Because of the recent surge in trade over the last five years, the Port of Halifax is considering adding a third container terminal.

Container volumes at the port have increased by 103 percent to

reach a total of 3.9 million tons in 1990. This surge has resulted in a major expansion of facilities at the port's Halterm terminal and Fairview Cove terminals.

Plans are being considered to build a third container terminal for Atlantic Searoute Ltd.

Last year, the Port of Halifax handled a total of 17 million tons of cargo.

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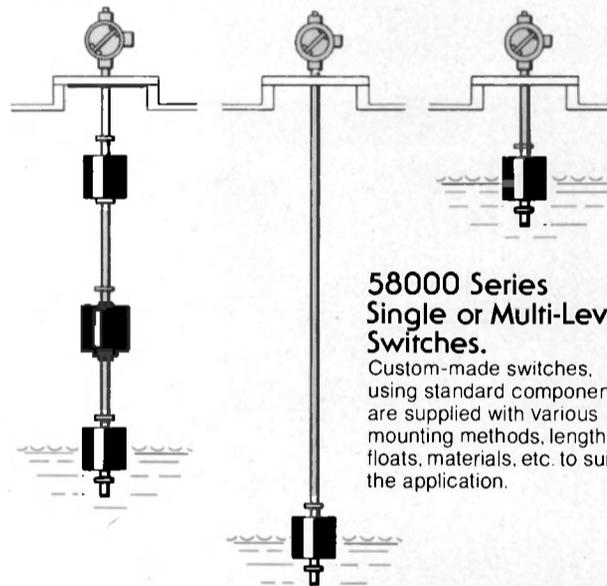
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L019

Circle 246 on Reader Service Card

Metrox Announces New Marine Crane Load Indicator

Metrox, Inc. of San Diego, Calif., recently announced a new Crane Load Indicator Model CLI500. The sealed, stainless steel unit will withstand years of outdoor, dockside or offshore use.

The display is a backlite 3/4-inch

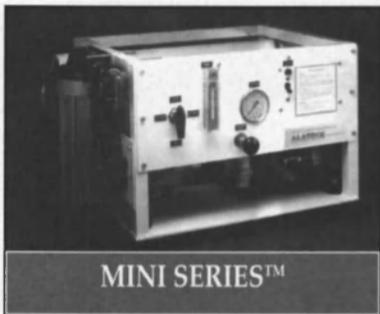
LCD for easy viewing in bright sunlight or at night. The controls include parts of line, tare and calibration.

The load is sensed with a Metrox tension link installed in the dead line. Other types of load sensors are available to tailor the CLI500 to any type crane for marine use.

For further information and free literature on the new marine crane load indicator from Metrox,

Circle 58 on Reader Service Card

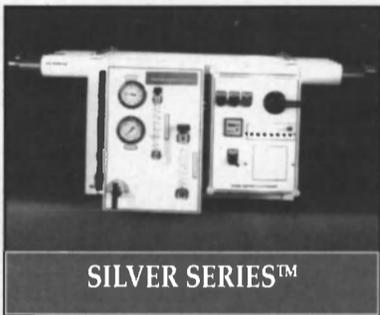
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Circle 28C on Reader Service Card



The transportation of five different, fully segregated cargoes is possible at the same time on the chemical tanker Conger, recently delivered by Lindenau.

Lindenau Shipyard Delivers MAN B&W-Powered Chemical Tanker

Lindenau GmbH of Kiel, Germany, recently delivered the 23,400-dwt chemical tanker Conger to its owner, Partenreederei "Conger," c/o Carl Buttner GmbH & Co. Built for the transportation of chemicals up to IMO type I, product oils and crude oil, the energy-saving and environmentally safe Conger is the largest ship Lindenau has delivered.

Special features of new vessel include: ship lines which were developed for an optimized speed/power characteristic and good sea-keeping properties, resulting in a trial speed of 15.5 knots at an engine output of 6,600 kw; a bow thruster with output of 735 kw which improves maneuvering quality; and a double bottom and double side shell which lower the risk of collision and environmental pollution.

Constructed under the class and supervision of Germanischer Lloyd, the 557.5-foot-long by 88.7-foot-wide Conger is powered by a MAN B&W 6L 58/64 main engine with 7,440 kw at 499 rpm. Other machinery includes Renk-Tacke reduction gear, Vulkan coupling for the main engine, KaMeWa controllable pitch propeller and Yanmar auxiliary engines. She is equipped with 17 cargo tanks which are divided into 12 side tanks (including two slop tanks) and five center tanks. The total volume is 27,740 cbm. Smooth inner tank walls provide for better and faster cleaning of the tanks, less

slop and, therefore, less pollution.

The tanker has received the Finnish ice class "Ice IA" and is suited for flat ice up to a thickness of 80 cm. A special stem was provided for good icebreaking capability.

Complete accommodations for a crew of 28 persons is located in a separate fully air-conditioned deckhouse aft.

For free literature on the facilities and capabilities of Lindenau,

Circle 41 on Reader Service Card

CONGER List of Suppliers

Main engine	MAN B&W
Reduction gear	Renk-Tacke
Propeller	KaMeWa
Auxiliary engines	Yanmar
Generators	STN
Steering gear	DAN Svendborg
Bow thruster	Jastram-Werke
Bow thruster starter	Asea Brown Boveri
Steam boilers	Aalborg Ciserv
Fresh water generator	Alfa Laval
Sewage treatment plant	Hamworthy
Deck auxiliaries	Ulstein Norwinch
Lighting, engine room	Aqua-Signal
Inert gas generator	Kvaerner Eureka
Radar	Krupp-Atlas
Echo sounder	Honeywell-Elac Nautik
Portable cargo pump	Frank Mohn
Stern tube seals	Blohm & Voss
Separators	Westfalia Separator

R/D/S To Supply Vessel Tracking System For Chinese Port

Radar/Digital Systems (R/D/S) of Auburn, Calif., has been awarded a contract for a radar surveillance and vessel tracking system to be incorporated as part of a new Vessel Traffic System for the Port of Dalian in China, the country's second largest mainland port.

The contract, valued at more than \$1.6 million, was awarded by Canac Telecom, a crown corporation in Canada, which will be integrating the

vessel traffic surveillance system with a larger communication system it is supplying for the port.

RD/S will supply a turnkey system including the radar, the R/D/S 1000 VR radar processing and vessel tracking system, and two bay console including color graphic displays and a Traffic Data Management System to provide traffic information reports.

For free literature detailing the radar image processing, vessel tracking, vessel collision avoidance and traffic data management systems offered by Radar/Digital Systems,

Circle 66 on Reader Service Card

Hitachi Zosen Completes HZ MAN B&W-Powered VLCC 'Sawako'



Designed to carry 2 million barrels of cargo oil and cruise with minimal resistance and fuel saving, the 1,076-foot-long by 187-foot-wide tanker Sawako has a new simplified hull structure that eliminates the center girder.

The 281,751-metric-ton VLCC Sawako was recently completed at the Ariake Works of Hitachi Zosen and delivered to the owner, Golden Sands Corporation.

The vessel is equipped with the Super Stream Duct, a nozzle developed by Hitachi Zosen, in front of the propeller and is fitted with a large bulbous bow below the waterline for better propulsion efficiency.

The Sawako is powered by an HZ MAN B&W 6S80MC main diesel engine with a maximum continuous output of 22,900 hp by 67.3 rpm, producing a speed of 14 knots. The derated, low-speed, long-stroke, static-pressure supercharger engine makes possible significant fuel savings in operation.

The cargo oil lines in the tanks are arranged to allow loading three grades of crude oil and are highly corrosion-resistant coated steel pipes to reinforce the prevention of corrosion. With its self-stripping system, the tanker also features short load periods and manpower savings.

For free literature on the facilities and capabilities of Hitachi Zosen,

Circle 50 on Reader Service Card

Seaward Provides Sea Guard Fenders For M/V Gulf Protector

Seaward International, Inc. of Clearbrook, Va., has received an order from Jahre Shipping (USA), Inc., Houston, Texas, one of the largest ship-to-ship transfer companies operating worldwide, to supply four large Sea Guard marine fenders. These fenders will be used aboard the M/V Gulf Protector, the first fender handling lightering support vessel in the U.S. Gulf to provide high-capacity firefighting and oil-spill response capability. The 3.3-diameter by 6.5-meter (11-by-22-

foot) Sea Guard fenders are among the largest of this type fender ever manufactured.

The M/V Gulf Protector will be permanently based offshore Texas and Louisiana in strategic locations to respond quickly to any Gulf Coast requirements. She will be the only vessel of her kind available on an every day basis in the Gulf Coast.

The patented Sea Guard fender

design incorporates many important features, including a thick continuous nylon filament reinforced elastomer outer skin and a through chain strength member. The smooth outer fender skin, which is not fitted with a net, is highly abrasion resistant and eliminates damage to vessel hull coating. The clean, unencumbered design of the Sea Guard makes it easy to handle and enhances its flexi-

bility for use in many operations.

Seaward International is an elastomer technology company that serves the offshore industry and government with fender, flotation, energy absorption and specialty coating products. For additional information,

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- 2 - Mo. D-398, Twelve cylinder, Caterpillar diesel engines keel cooled, air start, with LO and Water Temp alarms
- 2 - Mo. 3198, Caterpillar hydraulic clutches with 3.95:1 gear ratio driving four blade propellers
- 2 - 300 KW, 110/408 V AC generators driven by keel cooled, Mo. 353 Caterpillar diesel engines
- 2 - Two stage, Gardner-Denver, air compressors and tanks
- 1 - 3" Aurora bilge pump, 3" Aurora fire pump, 3" FO transfer pump
- 2 - 1" Deming FW pumps and system
- 1 - 4" Ammonia compressor cooling water pump
- 1 - 1-1/4" SW wash down pump

There are approximately 1400 wood lath traps on the vessel with 30 miles of 9/16" polypropylene rope with floats, etc. necessary for the operation of the traps.

There is a material lift from the ice hold to the processing room that is electrical operated.

There is a hydraulic crane on the second deck for lifting stores, catch boats, etc.

There are ten (10) hydraulic fishing reels on the main deck.

On the second deck of the vessel there is a processing room certified by the U.S.D.A. (composition covering).

The vessel is renovated with a total of 11,000 cu. ft. of below freezing, cargo hold with a plate freezer that has an estimated capacity of 1500# of frozen product per three (3) hours of operation

There are ammonia compressors on the vessel with 100% redundancy for the protection of the frozen product, and 6" of insulation through out the refrigerated spaces.

There are packaging machines, conveyors, stainless steel work tables, sinks, etc. for processing the product.

On the second deck port side there is a laboratory, to be used in the quality control of the product.

