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AND
ENGINEERING NEWS

WORKBOAT ISSUE

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**Innovative fast vessel designs
debut at FAST '95**

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NOVEMBER 1995

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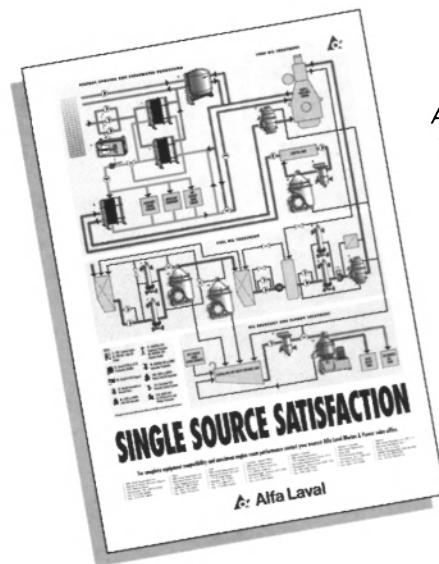
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ON THE COVER

Pictured on this month's cover is the *Irish Sea Pioneer*, a new generation of giant liftboat built in the U.S. by Bollinger Shipyard. Jointly designed by Bollinger and Halliburton Energy Services, the *Irish Sea Pioneer* is a self-elevating vessel created to service the oil drill platforms in the U.K. sector of the North Sea. The vessel incorporates many technological upgrades and innovations, detailed in the story starting on page 60.

44 TRAIL BLAZING

Travemunde, Germany was the site for FAST '95, a technical conference which brought together some of the world's most innovative marine professionals to discuss the development, design, testing and production of fast, safe and efficient vessels.

59 WORKBOAT REVIEW

As the International Workboat Show convenes in New Orleans, MR/EN looks back at a year filled with significant orders and deliveries, including the vessel pictured on the cover, the Bollinger-built *Irish Sea Pioneer*.

85 MARINE FINANCIAL YEARBOOK

"Subsidies . . . Currency Fluctuation . . . Market Demand . . . Profit Margin"
As builders and owners establish and enact measures to regain or retain profitability, understanding the world of marine finances has never been more crucial.

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EDITOR'S NOTE

The end of the year causes some people great angst, others great joy. Looking back on 1995, albeit a bit prematurely, should bring a collective smile to the proverbial face of the maritime industry.



While skeptics and pundits are quick to point out what is, or what could be, wrong in the industry, there is plenty of good news to go around.

For example: U.S. yards have prevailed against "industry wisdom" and won orders to build a variety of ships for international owners. The arrival of U.S. yards from navy builders to commercial contenders was the result of a combined government/industry initiative, which included a well-planned course of action including shipyard upgrades, innovative financing and astute marketing. The latest big news — Marinette Marine's contract to build a pair of 11,500-dwt tankers for Sweden's Furetank — can be read about on page 8.

There have been numerous technological developments brought to light throughout the year, developments geared to making vessels faster, safer and more efficient. A wonderful technological conference, FAST '95, was held in Travemunde, Germany in late September. The conference attracted many top

maritime minds from the scholastic, as well as the corporate side of the industry. In all there were 325 attendees from 30 countries, with the heavy concentrations of delegates from Europe and Asia. Firsthand coverage of FAST '95 starts on page 44.

Another indication that the "technology craze" is here to stay was shown via the tremendous response accorded to MR/EN's first standard sized technology supplement — dedicated to propulsion technologies — printed in conjunction with the September edition. Keep the comments coming.

Finally, this edition features another MR/EN first, the Marine Financial Yearbook, (timely in light of the Lykes Bros. Chapter 11 news) which includes a collection of articles and reports on the universal language of business . . . MONEY.

Greg Trauthwein, editor

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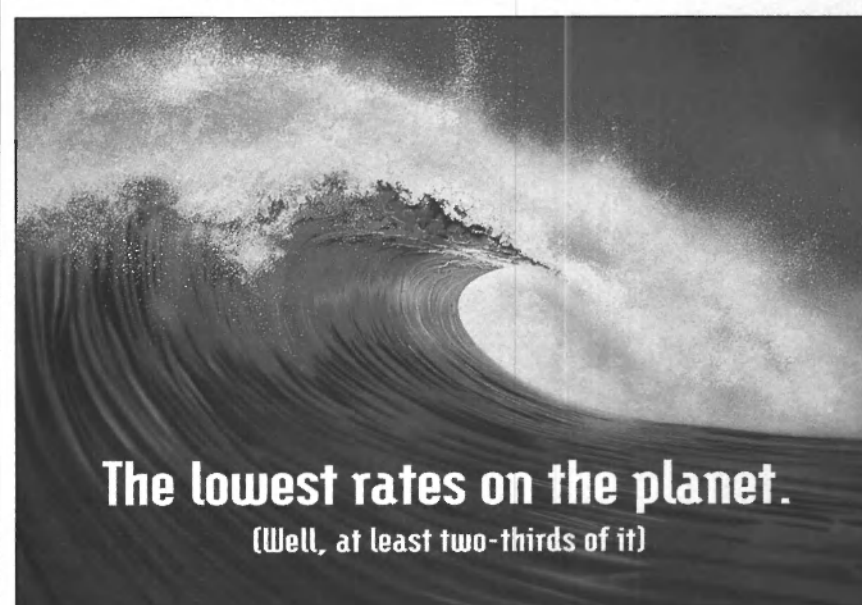
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Schichau Seebeckwerft To Deliver Containership

The launching of a SSW 1700 type containership was performed September 21 at Schichau Seebeckwerft shipyard in Bremerhaven, and delivery is slated for this month. The yard is a member of the shipbuilding division of the Vulkan Group.