This vessel has an appraised value of \$2,450,000.

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Circle 317 on Reader Service Card

Global Marine To Manage Semisubmersible Drilling Rig Sea Explorer

Management of the semisubmersible drilling rig Sea Explorer, on location in the North Sea, is to be taken over from BP Exploration by Global Marine, who won the con-

tract after BP invited tenders from selected UK-based drilling companies earlier this year.

The BP contract will result in over 100 new jobs at Global Marine in Aberdeen. Global, whose parent company is based in Houston, Texas, owns and operates 27 rigs worldwide, seven of which work in UK waters.

The handling of the rig was of-

fered by a third party BP because a contractor would be able to achieve economies of scale not possible in the present setup. Until now, it was being managed by a specially created branch of BP working on a semiautonomous enterprise basis.

Global Marine believes its safety record was a key factor in the contract negotiations, having had only three lost time accidents per million

manhours in 1990—half the industry average.

The Sea Explorer, a 700 series self-propelled rig built between 1981 and 1985 at Scott Lithgow in Greenock, will continue to work for BP.

U.S. Tanker Operators Hope To Avoid 'Double Trouble'

In a recent letter to the U.S. Coast Guard, the Coalition of Tank Vessel Operators urged the service not to discriminate against double hull tankers in service or being built when drafting its technical rules for compliance with the Oil Pollution Act of 1990.

In its letter the coalition, which is composed of the American Institute of Merchant Shipping, American Petroleum Institute and American Waterways Operators, said that the Coast Guard should provide sufficient flexibility in its rules in order to allow for development of future designs.

The coalition said that all existing double hull tankers, excluding Ore-Bulk-Oil (OBO) vessels, should be able to continue trading with the U.S.

The coalition has urged the Coast Guard to adopt rules "consistent with international standards."

AWO filed comments separately from API and AIMS.

Fuel Info '91, Sponsored By Seaworthy Sytems, Set For June 18 In New York

Seaworthy Systems, Inc. of Essex, Conn., a major consulting and marine engineering firm, will host "Fuel Info '91," a series of executive forums that will enable managers from marine and shipping companies, admiralty law firms, utilities and industrial firms to better deal with one of their largest and most volatile operating expenses, fuel and fuel-associated costs.

The Fuel Info '91 forum will be held June 18 from 9:30 a.m. to 4 p.m. at the Whitehall Club, 17 Battery Place in New York. The fee for this session, directed toward owners, managers and nontechnical personnel, will be \$285, which includes lunch and materials.

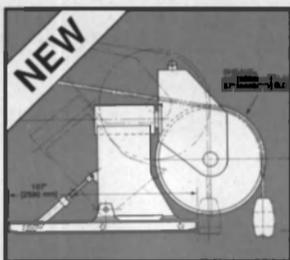
"Fuel costs can be a major operating expense for shipping companies, industries and utilities," says **Matthew F. Winkler**, vice president, Fuels & Combustion, Seaworthy Systems. "Anything you can do to reduce fuel expense will impact directly on your bottom line."

For more information on the New York Fuel Info '91 Forum and to register, contact **Matthew F. Winkler** at Seaworthy Systems, Inc., P.O. Box 965, Essex, Conn. 06426, or call (203) 767-9061.

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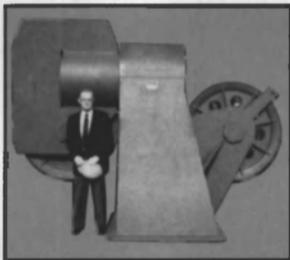
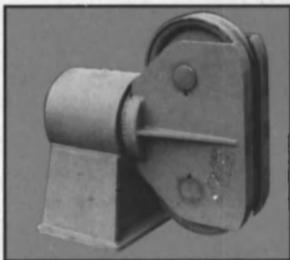
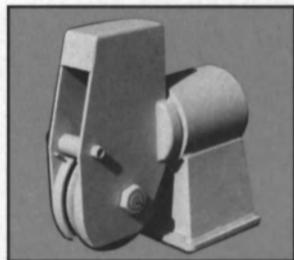
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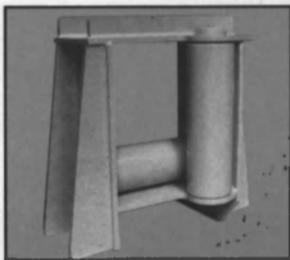
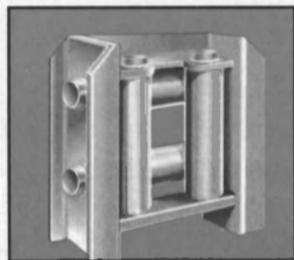
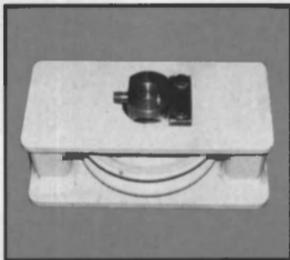


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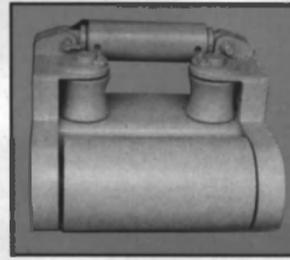
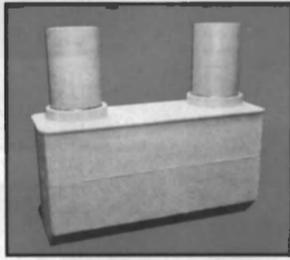
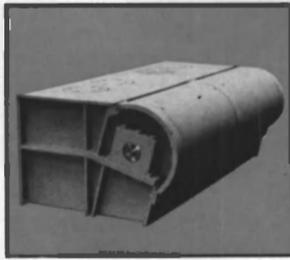


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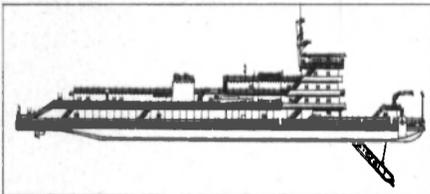


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Circle 241 on Reader Service Card

Halter Marine To Build 300-Foot Dustpan Dredge For Army Corps



Outboard profile drawing of the 300-foot dustpan dredge Hurley, which will be built by Halter Marine, Inc., of the Trinity Marine Group.

Halter Marine, Inc., of Moss Point, Miss., a member of the Trinity Marine Group, will soon begin construction on the \$38.4 million, 300-foot, diesel-electric, self-propelled dustpan dredge Hurley for the U.S. Army Corps of Engineers. Completion is expected in May 1993.

Other related contracts call for Halter to build a 65-foot aluminum crewboat which will serve the Hurley and the jumboizing and modification of the Corps' Drydock 5801. Crewboat 8901 will include a bow ramp for roll-on/roll-off equipment and will carry up to 17 passengers.

The drydock, which will serve the Hurley, will be widened by 20 feet and lengthened by 120 feet, bringing its overall dimensions to 320 feet long and 105 feet wide.

The dredge will remove materials from the sandy bottom of the Mississippi River to help keep navigation open between Baton Rouge, La., and Cairo, Ill.

Designed by a Corps of Engineers team from Memphis, St. Louis, Vicksburg and Philadelphia, the Hurley will be powered by three marine diesel generator sets with a rated capacity of 2,500 kw per unit. Total propulsion power will be 5,700 hp.

The 300-foot, 58-foot beam Hurley will be equipped with three DC motor-driven nozzleed Z-drive, 360-degree azimuthing propellers on the stern and two azimuthing jet type bowthrusters, which will provide it with exceptional maneuverability. Each of the propulsion thrusters on the stern will be capable of developing at least 1,900 bhp through the entire azimuth for accurate position keeping. This system of thrusters also make the dredge self-propelled.

Upon her delivery, the Hurley will be the first new dustpan dredge in the Corps of Engineers fleet in over 50 years. She will replace the dustpan dredge Burgess which is operated by the Memphis District of the Corps.

For free literature detailing the vessel construction and repair services of the Trinity Marine Group, **Circle 74 on Reader Service Card**

Second Tuna Seiner Launched For France By Campbell Shipyard

Campbell Shipyard of San Diego, Calif., has launched the second in a series of two 1,500-ton-capacity tuna seiners for France.

Called the Via Mistral, will be operated by Saupiquet, delivering

fish to the cannery at Abidjan, Ivory Coast.

The tuna seiner is 257 feet long, has a beam of 44 feet 9 inches and depth of 26 feet 5-1/2 inches and is powered by a Caterpillar 4,200-hp 3612 Series diesel engine. The diesel drives a five-bladed Bird-Johnson propeller through a Falk reduction/reversing gear at a shaft speed of 180 rpm.

As part of its ongoing commitment to continually develop vessels that lead the industry, Campbell has incorporated a number of refinements into the Via Mistral. Many of these developments are a direct result of time spent by Campbell engineers fishing aboard the Via Mistral's sister snip, Via Avenir, and from input provided by the vessel's captain and crew.

Among the refinements are an upgrading of the ship's electronics, with Furuno's newest FR-2800 Series S band Arpa radar, CSH-20 sonar, GP-500 GPS satellite navigator, FS-5000 SSB radios and a Felcom 5B satcom.

For free literature detailing the boatbuilding services of Campbell Shipyard

Circle 75 on Reader Service Card

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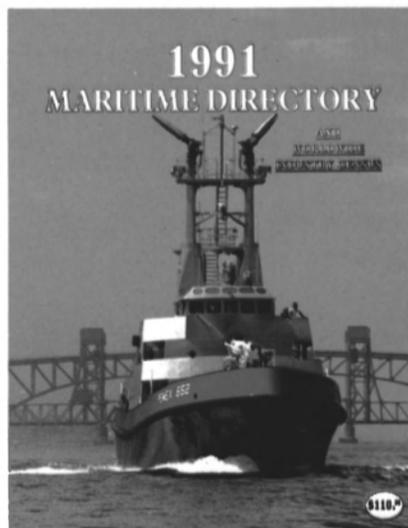
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Double-Bottom Ships Make Up Only 3.5% Of Tanker Fleet

Ships incorporating the safer double-hull or double-bottom designs demanded by new U.S. legislation make up less than 3.5 percent of the existing large tanker fleet,

according to a major new report by U.K.-based Clarkson Research.

The Clarkson 1991 Tanker Registration shows only 3.5 percent of tankers over 50,000 deadweight tons have double bottoms.

Clarkson Research says that there are 444 tankers with double bottoms—but 82 percent of these are under 50,000 dwt and mainly trade in products and chemicals.

International Maritime Organization regulations for chemicals sector have required the use of safer double-skin vessels for many years but until the legislation single skins were considered satisfactory for crude tankers.

According to the Clarkson database, only five existing VLCCs have double bottoms or double hulls and 21 Suezmax (100,000 to 200,000 dwt)

are equipped in this manner.

The study was initially carried out at the request of the U.S. National Academy of Sciences "Committee on Tank Vessel Design."

It is the first time that full details of the double bottom fleet have been published in the Clarkson Tanker Register. Clarkson Research is currently extending the analysis to cover double hull vessels in addition to double bottoms.

The US Oil Pollution Act of 1990 requires all newbuildings ordered after June 1990 to have double hulls, but existing tankers are exempt until the year 2000, except those over 28 years old.

Age analysis in the register shows 11.7 million dwt of existing tankers over 50,000 dwt will reach the age limit by January 1, 1997 and will need to be fitted with double bottoms by then, if they are to continue trading into the U.S.

Copies of the 1991 Tanker Register are available from **Bob Castor** of Clarkson Research Studies Ltd., 12 Camomile Street, London EC3A 7 BP; telephone: (071) 283-8955, ext. 3191; fax: (071) 626-3763. Copies are available at a cost of \$245 in Europe and \$280 outside Europe.

Landmark Projects Worth Over \$4.12 Billion Win UK Approval

Two landmark projects in the overall development of the North Sea, Chevron's Alba development and the Amoco-operated central area gas gathering project, representing an investment of over \$4.12 billion, were recently given UK approval.

Chevron's Alba field, in block 16/26, will be the first Eocene oil discovery in the UK to be brought on stream. The crude oil itself, at 20 percent API, will be the heaviest yet produced in the North Sea.

The other scheme, a gas gathering system for the central region of the North Sea, will be operated by Amoco, allowing two new fields to come on stream in 1993, which should bring about the development of a host of other gas accumulations in the area.

40-Page Catalog Features GEMS Continuous Liquid Level Indicators

The broad line of Continuous Liquid Level Indicators from GEMS Sensors Division is detailed in an all-new, 40-page catalog.

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Boats & Barges

Gladding-Hearn Delivers Detroit Diesel-Powered Survey Vessel To City Of New York

Gladding-Hearn Shipbuilding, The Duclos Corp., Somerset, Mass., recently delivered the HSV Osprey, a new research vessel for the City of New York Department of Environmental Protection.

The 56-foot high-speed, rough-water survey boat was designed by C. Raymond Hunt Associates, Boston, Mass., in conjunction with the Somerset, Mass., shipyard to monitor water and sediment conditions and marine life in New York Harbor and its surrounding coastal waters.

The Osprey carries a beam on deck of 16 feet, depth of hull 8 feet, draft 4 feet, fuel capacity of 800 U.S.

gallons and horsepower of 750 shp at 2,300 rpm. Powered by twin 8V-92N Detroit Diesel engines coupled to ZF Model IRM 320pl-1 main reduction gears, the all-aluminum vessel has a top speed of 20 knots and a cruising range of 40 hours at 20 knots.

The hull has four watertight compartments, a forepeak, fore-castle, engine room and lazarette. The forepeak houses two anchor line reels and anchoring gear. The fore-castle contains two berths, enclosed head and a fully equipped galley, with dinette. Aft of the fore-castle is the engine room housing the main



The HSV Osprey is powered by twin Detroit Diesel engines coupled to ZF reduction gears. The vessel's interior comfortably accommodates six crew members, including the captain and a mate.

engines, generators, pumps and electrical equipment. A large central hatch overhead allows complete engine removal.

The pilothouse, with a center helm, is forward of amidships. The 120-square-foot aft deck, where all samples are collected, contains the two sampling cranes, port and star-

board. Deck de-icing is supplied by a heat exchanger next to the main engines, and is pumped into cells to keep the decks cleared of ice and snow.

For free literature on the facilities and capabilities of Gladding-Hearn Shipbuilding, Circle 55 on Reader Service Card



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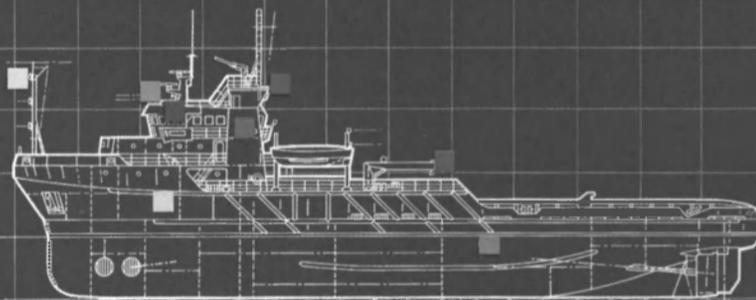
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New Rig Design From Global Marine For North Sea Use

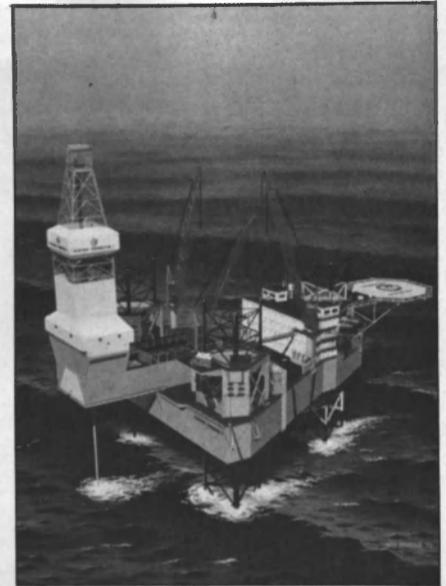
Global Marine Drilling Company, Houston, Texas, recently introduced a design for a new generation of mobile offshore drilling rigs for the North Sea. Global Marine's new

deepwater harsh environment design jackup, the Global Gibraltar Class, provides operators the operational and safety advantages of a bottom founded platform from which to conduct development drilling or extended high rate production tests of high-pressure, high-temperature reservoirs such as the North Sea's Central Graben area.

"The Global Gibraltar Class is

specifically designed to cope with physical, political, and economic conditions affecting North Sea operators," **Thomas Covellone**, senior vice president of engineering development of Global Marine Drilling.

The Glomar Gibraltar Class jackup design, based on the proven Marine Structural Consultants b.v. CJ-62 design, can drill year-round



A focal point of the Glomar Gibraltar jackup rig design is the temporary safe refuge (TSR). The crew's quarters serve as the TSR and the control room and emergency and communications are housed within.

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anywhere in the North Sea in water depths to 360 feet and seasonally to depths of 394 feet. The unit is structured to withstand a 98.5-foot wave, 87-knot sustained wind and a 2-knot surface current.

The major thrust of the Glomar Gibraltar Class, unlike other jackups with similar physical capabilities, is to integrate the most current safety and environmental requirements with state-of-the-art equipment in a modified hull design for improved operational efficiencies. To allow the rig to adapt to future operator needs, the design provides sufficient flexibility in space and arrangements.

Houston-based Global Marine Inc., incorporated in California in 1958, is one of the industry's largest international offshore drilling contractors. The company has 27 mobile rigs deployed worldwide and interests in oil and gas production.

For a free color brochure detailing the new jackup rig design from Global Marine,

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Alois Luhr Elected AWO Chairman At Annual Meeting

Alois Luhr, chairman of the board of Luhr Bros., Inc., Columbia, Ill., was elected chairman of the board of AWO at the recent meeting in Washington, D.C.

Mr. Luhr brings to AWO's chairmanship vast experience in the marine and construction industries, as well as extensive experience as a leader in industry-related associations. He has been associated with the construction industry since 1938, and served as president of Luhr Bros., Inc., from 1958 to 1990, when he became chairman of the board of Luhr Bros. and Tower Rock Stone Company.

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Halter International Christens Multipurpose Emergency Response Boat



One of the many uses of the versatile emergency response vessel Combo-60, a prototype developed by Halter International, New Orleans, La., is as a crane for clearing debris in the water.

Halter International, Inc., New Orleans, La., recently christened the new multipurpose emergency response vessel Combo-60 at ceremonies at the Southern Yacht Club in New Orleans.

The prototype Combo-60 is the first of a new generation of multipurpose emergency boats with fire-fighting, oil skimming and pumping capabilities.

Scheduled to be in attendance at the ceremony were: former Louisiana Lt. Gov. **James E. Fitzmoriss Jr.**; former Louisiana Congresswoman **Lindy Boggs**; Louisiana Congressman Robert L. Livingston; Senator **Samuel B. Nunez Jr.** of Louisiana; and Mayor **Sidney Barthelemy**.

Some of the uses designed into the Combo-60 include: rapid deployment, with speeds of up to 40 knots, for clean-up operations; vessel patching for repair, a method developed and proven by the U.S. Navy; pumping heavy oil spills into bladders or barges at up to 600,000 gallons per hour; skimming operations on lighter spills; boom deployment in vessel loading and unloading operations; firefighting capacity of up to 11,000 gpm; and shoreline clearing.

For free literature detailing the new Combo-60 from Halter International,

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Carleton Offers New Marine Products Brochure

Carleton Technologies Inc., Tampa, Fla., a leader in customized pneumatics, oxygen and life support systems for the U.S. Navy and prime contractors, is offering a new six-page marine products brochure.

Carleton's experience spans a period of over 30 years for designing and manufacturing high-pressure systems and components in support of some of the U.S. Navy's highest priority programs. The company's hardware is utilized on space shuttle, aircraft, missiles, submarines, surface ships, and in the dive community for fleet support, explosive ordnance disposal, and special warfare.

For further information and a free copy of the new brochure from Carleton Technologies,

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Major ASNE Symposium Set For June 25-27, 1991 In Bloomington, Indiana

The Midwest Section of the American Society of Naval Engineers (ASNE) has announced that its third biennial acquisition support symposium, titled "Engineering for Electronics Design and Pro-

duction," will be held in Bloomington, Ind., June 25-27, 1991.

The conference is sponsored by the Naval Weapons Support Center Crane, Naval Avionics Center, Indianapolis, and Naval Ordnance Station, Louisville.

In addition to parallel splinter technical sessions, the symposium will feature such speakers as **Gerald Cann**, Assistant Secretary of the Navy (RD&A); Rear Adm. George

R. Meining Jr., USN, NavSea Deputy Commander; Rear Adm. **John T. Hood**, AEGIS Program Manager; Herman

Reininga, Rockwell; and Dr. **Samuel F. Hulbert**, president of Rose-Hulman Institute.

The symposium is open to all persons interested in the advancement of applied technologies. For further information, call ASNE (703) 836-6727.