Newbuilding No. 1090 will be named *Contship Ticino*, and its sponsor will be Frau Karin Izbicki of Muhlheim/Ruhr. The 534.8-ft. (163-m), 1,684-TEU ship is being constructed for Contship Containertransport- und Beteiligungsgesellschaft GmbH & Co.

Contship Ticino will be managed by NSB Niederelbe Schiffahrtsgesellschaft GmbH, Buxtehude, and enter a four-year

charter for the Contship Group. The vessel has 152 plugs for refrigerated containers; 618 of its containers may be stored below deck and 1,066 above deck.

Main propulsion is provided by a BV/MAN B&W 7L60MC, which propels the vessel to a maximum speed of 19.1 knots.

For more information on Schichau Seebeckwerft
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Marinette Marine Receives Order For Tankers Swedish shipping company contract pending Title XI financing

The preliminary order of two tankers by the Swedish tanker shipping company Furetank at Wisconsin's Marinette Marine is reportedly the first order from a Swedish shipping company placed at a U.S. shipyard since the 1920s. The Donso class chemical tanker is reportedly a technologi-

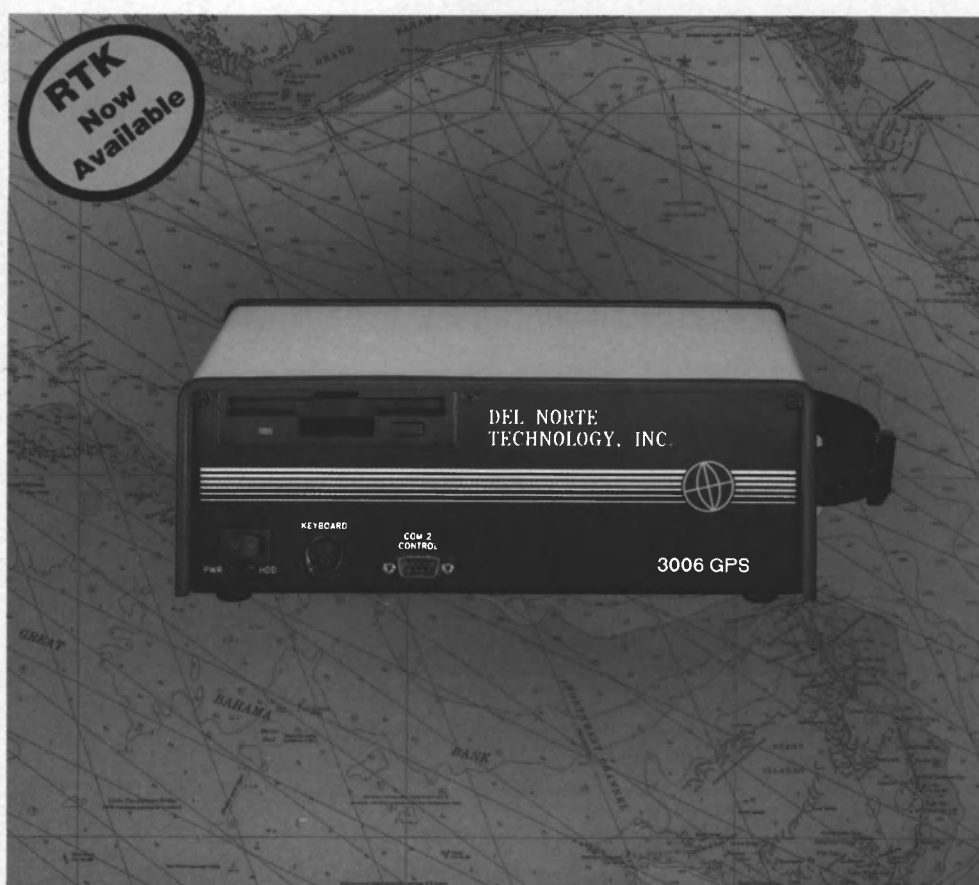
cally sophisticated and environmentally friendly design. Furetank is a family business situated on the island of Donso in the Goteborg archipelago.

"Tanker shipping can be stimulated by this new cooperation," said **Per Jessing**, director, Swedish Shipowner's Association.

"It is very exciting. We also think that the American shipbuilding industry, if it wants to, can gain new technology from the Donso model. It is the best model available anywhere today."

Each ship will be 11,500 dwt. They are IMO-2 class product tankers, designed by Pelmatic

Goteborg AB. The ships will integrate the latest in design technology and efficient operating characteristics. Simonship AB in Stockholm is the broker. The order is preliminary, pending approval of Title XI financing. A contract value was not available at press time.



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Swath Licenses Bollinger, Greenbay And Redman

Swath International Ltd. (SIL) has announced the licensing of three shipyards to build the company's Swath (Small Waterplane Area Twin Hull) technology vessel designs. The three yards are Bollinger Shipyards, of Lockport, La.; Greenbay Marine of Singapore; and Rodman Polyships in Vigo, Spain.

Swath International Managing Director **C. William Hayes**, in making the announcement, stated: "The licensing of the shipyards is a major departure from our previous 'design and build' philosophy. We feel that we can be much more responsive to our clients by having the shipyard involved with the client from the outset." Mr. Hayes indicated that SIL would continue marketing its designs but would no longer function as co-builder with an available shipyard acceptable to the client. "Our emphasis has changed to supporting our licensees," Mr. Hayes explained. "We have a number of standard Swath vessel designs which are available to the licensed shipyards. As the shipyards become progressively more familiar with the capabilities and details of each of the standard designs, our marketing efforts will shift to support of the licensees' efforts in marketing and sales." In conjunction with this shift in policy, Mr. Hayes announced the company would be consolidating design functions now split between the U.K. and U.S. offices. "Effective October 1, 1995," Mr. Hayes said, "the design team will be located in the Maryland U.S.A. offices. An engineering and administrative support office will be maintained in the U.K. under **Stephen Kinrade**, manager - projects. Kinrade will have oversight of the U.K.-based marketing and the ongoing efforts of our consultants in the U.K. and elsewhere in Europe."

"Our objective is to be more
(Continued on page 11)

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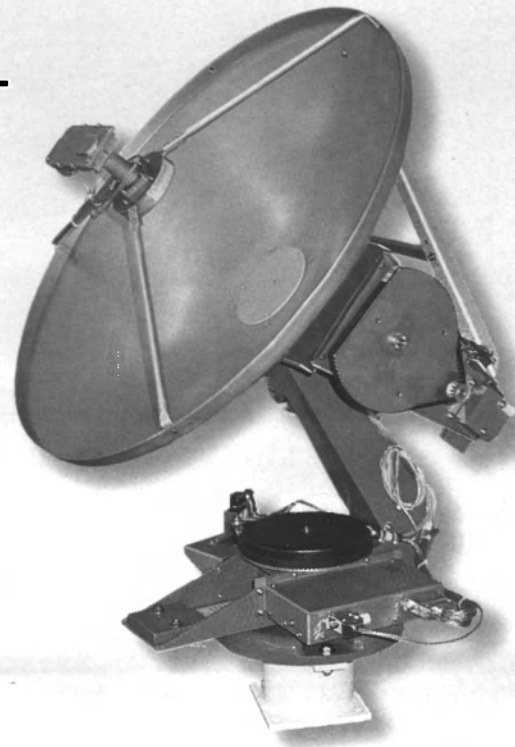
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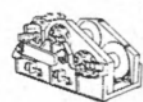
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Samsung Tapped To Build Two Suezmax Tankers

New ships to incorporate ABS Safehull design criteria

Ceres Hellenic Shipping Enterprises, Ltd. and Ultramar Canada Inc., a wholly-owned subsidiary of Ultramar Corp., have jointly announced the construction of two double-hulled Suezmax tankers for charter to Ultramar Canada Inc., with delivery scheduled in the first quarter of 1998.

The vessels will be purpose-built tankers of approximately 150,000 dwt (metric) each, and will be constructed by Samsung Heavy Industries Co., Ltd. at its Koje shipyard.

In their joint announcement following the signing of the shipbuilding and commercial agreements in London in early October, **Peter G. Livanos**, managing director of Ceres Hellenic, said, "Today we have concluded a strategic alliance for the transport of petroleum, using what will be the most advanced and environmentally safe tankers built. We believe that this will set the standard for the marine transportation of oil into the 21st century."

The two new double-hulled, ice-strengthened, shallow-draft tankers incorporate numerous improvements in design, structure and operating systems as compared to existing ships in use today. These improvements provide increased safety and environmental protection. The use of more steel exceeding present requirements by the classification and international trading standards will result in a higher safety margin for prevention of corrosion and fatigue, thereby affording a longer life expectancy.

The adoption of exceptionally high specifications, including the American Bureau of Shipping (ABS) Safehull design criteria, will result in distribution of steel in critical areas,

and also in increased safety. The main diesel engine will be upgraded for more power and greater operating safety margins in the North Atlantic trade where harsh weather patterns are anticipated.

The design features will include provisions for ice class "DO" in order to afford efficient and reliable operation at extreme sub-zero centigrade temperatures as well as ice conditions which can exceed 40 cm in thickness, which are prevalent in the St. Lawrence River and the approaches to Ultramar's St. Romuald refinery in Quebec.

"This agreement, under which Ultramar is chartering ships with construction standards clearly exceeding current local and international regulations, is yet another example of Ultramar's efforts to use the safest and most efficient means of transportation available," said **Curtis V. Anastasio**, Ultramar's vice president of Supply and Shipping.

Ceres Hellenic Shipping Enterprises, Ltd., as general managing agents for various shipowning companies, and Ultramar Canada Inc. have been involved in marine transportation contracts and have worked together since 1984.

Ultramar Canada owns and operates a 150,000-barrel-per-day refinery at St. Romuald, Quebec, markets petroleum products through a network of over 1,400 retail outlets and cardlocks, and provides heating oil to over 173,000 households.

For more information on Samsung
Circle 36 on Reader Service Card

For more information on ABS
Circle 35 on Reader Service Card

Commercial Metals Ships Scrap

Commercial Metals Company (CMC) announced that last week it shipped the largest single cargo of steel scrap ever loaded on a vessel anywhere in the world. The cargo consisted of more than 85,000 metric tons.

The steel scrap cargo has an invoice value of about \$16 million and was shipped to Nakorn Thai Steelworks Company Ltd. (NTS), a Thailand steel mini-mill operation which will use the metal in the manufacture of new steel products.