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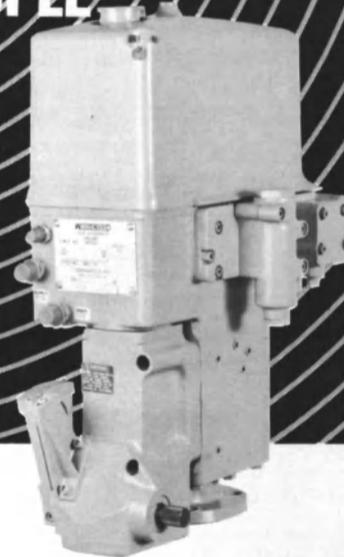


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Intermarine Launches Third Minehunter For Italian Navy

Intermarine S.p.A. (part of the Ferruzzi-Montedison Group) recently launched, in its shipyard in Sarzana (La Spezia), the third Lerici 2 class minehunter built by the company

for the Italian Navy.

The advanced technologies developed by Intermarine S.p.A. have been utilized by its American subsidiary, Intermarine USA, in the construction of larger minehunters for the U.S. Navy.

The Ferruzzi Group is a leading international industrial system which operates through Montedison in the chemical, pharmaceutical and

energy sectors, as well as in the agro-industrial sector, with an aggregate turnover of approximately \$30 billion.

For free literature on the facilities and capabilities of Intermarine S.p.A.,

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Corps Of Engineers Workboat Repowered With Caterpillar, Traktor Jet

The U.S. Army Corps of Engineers' Memphis District Office recently repowered a 26-foot Hydra workboat with a new Caterpillar 3208 direct injected turbocharged and seawater aftercooled engine and Traktor II jet propulsion unit, according to Leonard Hill, founder and president of North American Marine Jet of Benton, Ark.

Following installation of the Cat engine and the Traktor jet unit, Mr. Hill took the refurbished boat out for some tests on the Arkansas River. The result was a top speed of 26 miles per hour, approximately double its previous speed, with more power and higher fuel efficiency.

The Cat 3208 provides 315 horsepower at 2,600 rpm. When combined with the Traktor Jet's two-state axial flow impeller design, the result is more than 3,800 pounds of static thrust. The Traktor Jet is basically a water pump with a modified intake and a modified exhaust which allows for steering and reversing the boat.

For free literature detailing the propulsion systems from North American Marine Jet,

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Stan-Blast Offers Shipyards New Clean Safe Blasting Abrasives

A new free literature package from Stan-Blast Abrasives Co., Inc., Galveston, Texas, details the company's low free silica abrasives.

The company claims that its abrasives are silica safe—containing less than 0.1 percent free silica. The National Institute for Occupational Safety and Health (NIOSH) has recommended a ban on blasting with abrasives containing more than 1 percent free silica. Stan-Blast claims its abrasives are safer and cleaner. Additionally, since Stan-Blast abrasives are harder with less dust, it is more efficient and will lower costs for your blast cleaning operations.

Founded in 1971, Stan-Blast is one of the largest suppliers of low free silica abrasives on the U.S. Gulf Coast.

For a free copy of the brochure from Stan-Blast,

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Correction

In an article on page 18 of the April issue on the refurbishment of the U.S. Navy's SES-200 at Textron Marine Systems shipyard in New Orleans, La., the article misstated that she was originally designed and built at the New Orleans yard.

The original 110-foot SES, however, was actually built in 1978 by Bell-Halter, a joint effort between Bell Aerospace Textron and Halter Marine, Inc. She was designed and built at Halter's Chalmette, La., division.



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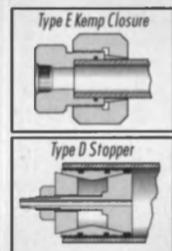
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Nichols Bros. Launches 150-Foot Dinner Boat For Pacific Marine



Artist's conception of the 700-passenger San Francisco Spirit, built by Nichols Brother Boat Builders for Pacific Marine Yacht Charters.

The 150-foot dinner charter yacht San Francisco Spirit was recently launched by Nichols Brothers Boat Builders, Inc., Freeland, Wash., for Pacific Marine Yacht Cruises, Inc.

The Nichols Brothers-designed vessel will join Pacific Marine Yacht Cruises' four-boat fleet this month.

The San Francisco Spirit has three decks to accommodate 700 persons for reception/buffet programs or 55 guests for formal dining with an operating and service crew of up to 50 people.

The San Francisco Spirit, whose general layout was specified by Pacific Marine Yacht Cruises president **Marti McMahon**, will be powered by three 360-hp Cummins NTA-855-M engines driving P&S and centerline propellers. Two Cummins NTA-855 generators will each supply 215-kw of power.

For free literature detailing the boatbuilding services of Nichols Brothers Boat Builders,

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Maritrans, MSI Offer Innovative Tug/Barge Training Program

Maritrans GO, Inc., the managing partner of Maritrans Operating Partners L.P., has jointly developed with MarineSafety International (MSI) a new training program for its 140 tug captains and mates. The training combines an aviation industry approach to safety awareness with tug/barge simulator exercises.

MSI is a professional training organization and operator of the Computer Aided Operations Research Facility (CAORF) at the U.S. Merchant Marine Academy, Kings Point, N.Y.

Maritrans Operating Partners L.P., Philadelphia, Pa., is one of the leading independent marine transporters of petroleum products in the U.S.

The objective of the training is to help prepare the tugboat operators to avoid groundings, collisions or other incidents which might result in injuries or oil spills. Application of Maritrans' bridge procedures, passage plans, personnel responsibilities and communications are stressed.

MSI will conduct 15 carefully structured courses in 1991 for eight Maritrans deck officers each. The five-day course consists of five seminars which include classroom instruction, role playing, simulator

exercises and debriefings. The seminars are focused on the underlying causes of human error: loss of situational awareness, lack of adequate passage planning, failure to recognize developing error chains, poor communications and failure to follow procedures.

For free literature detailing the training services MSI,

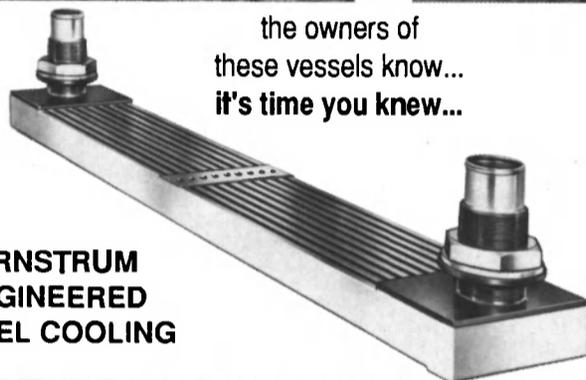
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Litton Receives Contract For Aegis Radar Power Amplifier

Litton's Electronics Devices division in Williamsport, Pa., has received a \$3 million award from the U.S. Navy to provide 165 final power amplifiers for the Aegis AN/SPY-1 radar

system. The radar system is a key part of the Aegis Combat System used by the Navy on its Ticonderoga class cruisers and Arleigh Burke class destroyers.

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sta • bil • i • ty / n 1 : the quality, state, or degree of being stable; as a : the strength to stand or endure : FIRMNESS b : the property of a body that causes it, when disturbed from a condition of equilibrium or steady motion, to develop forces or movements that restore the original condition 2 : the dramatic effect of **NAIAD** roll stabilizers on a vessel at sea.

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Oil Spill Tracking VHF Radio Beacon

- Track spill day or night
- Drop from aircraft
- Drifts with spill
- Use Novatech Direction Finding Receiver to locate



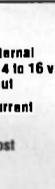
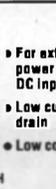
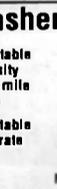
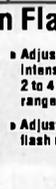
Oil Spill Tracking Xenon Flasher

- High visibility flashing light
- Locate spill at night
- Drop from aircraft
- Drifts with spill



VHF Radio Beacons

- Use to recover and locate equipment at sea
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Circle 288 on Reader Service Card

Union Bay Shipbuilding Repowers Ex-Navy Tug



Bay and Delta Towing's 101-foot Pt. San Pablo, following her repowering at Union Bay Shipbuilding Corporation.

Union Bay Shipbuilding of Seattle, Wash., recently completed repowering the 101-foot tug Hiawatha (ex-Navy YTM-265) for Bay and Delta Towing of San Francisco, which rechristened the refurbished tug "Pt. San Pablo."

Union Bay was assisted by Marine Engineering and Repair of Seattle, who removed the old 52-ton engine and converted the vessel's electrical system from 120 volts DC to 208/120 volts AC, with SCR controlled 120 volt DC deck machinery.

Union Bay installed a rebuilt 4,000 horsepower 20-cylinder EMD 645-E4 engine driving a Haley gear. This gear was the first manufactured to Haley's new RIHF-2828 design. The engine was rebuilt by Hatch and Kirk of Seattle. It was possible to reuse the existing tailshaft and much of the original piping, making the conversion extremely efficient.

The owner installed a tow winch on the vessel upon its arrival in San Francisco.

Engineering and project management services were provided to Bay and Delta by Walther Engineering Services of San Rafael, Calif.

The Pt. San Pablo, sporting Bay and Delta's distinctive black and yellow stack, is now performing ship assist work on San Francisco Bay.

For free literature detailing the boatbuilding and repair services of Union Bay Shipbuilding,

Circle 63 on Reader Service Card

WESMAR Introduces Fishing-Finding Sonar —Literature Available

WESMAR, Seattle, Wash., has introduced the HD600 Series, a high definition fish-finding sonar with outstanding target resolution, according to the company.

WESMAR reports that the HD600 Series features "an engineering breakthrough in signal processing" which makes it "among the fastest scanning sonars in the world." The HD600 has a variety of options menus, available in six languages, to allow fishermen to fine tune the unit to their own specific needs and fishing conditions. Information updates are presented on-screen at an extremely fast rate, allowing an operator to accurately track fish schools.

In addition to increased scanning speed, WESMAR reports that it has improved screen resolution by 400 percent. Based on new technology, the number of pixels on the screen are increased to over 307,000—up to four times that of most other sonars.

For complete details on the WESMAR HD600 Series,

Circle 67 on Reader Service Card

Meyer Werft Delivers Second In Series Of Three Vessels For Indonesia

Meyer Werft, Papenburg, Germany, recently delivered the second in a series of three passenger ships to the Directorate General of Sea Communication, Jakarta, Indonesia. The 969-passenger newbuilding, named Sirimau, is also the ninth passenger ship from Meyer Werft for the Republic of Indonesia. The passenger ships are employed on the Indonesian interisland service.