"This shipment represents a first for NTS as well as CMC," commented **Stanley A. Rabin**, president and CEO of CMC.

"No steel mill in the Pacific Rim has ever undertaken the receipt of a shipment this large. Managing the logistics of unloading and transporting will be a considerable accomplishment."

The steel scrap was loaded onto the Turkish vessel *M/V Tahir Kaptan* at Port Newark, N.J.

The ship measures approximately 820 ft. (250 m) by 125 ft. (38.1 m), with a deadweight of 120,000 tons. The CMC shipment, which comprised the entire cargo of the vessel, would fill the equivalent of 1,100 rail cars. Due to the draft restriction at the load port, the first 75,000 metric tons was loaded at the dock, then the ship moved to deep water for loading of the remaining 10,000 metric tons utilizing barges and floating cranes.

The loaded vessel departed for Thailand September 29 on a 50-day voyage around the southern tip of Africa.

"We see this as a trend in scrap exports," **Mr. Rabin** said. "The economics are simple—the greater the load, the greater the cost savings in shipping. We think customers will increasingly pursue the economic benefits of larger shipments."

CMC and its subsidiaries manufacture, recycle and market steel and metal products, related materials, and services through a network of more than 90 locations including steel mini-mills, steel fabrication plants, a copper tube mill, recycling facilities and trading

Maritime Reporter/Engineering News

offices in the U.S. and overseas.

Keppel Clinches \$21 Million FPSO Conversion Deal

Keppel Shipyard has secured a contract from Modec Inc. of Japan to convert *Ellida*, a 137,684-dwt tanker, into a Floating Production Storage and Offloading (FPSO) vessel. This follows the recent completion of a \$70 million contract by Keppel Shipyard to convert the 149,991-dwt tanker *Cossack Pioneer* into an FPSO vessel for Woodside Petroleum of Australia. Modec Inc. is a subsidiary of the Mitsui Group.

A significant portion of the conversion will be the installation of a turret mooring system, complete with supporting ancillary at the bow of the vessel. A tandem mooring facility and an offloading station will also be installed at the stern of the vessel. Another major job will be the installation of crude process systems aboard the vessel, including a gas compression system and flare system with a 30-m tower. The main boilers will be converted for process oil firing. Major modifications to the piping system will be carried out in order to facilitate storage of processed oil in the cargo tanks.

The *Ellida* will be outfitted with a 100-ton helideck, a 20-ton-capacity deck crane and laboratory house. Keppel will also carry out refurbishment of accommodation and deckhouse facilities.

Other repair work to be carried out includes the overhaul of the main engine and auxiliary machinery. Extensive tank blasting and coating of over 45,000 sq. m. of the cargo tanks and reinforcement of the hull will also be carried out.

To maintain safety standards, a fire and gas detection/protection system, an extensive fire and foam deluge system, and pollution prevention equipment will be installed.

Upon completion, the vessel will be stationed at the Shell Todd Oil Services-operated Maui B. Oil Field, in the waters off New Zealand.

For more information on Keppel Shipyard
Circle 134 on Reader Service Card

ABS Finds Asian Market Fruitful

The American Bureau of Shipping (ABS) reports that so far in 1995, it has experienced a significant increase in contracts in Asian shipyards for the classification of new vessels more than 10,000 dwt.

As of the end of September 1995, total vessels building or contracted to be built to ABS class in the shipyards of Japan, Korea, the Republic of China and the People's Republic of China totaled 12.1 mil-

November, 1995

lion dwt, representing a reported market share of 27.5 percent. By country this represents: Japan, 6 million dwt; Korea, 3 million dwt; the Republic of China, 1.4 million dwt; and the People's Republic of China, 845,000 dwt. In addition, there are 43 vessels building in Singapore, and 10 vessels building in India to ABS class.

For more information on ABS
Circle 38 on Reader Service Card

SWATH Licenses Bollinger, Greenbay And Rodman

(Continued from page 8)

responsive to the shipyards' design needs and technical sales support requirements."

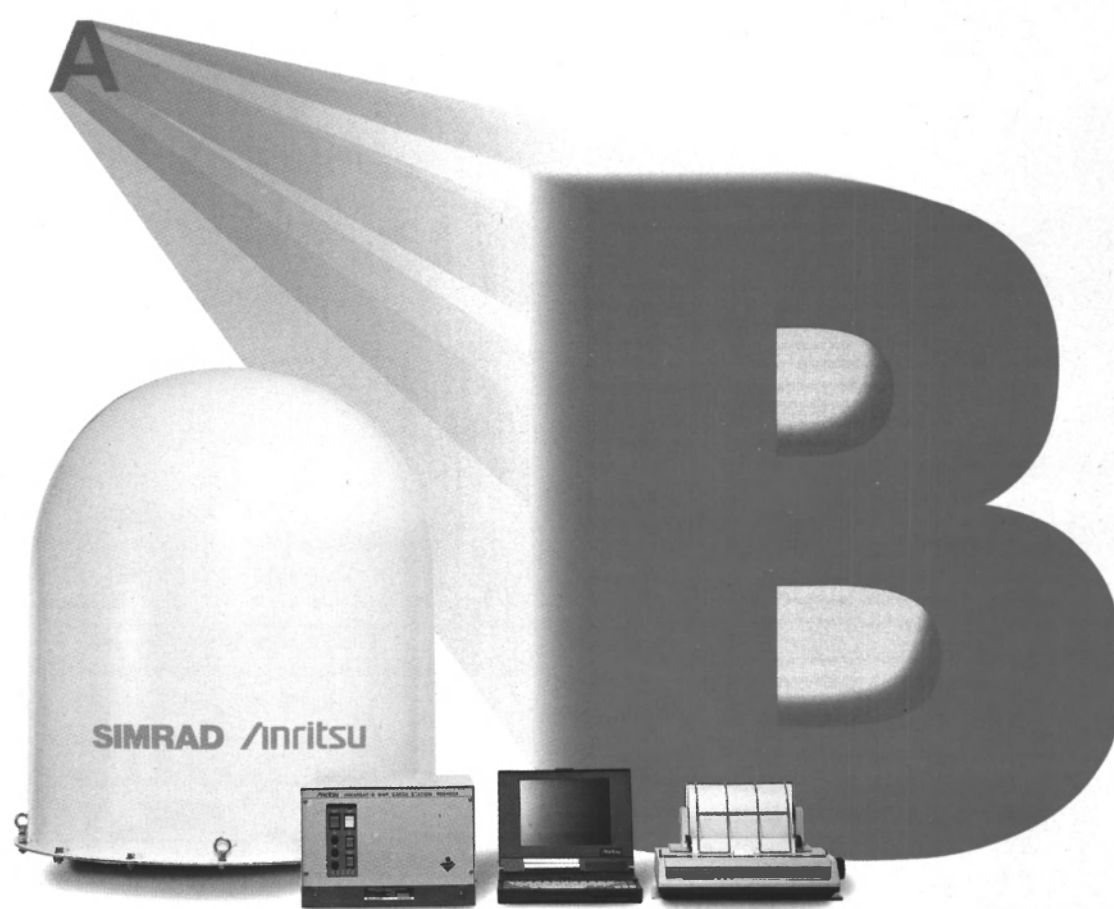
Mr. Hayes stated, "The five-hour time difference has certainly been a problem," he said, "but more important is synergism you gain when design people have cof-

fee together."

For more information on SWATH
Circle 148 on Reader Service Card

For more information on Bollinger
Circle 46 on Reader Service Card

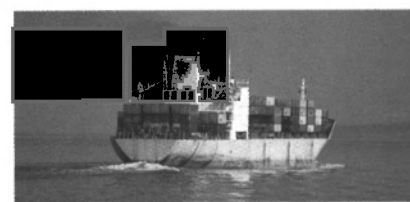
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Bisso Completes Removal Of The Tensaw River Bridge

Bisso Marine, working with Jordan Pile Driving Inc., completed the removal of five 400-ton sections of the Tensaw River Bridge on the Mobile Bay Causeway in Alabama. The 400-ton sections were lifted onto Bisso's ocean barge, *Big Chief*, and transported by the *MV Darlene Bisso* to a designated site south of Dauphin Island to be used as an artificial reef.

For more information on Bisso Marine
Circle 45 on Reader Service Card



Alabama Shipyard Buys Senermar's FORAN CAD/CAM System

Senermar, the Spanish firm of naval architects, has won the first license in the U.S. for its CAD/CAM system for ship design and production, FORAN Version 3.0. The company has licensed the system to Alabama Shipyard, a subsidiary of Atlantic Marine Holdings Co. of Jacksonville, Fla. The award is an outgrowth of Alabama Shipyard's efforts to become a world-competitive commercial shipyard, an aspiration that seems attainable in light of the agreement it has reached with Dannebrog Reederi for three chemical carriers. That agreement is subject to Title XI financing, which is expected to be approved in the near future. The license also comes on the heels of Senermar's recent FORAN license to the French shipyard Ateliers et Chantiers du Havre. Alabama Shipyard reportedly decided on the FORAN system after an extensive evaluation of all main CAD/CAM systems currently available, including exhaustive benchmarks in different countries. Training in the use of all FORAN's features has been carried out, and the program is expected to be put to active use in the very near future.

This most recent version of FORAN was released in the beginning of 1993 and has now been implemented in 32 shipyards worldwide. Counting all versions of FORAN, the system has been implemented in 120 yards across 21 countries.

Senermar Develops New Module For CAD/CAM System

Senermar has developed a new module for Foran V30, its CAD/CAM/CAE system for ship design and production. The new module, devoted to modeling and positioning of general outfitting structures, is part of Senermar's continuous development of the Foran CAD/CAM system, which, in all of its versions, is now licensed for use in 120 shipyards in 21 countries. The objective of the new module is the modeling and positioning of general outfitting structures like foundations and supports. The design is carried out in a fully interactive 3-D graphic environment, where it can be used as reference to any item available in the zone, such as structural elements, equipment or piping.