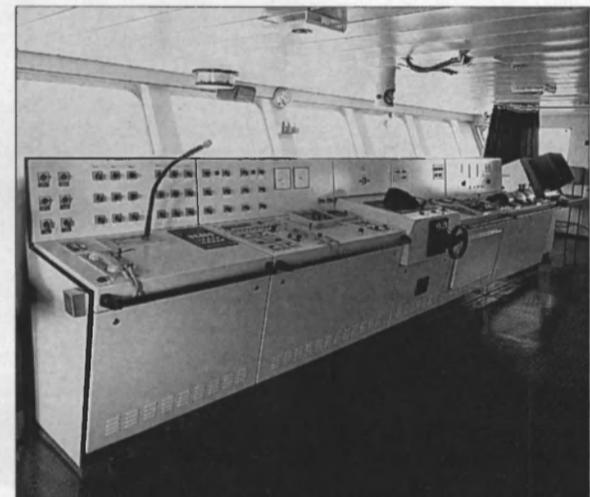
In February, Meyer Werft succeeded in booking another order for five passenger ships for this country: two 14,000-grt units (Tidar-type) and three 6,000-grt units (Tatamailau-type). This order, however, is subject to securing long-term financing.

The 1,400-dwt Sirimau has an overall length of about 327 feet and breadth of 59 feet. The 969-passenger vessel was built in compliance with the regulations of the Indonesian classification society KI and under the survey of Germanischer Lloyd.



Meyer Werft's Krupp MaK-powered, 969-passenger Sirimau carries eight motor lifeboats and 23 life rafts, meeting the highest requirements of SOLAS 1974.

The ship is propelled by twin Krupp MaK four-stroke diesel engines, type 6Mu 453C, each with an output of 2,176 hp at 600 rpm, with reduction gear and fixed-pitch propellers, producing a service speed of 15 knots. Maneuverability is enhanced by the installation of a bow thruster plant with controllable-pitch propeller of 480 kw (653 hp) and a thrust of about 7.2 tons.



View of the bridge on the 6,000-gt passenger vessel Sirimau.

Electrical power is provided by four diesel generator sets (456 kw = 620 hp at 1,000 hp each) with a generator capacity of 525 kva each as well as one emergency generator (184 kw/250 hp) with a capacity of 210 kva.

The air conditioning and other ventilation plants meet the requirements of the trade range.

For free literature on the facilities and capabilities of Meyer Werft,

Circle 96 on Reader Service Card

FOR MORE INFORMATION

ON EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

CIRCLE THE APPROPRIATE NUMBER ON READER SERVICE CARD OPPOSITE

ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.	ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.
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Color Brochure Details Dobsons' Refrigeration, A/C Spare Parts Services

Dobsons USA Inc., Camp Hill, Pa., is offering a free color brochure detailing its total spare parts service for marine refrigeration and air conditioning, supported by an ex-

tensive stock of spares, equipment and compressors in the U.S., Europe and the Far East.

According to the brochure, Dobsons USA has engineers based at major world ports and service depots to attend to breakdowns, overhauls, major refits, classification surveys, maintenance or installations. Dobsons USA, is able to provide marine refrigeration and air

conditioning service in port, at sea, in drydock and at its service depots.

The firm specializes in Daikin, Sabroe, Carrier, Mycom, Dupont, APV Hall, York International, Trane, and Stal Refrigeration equipment.

For a free copy of the four-page color brochure offered by Dobsons USA,

Circle 73 on Reader Service Card

Simrad Wins Contract For Shallow Water Multibeam Swath System

Simrad Subsea A/S of Norway recently signed a contract for delivery of a multibeam swath system to Maritime Shipping Services, France.

The Simrad EM 1000 System is the latest member of the Simrad family of multibeam Swath echo sounders. The system will be operated by French IFREMER on the vessels Le Suroit and Jean Charcot.

The EM 1000 system comprises a transportable top side of electronics, whereas the rest of the system with transducer arrays will be fixed-mounted onboard both vessels.

One of the major advantages of this system is the ability to achieve the same high accuracy in all beams throughout the entire fan.

The EM 1000 also comprises the unique feature of presenting a geometrically corrected sonar image of the sea floor's acoustic reflectivity.

The system will include full corrections for vessel movements and acoustic ray-bending in real time.

The EM 100 is based on the experience gained with the EM 100 multibeam system. It will use the same operating frequency, 95 KHz, and is intended for efficient, high precision surveys for water depths between 5 and 800 meters.

The system can communicate with other equipment on the vessel via Ethernet and/or RS232 connection.

A Simrad Synchronizing Unit can be added to eliminate problems of interference between different acoustic devices on the ship.

The EM 1000 gives Simrad a complete range of multibeam echo sounders, for high precision surveys in shallow waters as well as down to full ocean depth.

For free literature giving full information,

Circle 87 on Reader Service Card

Lykes Names Ohman VP, Maintenance & Repair

John F. Ohman has been named vice president, Maintenance & Repair, Lykes Bros. Steamship Co., Inc., it was recently announced by **Mac G. Bulloch**, senior vice president, Operations.

In his new position, Mr. **Ohman** assumes worldwide supervision of maintenance and repair on all Lykes vessels, including the planning and supervising of all drydock and tail shaft inspections and surveys.

Lykes Bros. Steamship Co., Inc., headquartered in New Orleans, La., has been a leader in ocean transportation for 90 years.

Lykes operates a U.S.-flag fleet of 30 vessels, including 12 cellular container vessels and 18 multipurpose vessels.

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JD5

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ABRASIVES

Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219
Stan-Blast Abrasives, P.O. Box 968, 3300 River Road, Hawey, LA 70059

AIR CONDITIONING AND REFRIGERATION—Repair & Installation

Adrick Marine Corp., 320 Cantor Ave., Linden NJ 07036
Bailey Group, 2323 Randolph Ave., Avenel, NJ 07001
Stal Refrigeration AB, Butangsgatan 16, S-601 87 Norrkoping, SWEDEN
York Int'l, P.O. Box 1592-083G, York, PA 17405

BALLAST

Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031
Mineral Research & Recovery Inc., 4565 S. Palo Verde, Ste 203, Tucson AZ 85714
Queen City Iron & Steel, P.O. Box 7205, Charlotte, NC 28241-7205

BARGE BUILDING

Conrad Industries, P.O. Box 790, Morgan City LA 70381

BARGE—Leasing

McDonough Marine Service, 2300 Surekote Road, New Orleans, LA 70117
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

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B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401

B.F. Goodrich, Marine Products Group, 6061 B.F. Goodrich Boulevard, Jacksonville, FL 32226

Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

Thomson Gordon Ltd., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6
Waukesha Bearings, P.O. Box 1616, Waukesha WI 53187

BOILER CLEANING

Thomas C. Wilson, 21-11 44th Ave., Ste. 1, Long Island City, NY 11101

BOILER—Manufacturers

Aalborg Ciseriv (Miami), Inc., 1539 SW 21st Avenue, Ft. Lauderdale, FL 33312

BROKERS

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2900 Energy Centre, 1100 Poydras Street, New Orleans, LA 70163-2900
Diversified Marine Brokerage, 1201 Northern Blvd., Manhasset, NY 11030
Jack Faulkner, 2419 Caddy Lane, P.O. Box 371, Flossmoor IL 60422
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BUNKERING

Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

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Baldt, Inc., 6 M. Butler St., Chester, PA 19013
Crandall Dry Dock Engineers Inc./Marit Chain, 21 Pottery Lane, Dedham MA 02026
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020
G.J. Wortelboer Jr. B.V., Postbus 5003, 3008 AA Rotterdam, NETHERLANDS

CHEMICAL CLEANERS

Charlie Chemical & Supply, Inc., P.O. Box 4639, Greenville, MS 38704-4639

CHOCKING COMPOUNDS

ITW Philadelphia Resins, 130 Commerce Drive, Montgomeryville, PA 18936

CLAMPING—Pipe, Tubes, Hose

ZSI, 32497 Schoolcraft Road, Livonia, MI 48150

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International Compactor, Inc., P.O. Box 5918, Hilton Head, SC 29938
A/S Vesta, Skudehavsvej 27, DK-2100 Copenhagen, DENMARK;
Sales Agents: American United Marine Corp., 5 Broadway, Rt 1,
Saugus, MA 01906, USA

COMPUTERIZED INFORMATION SYSTEMS

TIMSCO, P. O. Box 91360, Mobile AL 36691
Coastdesign, Inc., Unit 201, 12837 76th Avenue, Surrey, BC CANADA V3W 2V3

CONDENSERS/SEPARATORS

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Standard Refrigeration Co., 2050 N. Ruby, Melrose Park, IL 60160
Wright Austin Co., 3250 Franklin St., Detroit MI 48207

CONTROL SYSTEM—Monitoring

Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950
IMO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06062
Lyngso-Valmet Marine A/S, P.O. Box 130, N-3430 Spikkestad, NORWAY
MMC International, 60 Inip Dr., Inwood NY 11696
NAMCO Controls, 7567 Tyler Blvd, Mentor OH 44060
Norcontrol A/S, P.O. Box 1024, N-3191 Horten, NORWAY
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006
Robertson-Shipmate, 400 Oser Avenue, Hauppauge, NY 11788
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406

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The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101
Del Gaudio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072
Liebherr-Werk Nenzing GES.mbh, P.O. Box 10, A-6710 Nenzing, AUSTRIA
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
Morgan Crane Company, Inc., 1300 Normandy Place, Santa Ana, CA 92705
J.D. Neuhaus Hebezeug GmbH, D-5810 Witten, GERMANY
Pettibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883
Reco Crane Co., 5734 Jefferson Highway, New Orleans LA 70181
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

CYROGENICS

Technigaz, Division of Bouygues Offshore, 3 rue Stephenson, 78884 St.
Quentin en Yvelines, FRANCE

DECK MACHINERY—Cargo Handling Equipment

All Set Marine Lashing AB, P.O. Box 14112, S-161 14 Bromma, SWEDEN
Braden Carco Gearmatic, P.O. Box 547, Broken Arrow, OK 74013
Markey Machinery Co., Inc., P.O. Box 24788, Seattle, WA 98124-0788
Morgan Crane Company, Inc., 1300 Normandy Place, Santa Ana, CA 92705
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454
Seattle Crane & Equipment Co., Inc., 4403 20th Street East, Fife, WA 98424
Willem Pot b.v., P. O. Box 29102, 3001 GC Rotterdam, The Netherlands

DECKS

Boatlife, 205 Sweet Hollow Road, Old Bethpage, NY 11804

DEHUMIDIFIERS

L&C Associates, 216 Lafayette Rd., North Hampton NH 03862

DIESEL ACCESSORIES

Coltec Industries Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511

Diesel America Inc., 5217 River Rd., New Orleans LA 70123

Gearhardt's Inc., P.O. Box 10161, Jefferson, LA 70181

General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105,
Plymouth, MA 02360

Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison IL 60101

Pow-R-Quik, 5518 Mitchelldale, Houston, TX 77092

DIESEL ENGINE—Spare Parts & Repair

Aalborg Ciseriv (Miami) Inc., 1539 SW 21st Avenue, Ft. Lauderdale, FL 33312

Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610

Coltec Industries, Parts & Service Div., 701 Lawton Ave., Beloit, WI 53511

Cummins Engine Company, Mail Code 60011, Box 3005, Columbus, IN 47202-3005

Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315

Goldten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231

Grace Dearborn, W.R. Grace & Co., 300 Genesee Street, Lake Zurich, IL 60047

Hatch & Kirk, 5111 Leary Avenue NW, Seattle, WA 98107

KHD Canada, Inc., 4420 Garand, Ville St-Laurent, Quebec, CANADA H4R 2A3

Kim Hotstart Mfg Co., E 5724 Broadway Ave, P.O. Box 42, Spokane WA 99210

MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-8900 Augsburg 1, GERMANY

MAN B&W Diesel, 50 Broadway, 18th Fl., New York, NY 10004

MTU of North America, 10450 Corporate Drive, Houston, TX 77478

Markisches Werk GmbH, P.O. Box 1442, D-5884 Halver 1, GERMANY

Pacific Rim Diesel, 3842 W. Marginal Way SW, Seattle, WA 98106

Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND;

Paxman Diesels USA, (A Div. of Ruston Gas Turbines, Inc.), 15950
Park Row, Houston, TX 77084

S.E.M.T. Pielstick, 2 Quai de Seine, Saint Denis, Paris, FRANCE 93203

Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166

DIVING & SALVAGE

H.J. Merrihue, P.O. Box 23123, New Orleans LA 70183

Muldoon Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731

Sea-Side Diving, 28612 Harper Ave., St. Clair Shores, MI 48081

DRY DOCKS—Design

Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381

Marine Design Services, P.O. Box 928, Bonita CA 92002

MAN GHM Sterkrade, P.O. B. 110240, D-4200 Oberhausen 11, GERMANY

ELECTRICAL EQUIPMENT

L. F. Gaubert & Co., Inc., P. O. Box 50500, New Orleans LA 70150

MMC International, 60 Inip Dr., Inwood NY 11696

P.J. Plishner Marine/Radio Research Instrument Co., 584 N. Main St.,
Waterbury, CT 06704-3506

SPD Technologies, 13500 Roosevelt Blvd., Philadelphia PA 19116

ELECTRONIC DISPLAY

Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolbotn, NORWAY

ELECTRONIC ENCLOSURES

A&J Manufacturing, 14131 Franklin Ave., Tustin CA 92680

ELECTRONIC INFORMATION SUPPORT

Inventory Locator Service, 3965 Mendenhall Rd. South, Suite 10, Memphis,
TN 38115

ENGINE TEST EQUIPMENT

General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth,
MA 02360

Instruments, Computers, & Controls, Inc., 6942 Haven Creek Dr., Katy, TX 77449

EPIRBs

Alden Electronics, 40 Washington St., Westborough, MA 01581

Litton Special Devices, 750 W. Sprout Road, Springfield, PA 19064

Koden International, 77 Accord Park Drive, Norwell, MA 02061

EQUIPMENT—Marine

Byrne, Rice & Turner, Inc., 1172 Camp St., New Orleans, LA 70130

Gladsky Marine, Garvies Point Rd., Glen Cove, NY 11542

Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302

Ovako Steel Inc., P.O. Box 745, Avon, CT 06001

EVAPORATORS

Alfa-Laval, Desalt A/S, Stamholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK

Aqua-Chem, Water Technologies Div., P.O. Box 421, Milwaukee, WI 53201

Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130

FANS-VENTILATORS-BLOWERS

Carling Turbine Blower Co., 10 Nebraska St., P.O. Box 88, Worcester, MA 01613

Jon M. Liss Associates, Inc., 411 Borel Ave., San Mateo, CA 94402

FASTENERS

Jamestown Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02635

Non-Ferrous Bolt & Mfg. Co., 4085 Nevso Dr., Suite C, Las Vegas, NV 98103

FENDERING SYSTEMS/BUOYS—Dock & Vessel

Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston, TX 77020

Rowe Bumpers, Conveyors & Caster Corp., 3501 Detroit Ave., Cleveland, OH 44113

Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98,
Clearbrook, VA 22624

Solidur Plastics Co., 200 Industrial Dr., Delmont, PA 15626

Standard Refrigeration Co., 2050 N. Ruby, Melrose Park, IL 60160

Ultra Poly Inc., 2926 South Steele, Tacoma, WA 98409

Viking Fender Co., 50 Church Street, Sea Bright, NJ 07760

FUEL ADDITIVES, CONDITIONING

U.S. Borax/Industrial Chemicals, 3075 Wilshire Boulevard, Los Angeles, CA 90010

GALLEY EQUIPMENT

Cospolich Refrigerator Co., 949 Industry Rd., Kenner LA 70062

Gaylor Industries, 10900 S W Avery St, P.O. Box 1149, Tualatin, OR 97062

McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Biloxi MS 39535-4454

GANGWAYS, LADDERS

Coast Marine & Industrial Supply Inc., 398 Jefferson St., San Francisco, CA 94133

Rampmaster Inc., 9825 Osceola Blvd., Vero Beach, FL 32966

Sea Systems Inc., 65 Avco Road, Ward Hill, MA 01835

Westmont Industries, 10805 Painter Ave., Santa Fe Springs, CA 90670

Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691

HEAT EXCHANGERS

Alfa-Laval, Desalt A/S, Stamholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK

Alfa-Laval Separation Inc., 2115 Linwood Avenue, Fort Lee, NJ 07024

Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130

Thomas C. Wilson, Inc., 21-11 44th Avenue, Long Island City, NY 11101

HORNS/WHISTLES

Kahlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241

HOSE

HBD Industries, Inc., 1801 S. Railroad Street, Salisbury, NC 28145-0948

HYDRAULICS

Aeroquip Corporation, 3000 Strayer, P.O. Box 631, Maumee, OH 43537-0631

Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken NJ 07030

Del Gaudio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072

INCINERATORS

Teamtec A/S, P.O. Box 100, N 4912 Gjevning, NORWAY

A/S Vesta, 27 Skudehavnsvej, DK-2100 Copenhagen DENMARK. US Agent: American
United Marine, 5 Broadway, Rte 1, Saugus, MA 01906

INSULATION

Soundcoat Company, 1 Burt Drive, Deer Park, NY 11729

JOINER—Watertight Door—Paneling—Ceiling System—Decking

Cupples Products, 2650 S. Hanley Rd., St. Louis, MO 63144

GEC-Marconi Electronic Systems Corp., 550 S. Fulton Avenue, Mount Vernon, NJ 10550

IMAC AB, Berga Alle 1, S-252 55 Helsingborg, SWEDEN

U.S. Rep: Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980

Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031

Walz & Krenzer Inc., 1390 Mt. Read Blvd., Rochester NY 14606

KEEL COOLERS

R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858

Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

The Walter Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307

LEGAL SERVICES

American Maritime Correspondents, One Embarcadero Center, Suite 330, San
Francisco, CA 94111

John Jozwick, c/o Bryan, Schiffrin & McMonagle, First & Cedar Bldg., Ste
350, 2701 First Ave., Seattle, WA 98121

LIFEBOATS/RAFTS

Zodiac of North America, P.O. Box 400, Stevensville, MD 21666

Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

Archway Marine Lighting, 4501 Swan Ave., St. Louis, MO 63110

Carlisle & Finch, 4562 W. Mitchell Ave., Cincinnati OH 45232

The L.C. Doane Co., P.O. Box 975, Essex, CT 06426

Nautilus Equipment Ltd., P.O. Box 66, Station M, Halifax, Nova Scotia
B3J 2L4, CANADA

Phoenix Products, 6161 N 64th St., Milwaukee WI 53218

LINE BLINDS

Stacey/Fetterolf

R.J. Mellusi & Co., 71 Hudson St., New York, NY 10013
Nautical Designs, Inc., 2101 S Andrews Ave., Suite 202, Ft Lauderdale FL 33316
Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169
Northern Marine, P.O. Box 1169, Traverse City, MI 49685
Ocean Oil International Engineering Corp., 3019 Mercedes Blvd, New Orleans LA 70114
Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777
Omega Marine Engineering Systems, Inc., 11757 Katy Freeway, Ste 1100, Houston TX 77079
QED Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112
Sea School, 10812 Gandy Boulevard, St. Petersburg, FL 33702
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426; 17 Battery Pl., New York, NY 10004; P.O. Box 205, Solomons MD 20688; 2 Skyline Pl., 5203 Leesburg Pike, Suite 700, Falls Church VA 22041; 1305 Franklin St., Suite 210, Oakland, CA 94612.
Seaworthy Electrical Systems, 17 Battery Pl. N.Y. N.Y. 10004
George G. Sharp, Inc., 100 Church St., New York, NY 10007
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
Systems Engineering Associates (SEACOR), 200 East Park Dr., Suite 600, Mt Laurel NJ 08054
TIMSCO, P. O. Box 91360, Mobile AL 36691

NAVIGATION & COMMUNICATIONS EQUIPMENT
AT&T, High Seas Dept., 412 Kemble Ave., Room C380, Morristown, NJ 07960
Comsat Maritime Services, 950 L'Enfant Plaza SW, Washington DC 20024
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950
Hose McCann, 9 Smith Street, Englewood, NJ 07631
IDB Aero-Nautical Communications, 15200 Omega Dr., Rockville, MD 20850-3240
Kelvin Hughes Ltd., New North Rd., Hainault, Wford, Essex IG6 2UR ENGLAND
Mackay Communications, 441 US Highway #1, P.O. Box 331, Elizabeth NJ 07207
Maxon, South Boundary St., P.O. Box 69, Tell City, IN 47586
Mobile Telesystems, Inc., 300 Professional Drive, Gaithersburg, MD 20879
Naval Electronics, 5417 Jetview Circle, Tampa FL 33634
Norwegian Telecom, P.O. Box 6701, Oslo 1, NORWAY
Novatech, 820 Cormorant St., Victoria, BC V8W 1R1, CANADA
Robertson Marine Systems, 3000 Kingman Street, Suite, 207, Metairie, LA 70006
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia, PA 19116
Simrad, 620 Northwest Bright Street, Seattle, WA 98107
Singapore Telecom, Orchard Point Post Office, P.O. Box 38, SINGAPORE 9123
Sperry Marine Inc., 1070 Seminole Trail, Charlottesville VA 22901
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Summer Equipment Ltd., 24 West 4th Ave., Vancouver V5Y 1G3, CANADA
Trimble Navigation, 585 North Mary Avenue, P.O. Box 3642, Sunnyvale, CA 94086
Waterway Communications System, Inc. 453 E. Park Pl., Jeffersonville, IN 47130