For more information on Foran
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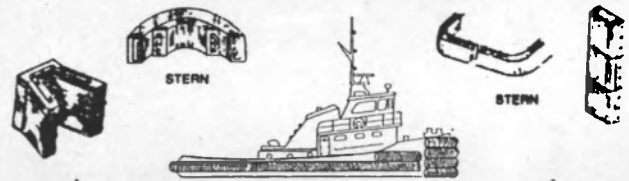
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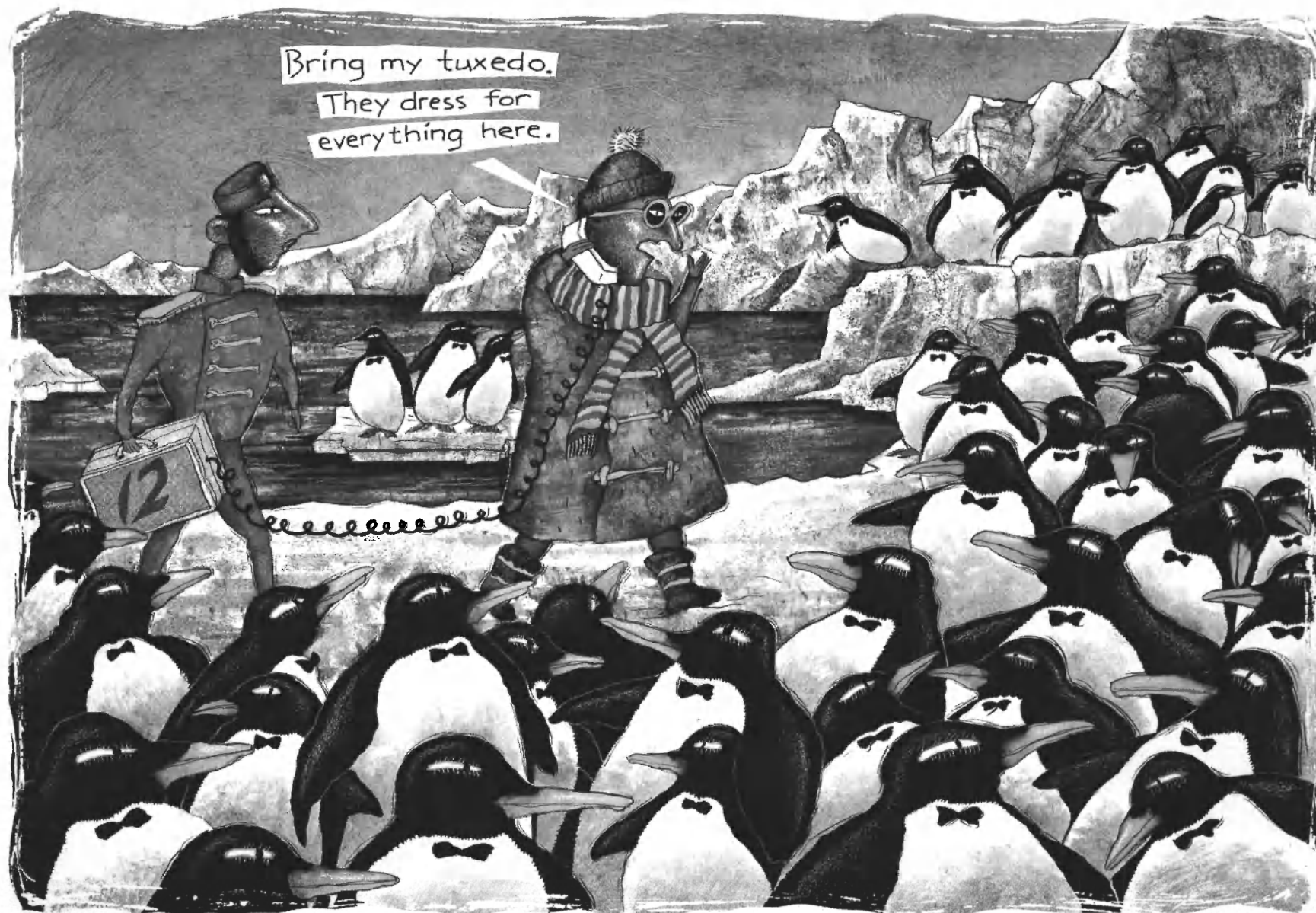


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NEW FROM SEAARK MARINE

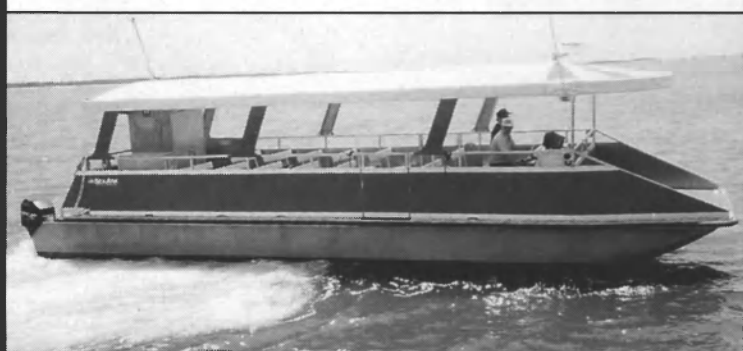
SeaArk Now Builds Excursion Models



26' Excursion Boat / 40 Passengers



28' Excursion Boat / 24 Passengers

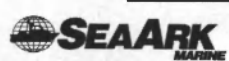


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A UNITED EFFORT

Ingalls, NNS, NASSCO Join Forces

To Bid For Next-Generation Navy Ship

Three of the leading ship design and shipbuilding companies in the U.S. have joined in a team effort to bid for the design, production and life cycle support of the Navy's next generation of amphibious ships, the LPD-17 class.

Litton's Ingalls Shipbuilding division, Pascagoula, Miss., Tenneco's Newport News Shipbuilding in Virginia and National Steel and Shipbuilding Co. (NASSCO) in San Diego will bring decades of experience in naval combatant ship design, construction and fleet support to the LPD-17 program.

Lockheed Martin Government Electronic Systems, Moorestown, N.J., will be on the ship production bidding team to provide ship system and combat system integration.

Ingalls will be the team's prime contractor. Pending congressional appropriation, bids for the detail design and construction of the lead ship of the new class are expected to be submitted in early- to mid-1996, with a contract awarded before the end of the government's fiscal year on Sept. 30, 1996.

The LPD-17 class will meet Navy/Marine Corps amphibious lift needs well into the 21st Century. These multi-mission ships will replace retiring ship classes with aircraft and vehicle lift, troop transport, mission support and significant self-defense capabilities exceeding their predecessors.

"Teaming of the three shipbuilding companies with Lockheed Martin will combine the resources of this nation's best ship designers and builders with a world-class ship systems integrator to achieve the highest level of efficiency in the production of the LPD-17 class," said Gerald J. St. Pe, a Litton senior vice president and Ingalls president.

In producing the LPD-17 class, Ingalls would build and completely outfit the forward portion of each ship. Newport News would do likewise with the aft portion. Each aft section, weighing more than 11,000 tons, would be floated from Newport News to Ingalls for integration into the final ship configuration. Ingalls would then complete each ship's outfitting and testing prior to delivery to the Navy.

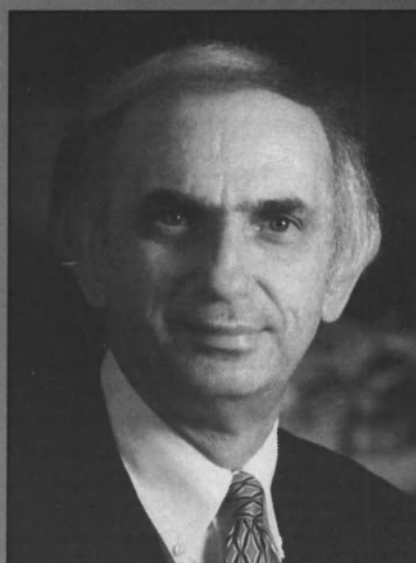
"Ingalls and Newport News are uniquely experienced for this method of partnership production, with decades of experience in efficiently designing and building aircraft carriers, submarines, cruisers, destroyers and amphibious ships," Mr. St. Pe said.

Over the past 25 years, Ingalls has been the sole builder of the Navy's two most advanced amphibious assault ship classes — Tarawa class LHAs and Wasp class LHDs — as well as builder of 60 cruisers and destroyers. Newport News Shipbuilding is America's largest privately-owned shipyard.

In its 109 years of operation, the company has built almost 800 ships, including nuclear-powered aircraft carriers, submarines, cruisers and a wide variety of commercial vessels.

Under the teaming agreement, NASSCO would provide preconstruction support, as well as post-delivery support for Pacific Fleet-based ships of the LPD-17 class. NASSCO currently is involved in construction and conversion work in the Navy's strategic sealift program.

Lockheed Martin would provide the system integration of LPD-17's advanced machinery control, damage control, interior and exterior communications and combat systems. Its Government Electronic Systems operation, producer of the Navy's shipboard Aegis weapon system, would lead that company's work on the new program.



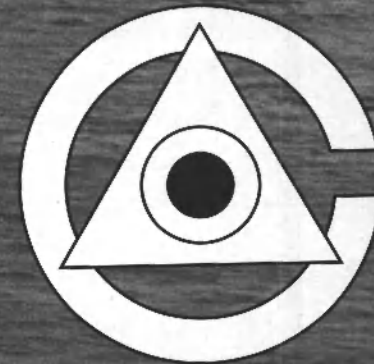
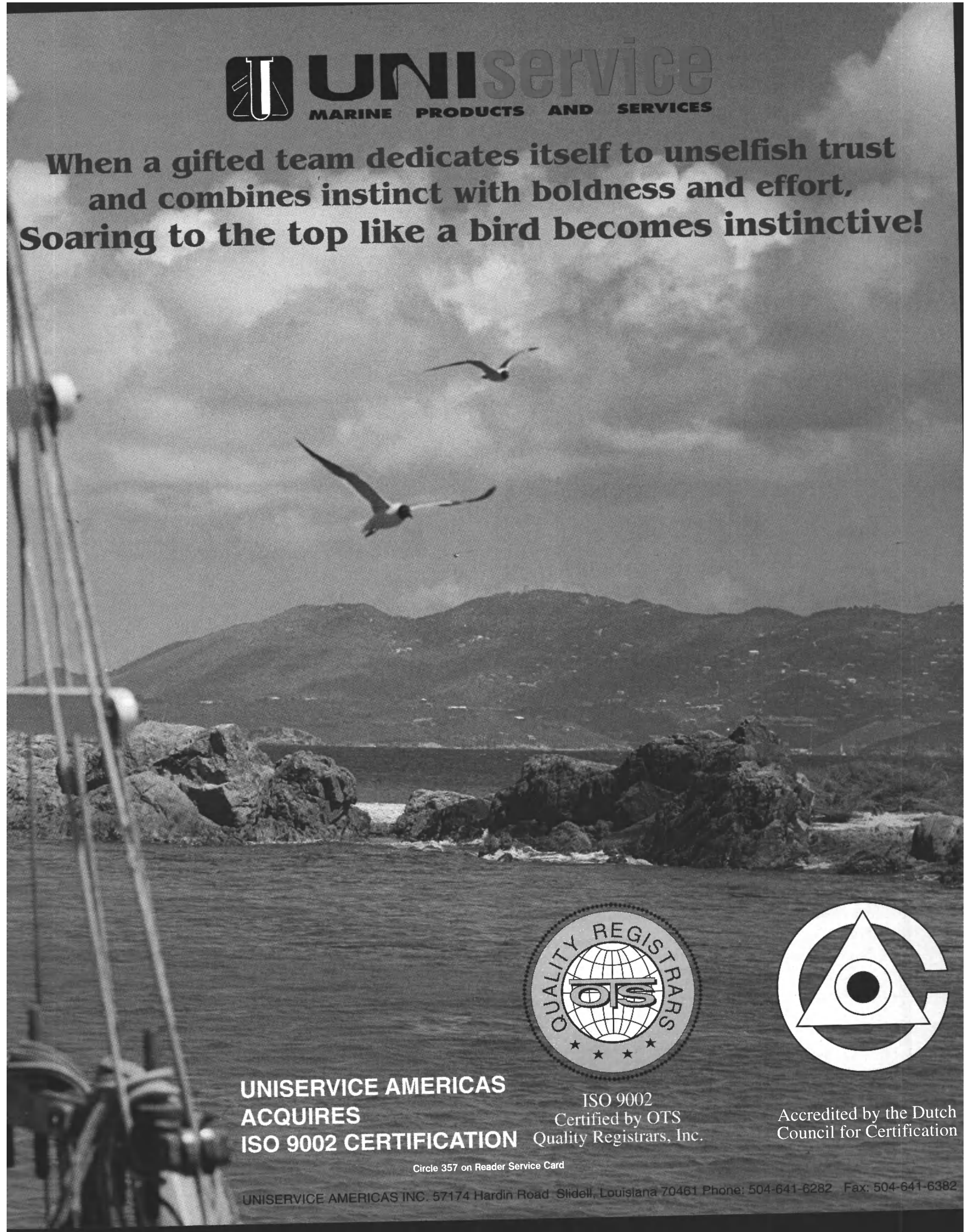
Gerald J. St. Pe, president, Ingalls Shipbuilding