NOZZLES
Nautican Enterprises Ltd., 407 Mountain Highway, North Vancouver, B.C. V7J 2L1

OIL—Marine—Additives
Castrol, Inc., Raritan Plaza II, Raritan Center, Edison, NJ 08837
Exxon Company International, 200 Park Ave., Bldg 222, Room A279, Florham Park NJ 07932, P.O. Box 4706, Houston, TX 77210-4706
Mobil Oil Corporation, 3225 Gallows Road, Fairfax, VA 22037-0001
Texaco, International, 2000 Westchester Avenue, White Plains NY 10650

OIL/WATER SEPARATORS
Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974-0556
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale NJ 07647
FAST Systems, Inc., 3240 N. Broadway, St. Louis, MO 63147
MMC International, 60 Inip Dr, Inwood NY 11696
Shell Oil, P.O. Box 2463, Houston, TX 77252

PAINT—COATING—CORROSION CONTROL
Ameron, 201 N. Berry St., Brea, CA 92622
Enviro Coatings, Inc., 4560 Belt Line Rd., Suite 300, Dallas, TX 75244
Esgard, Inc., P.O. Drawer 2698, Lafayette, LA 70502
GlobalTech, 9801 Westheimer St., Ste. 202, Houston, TX 77042
Jamestown Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02635
Microphor, Inc., Marine Division, 452 E. Hill Rd., P.O. Box 1460, Willits, CA 95490
PPG Industries, Inc., One PPG Place, 38th Floor, Pittsburgh, PA 15272
Sigma Coatings, 8979 Market St., Houston, TX 77029, 330 Rover Road, Harvey, LA 70059, 1100 Adams St., Hoboken, NJ 07030
Unitor Ships Service, Unitor Marine Chemicals Division, 3 High St., Rickmansworth, Herts, WD3 1SW UNITED KINGDOM

PIPE FITTINGS/CONNECTING SYSTEMS
Aeroquip Corporation, 3000 Strayer, P.O. Box 631, Maumee, OH 43537-0631
Deutsch Metal Components, 14800 S. Figueroa, Gardena, CA 90248
Stanley G. Flagg Co., 1020 W. High St., Stowe, PA 19464
Thaxton, Inc., 25 Leonburg Rd., Mars, PA 16406-8401

PORT SERVICES
Port of Iberia, P.O. Box 897, New Iberia LA 70561
Port of Orange Texas, P.O. Box 516, Orange, TX 77630
Port of Portland, 5555 N. Channel Ave., Portland, OR 97217

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Avondale Industries, Harvey Quick Repair, P.O. Box 116, Harvey, LA 70058
American Air Filter, P.O. Box 35690, Louisville, KY 40432
ASEA Brown Boveri, 1460 Livingston Ave., North Brunswick NJ 08902
ASEA Brown Boveri (Stromberg), P.O. Box 185, 00381 Helsinki, FINLAND
Argo International, 140 Franklin Street, New York, NY 10013
Aquamaster-Rauma Ltd., Box 220, SF-26101, Rauma, FINLAND
Bergen Diesel A/S, P.O. Box 924, N-5002, Bergen, NORWAY
Bird Johnson Company, 110 Norfolk St., Walpole, MA 02081
CWF Hamilton & Co., Ltd., P.O. Box 709, Christchurch, NEW ZEALAND
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
Cotec Industries (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511
Cummins Engine Company, Mail Code 60011, Box 3005, Columbus, IN 47202-3005
Electro-Motive Division of GM, 9301 W 55th St., LaGrange, IL 60525
Fincantieri, Diesel Engines Division—GMT, Bagnoli della Rosandra 334, Trieste, ITALY
GE Marine & Industrial, 1 Neumann Way N-158, Cincinnati OH 45215
GE Naval & Drive Turbine Systems, 166 Boulder Dr., Fitchburg MA 01420
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Krupp MaK, 7555 Danbro Crescent, Mississauga, Ontario, CANADA L5N 6P9
Mapeco Products Inc., P.O. Box 6, 725 Glen Cove Ave., Glen Head NY 11545
Marine Gears, Inc., P.O. Box 689, Greenville MS 38707
Marine Systems Inc., 2032 Atlantic Ave., Chesapeake VA 23324

Markisches Werk, P.O. Box 1442, D-5884 Halver GERMANY
MAN B&W Diesel, 50 Broadway, New York, NY 10004
MAN B&W Diesel A/S, Ostervej 2, DK 4960 Høleby, DENMARK
MAN B&W Diesel A/S, Alpha Diesel, Niels Juels Vej 15. DK-9900 Frederikshavn DENMARK
MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-8900 Augsburg 1 GERMANY
MKW Power Systems, 301 S. Church St., Rocky Mount, NC 27801
MTK Magnetek Inc., 11150 Santa Monica Blvd., Los Angeles CA 90025
New Sulzer Diesel, Ltd., CH-8401, Winterthur, SWITZERLAND
Northwest Marine Services Corp., 6452 So. 144th St., Tukwila WA 98168
Nylands Marine Service A/S, P.O. Box 130, N-4818 Faervik, NORWAY
Ornithruster Inc., 9515 Sorensen Ave., P.O. Box 2144, Santa Fe Springs, CA 90670
Ovako Steel Couplings AB Sweden, S-813 00 Hofors SWEDEN
Propulsion Systems, 1441 N Northlake Way, Seattle WA 98103
Rolla SP Propellers SA, Via Silva 5, P.O. Box 251, 6828 Balerna SWITZERLAND
Rolla SP Propellers USA, 4030 Mustang Road, Melbourne, FL 32934, USA
Karl Senner Inc., 25 W Third, Kenner LA 70062
Schottel-Werft, D-5401 Spay, GERMANY
Stewart & Stevenson, 1400 Destrehan, P.O. Box 8, Harvey LA 70059 0008
Sulzer/Escher Wyss, Ravensburg GERMANY
Textron Lycoming, 550 Main St., Stratford, CT 06497
Ulstein International, A/S, N-6065 Ulsteinvik, NORWAY
J. M. Voith GmbH, Marine Division, Postfach 1940, D-7920, Heidenheim/Brenz, GERMANY U.S. Rep: Voith Schneider America Inc., 121 Susquehanna Ave., Great Neck, NY 11021
Oy Wartsila Ab, Vasa and Abo Divisions, P.O. Box 244, SF65100 Vasa, FINLAND
Oy Wartsila, Stork Division, P.O. Box 244, SF 65100 Vasa, FINLAND
WesTech Gear Corp., 2600 E. Imperial Highway, Lynwood, CA 90262
ZF of North America, Marine Sales, 500 Barclay Blvd, Lincolnshire IL 60069

PROTECTIVE WRAPS
FANA (Film Applicators of North America), 1260 E Woodland Ave., Springfield PA 19064

PUMP—Repair—Drives
Coffin Turbo Pump, Inc., 326 S. Dean Street, Englewood, NJ 07631
Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072
Goten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231
Houser Marine, Lario Division, 1713 S McKenzie St., Foley AL 36535
Jim's Pump Repair, 48-55 36th St., Long Island City NY 11101
Megator Corporation, 562 Alpha Drive, Pittsburgh, PA 15238
Vita Motivator, 99 W Hawthorne Ave., Suite 622, Valley Stream NY 11580
Wilden Pump & Engineering Co., 22069 Van Burren St., P.O. Box 845, Colton, CA 92324

REMOTE VALVE OPERATORS
Teleflex, Inc., 771 First Ave., King of Prussia, PA 19406

ROPE—Manila—Nylon—Hawsers—Fibers
Allied Signal Inc., Fibers Division, 1411 Broadway, New York, NY 10018
Columbian Rope Corp., P.O. Box 270, Guntown, MS 38849
Dupont, Montgomery 403, 1011 Centre Road, Wilmington, DE 19805

SANITATION DEVICE—Pollution Control
Jered Brown Brothers, 56 South Squirrel Rd., Auburn Hills, MI 48326
Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans, LA 70130
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
FAST Systems, Inc., 3240 N. Broadway, St. Louis MO 63147
Microphor, Inc., 452 E. Hill Rd., P.O. Box 1460, Willits, CA 95490
Novatech, 820 Cormorant St., Victoria BC V8W 1R1, CANADA
Red Fox Environmental Services, Inc., P.O. Box 53809, Lafayette, LA 70505-3809
Research Products/Blankenship (Inciolet), 2639 Andjon, Dallas, TX 75220

SCALE MODELS
Sturgeon Bay Model Shop, 187 N Ninth Ave., Sturgeon Bay WI 54235

SCUTTLES/MANHOLES
L.S. Baier & Assoc., 7527 NE 33rd Dr., Portland OR 97211

SHIPBUILDING EQUIPMENT
MAN—GHH, Sterkrade Werksrabe 112 D 4100 Duisburg 18, GERMANY
MAN—GHH, P.O. Box 110240, D 4200 Oberhausen 11, GERMANY
NEI Syncrolift, Inc., 8970 S W 87th Ct., Miami FL 33176
Offshore Industries, Inc., 144 Railroad Ave., Suite 206, Edmonds WA 98020

SHIPBUILDING—Repairs, Maintenance, Drydocking
Astilleros Espanoles S.A., Padilla 17, 28006 Madrid, SPAIN
Atlantic Marine, Inc., 8500 Heckscher Dr., Jacksonville, FL 32226
Avondale Industries Inc., P.O. Box 50280, New Orleans LA 70150
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601
Bethlehem Steel, Martin Tower, Bethlehem PA 18106
Bethlehem Steel, Baltimore Marine Div., Sparrows Point Yard, Sparrows Point MD 21219
Blount Marine, Box 368, Warren RI 02885
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374-0250
Brodosplit Shipbuilding Industry, Put Udarnika 19, P.O. Box 17, 58000 Split YUGOSLAVIA
Chris-Marine AB, P.O. Box 9025, S-2000 39, Malmo, SWEDEN
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381
Curacao Drydock (USA), Inc., P.O. Box 3012, Curacao, Netherlands Antilles
Equitable Shipyards Inc., Trinity Marine Group, Box 29266, New Orleans LA 70189
Fincantieri SpA Cantieri Navali Italiani, Via Cipro 11, 16129 Genoa ITALY
Freeport Shipbuilding, P.O. Box 417, Freeport, FL 32439
Galveston Shipbuilding, 6800 Port Industrial Boulevard, P.O. Box 2660, Galveston, TX 77553
Gulf Craft, Inc., 3904 Highway 182, Patterson, LA 70392
Hitachi Zosen, Hitachi Shipbuilding & Engineering Co., 1-1-1 Hhtosubashi, Chiyoda-ku Tokyo 100, JAPAN
Houston Ship Repair, 1621 Woods Dr., P.O. Box 489, Channelview, TX 77530
In-Place Machining Co., 1929 N. Buffum Street, Milwaukee, WI 53212-3793
Jacksonville, Shipyards, 750 E. Bay St., Jacksonville, FL 32202
Jeffboat, Inc., P.O. Box 610, Jeffersonville IN 47130
Kvaerner Fjellstrand, N-5632 Ormastrand, NORWAY
Lindenau Werft, Postfach 9060, D-2300 Kiel-Friedrichsort, GERMANY
Lisnave, Apartado 2138, 1103 Lisbon, Codex PORTUGAL
MAN GHH Sterkrade, P.O.B. 110240, D-4200 Oberhausen 11, GERMANY
MIL Davie, Inc., P.O. Box 130, Levis, Quebec, CANADA
Marco, Inc., 2300 W Commodore Way, Seattle, WA 98199
T. Mariotti, Calata Chiappella, 16126 Genoa (Port) ITALY
Master Marine, Inc., P.O. Box 665, Bayou La Batre, AL 36509
Munson Manufacturing, 150 Dayton, Edmonds WA 98020
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
New York Shipyard Corp., One Beard St., Brooklyn NY 11231
Norconsult Engineering Co., Inc., P.O. Box 529, 5785 Plantation Rd., Theodore, AL 36582
Proctec, Ltd., Rua Eugenio Castro, 13A+/c, 2800 Almada, PORTUGAL, U.S. Rep: Walter Thorsen, Inc., 79 Oweno Rd., P.O. Box 755, Mahwah, NJ 07430-0755
Quality Shipyards, Inc. (Zapata), 3201 Earhart Dr., P.O. Box 1817, Houma, LA

70361
SeaArk, P.O. Box 210, Monticello AR 71655
Service Marine Industries, P.O. Box 3606, Morgan City LA 70381
Skipperliner Shipyards, 621 Park Plaza Dr, Dept 21, LaCrosse WI 54601
Steiner Shipyard, Inc., P.O. Box 742, Bayou la Batre, AL 36509
Swath Ocean, 979 G Street, Chula Vista, CA 92011
3 Maj Associates Shipbuilding Industry, P. O. Box 117, 51001 Rijeka YUGOSLAVIA
Textron Marine Systems, 6600 Plaza Drive, New Orleans, LA 70127-2584
Trinity Marine Group, Box 3029, Gulfport, MS 39505-3029
Union Dry Dock & Repair, P.O. Box M1539, Hoboken, NJ 07030
Zidell Explorations, Inc., 3121 S.W. Moody Street, Portland, OR 97201
Zodiac of North America Inc., Thompson Creek Rd., P.O. Box 400, Stevensville, MD 21666

SIMULATOR TRAINING
Marine Safety International, Marine Air Terminal, LaGuardia Airport, NY 11371

SILENCERS
Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130

SMOKE CURTAINS
HMS Marine Hardware, 333 W. Merrick Road, Valley Stream, NY 11580

STABILIZERS
Naiaid Stabilizers, Van Dusen & Meyer Inc., P.O. Box 558, Shelton, CT 06484
Seatrak Industrial Marine, 834 W. Production Pl, Newport Beach, CA 92663

STAINLESS PLATE
Eastern Stainless Division, Cyclops Corporation, P.O. Box 1975, Baltimore MD 21203

STUFFING BOXES
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241

SURVIVAL EQUIPMENT
Schat Watercraft, P.O. Box 465, Ft of Industrial Rd., Farmingdale NY 07727
Stearns Manufacturing, P.O. Box 1498, St. Cloud MN 56302
Viking Life Saving Equipment, 1625 N Miami Ave., Miami FL 33136

TANK CLEANING
Houston Ship Repair, 1621 Woods Dr., P.O. Box 489, Channelview, TX 77530

TANK LEVELING INDICATORS
IMO International, Gems Sensors Division, One Cowles Rd, Plainville CT 06062
MMC Industrial, 60 Inip Dr, Inwood NY 11696
Saab Marine Electronics AB, P.O. Box 13045, S 402 51 Goteborg SWEDEN

TESTING
Barbee Valves, 205 W. 35th St., Suite A, National City, CA 92050
Wyle Laboratories, 7800 Govern's Dr., SW, Huntsville, AL 35807

TOOLS
Derbyshire Machine & Tool, Belfield Ave. & Wister St., Philadelphia, PA 19144-1788
Ingersoll-Rand, Professional Tool Group, Allen & Martinsville Rd., Liberty Corner, NJ 07938
LSP Industries, P.O. Box 5303, 2511-20th Street, Rockford, IL 61125
San Diego Marine Hardware, 1660 Logan Avenue, San Diego, CA 92113

TORSIONAL VIBRATION SPECIALISTS
T.W. Spaetgens, 156 W. 8th Ave., Vancouver, BC, CANADA, V5Y 1N2

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.
Jack Faulkner, 2419 Caddy Lane, Flossmoor IL 60422

TURBOCHARGERS
Cooper Industries, Energy Services Group, North Sandusky St., Mt. Vernon, OH 43050

VALVES AND FITTINGS
Aeroquip Corporation, 3000 Strayer, P.O. Box 631, Maumee OH 43537-0631
American Vulkan Corporation, P.O. Drawer 673, 2525 Dundee Rd., Winter Haven, FL 33882-0673
Circle Seal Controls, Brunswick Corporation, P.O. Box 3666, 1111 N. Brookhurst St., Anaheim, CA 92803
Cla-Val Co., P.O. Box 1325, Newport Beach, CA 92663
Cunico Corp., 214 N Hawaiian Ave., P.O. Box 306, Wilmington CA 90748
Dolsey Ltd., 863 West 44th Street, Norfolk, VA 23508
Elliot Manufacturing, P.O. Box 773, Binghamton, NY 13902
Loeffler Machine, US #1 & Robbins Ave., Pennel PA 19047
MMC International, 60 Inip Dr, Inwood NY 11696
Marotta Scientific Controls, Inc., 78 Boonton Ave., P.O. Box 427, Montville, NJ 07045
Stacey/Fetterolf, P.O. Box 103, Skippack, PA 19474
Stanley G. Flagg Co., 1020 West High St., Stowe, PA 19464
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

VIBRATION ANALYSIS
DLI Engineering Corp., 253 Winslow Way West, Bainbridge Island, WA 98110
T. W. Spaetgens, 156 W 8th Ave., Vancouver BC CANADA V5Y 1N2
Vibranalysis Engineering Corp., 4380 S. Wayside, Suite 100, Houston TX 77087

VIDEO—Training
Walport Wusa, 840 Bond St., Elizabeth, NJ 07201

WASTEWATER TREATMENT
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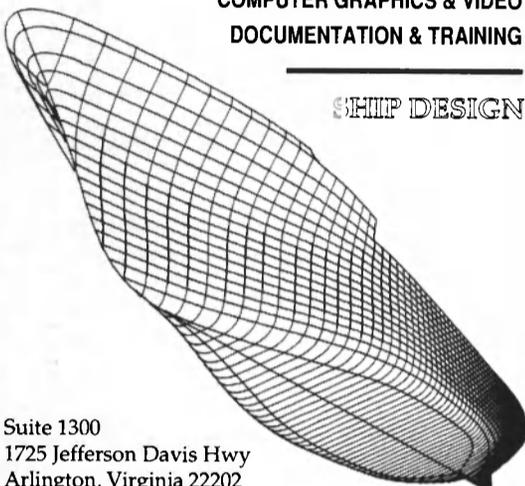
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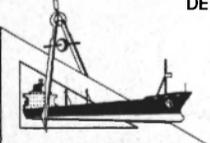
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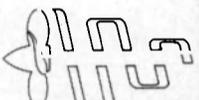
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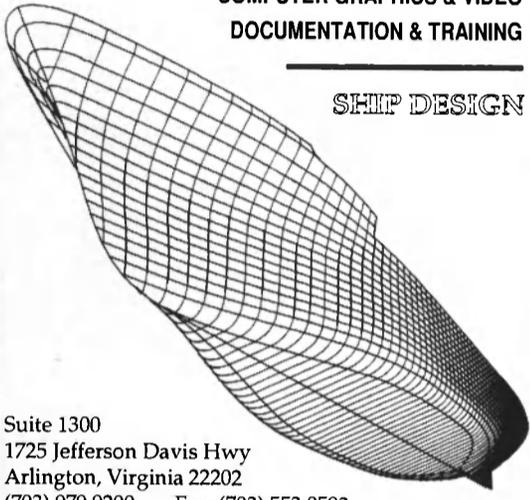
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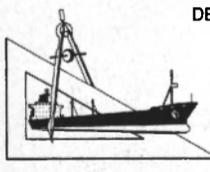
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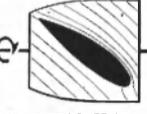
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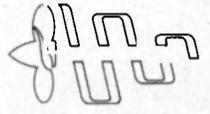
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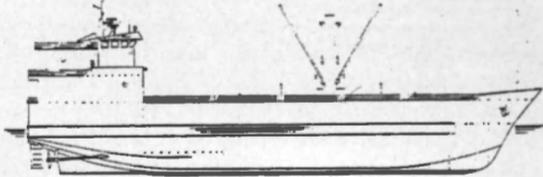


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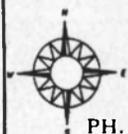
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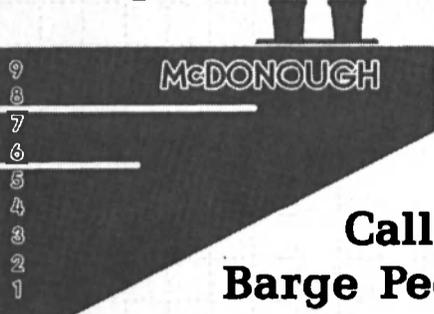
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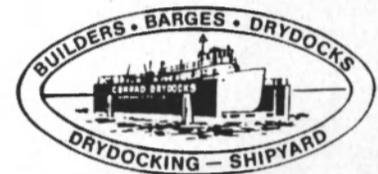
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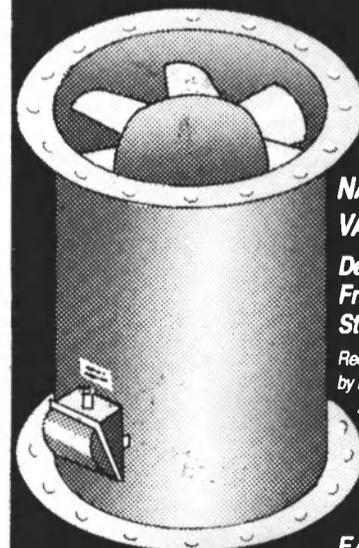
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