For more information on

Ingalls Shipbuilding154
NASSCO155
Newport News Shipbuilding156



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Marine Gears Projects Good Market

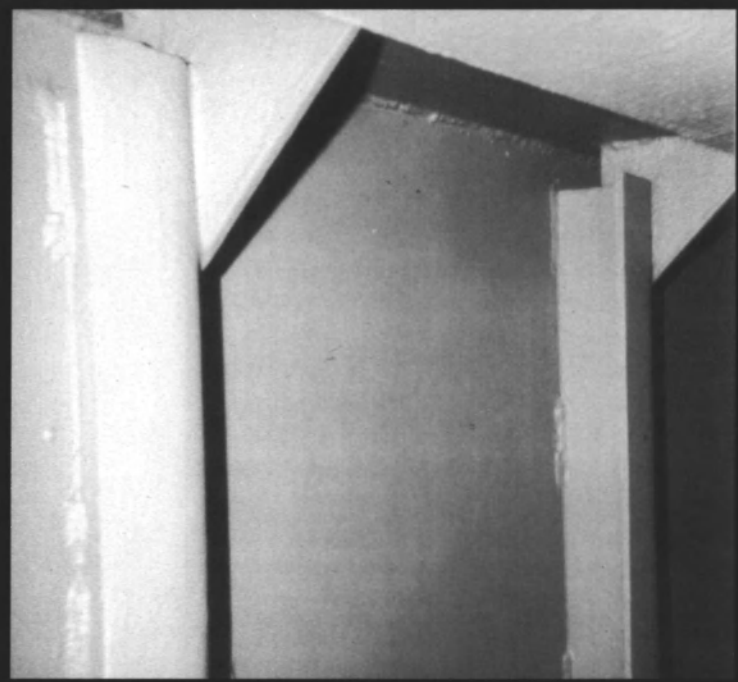
Marine Gears — consisting of Marine Gears Inc., Haley Clutch and Coupling Corp. and Marine Gears Intl. — is dedicated to serving the propulsion needs of the maritime industry, and its primary target is the workboat market. Marine Gears has noted a large increase in the number of rebuilds and repowers of existing vessels within the last decade. It expects this trend to continue in the near term, with newbuild numbers holding steady as well. Over the next five to 10 years, the company looks for the industry as a whole to begin to increase newbuilding projects at a steady pace, a projection based primarily on the age of the current fleet. To meet customer demands, the company offers an array of new, re-manufactured and re-built products. New marine propulsion gears include Pneumatic Clutch Gears, vertical or horizontal offset, in either the FMC series (Flywheel Mounted Clutch) or the GMC series (Gear Mounted Clutch). It also offers Hydraulic Clutch Gears, in either the hydraulic reversing vertical (HRV); hydraulic reversing horizontal (HRH); or the reversing in-line (RI) types.


The Haley HRC Torsional Coupling is designed to help smooth out the hammering effect indicative of all marine propulsion engines, to protect the gear elements and bearings. They also reduce torsional vibrations throughout the entire propulsion package and provide a dampening effect for vibration and noise transmitted to the vessel from the main engines. Marine Gears offers many additional products, too numerous to detail. While the company's current product arsenal is impressive in both size and diversity, it continually evaluates and updates to keep up with changing and pending customer needs and legislation. For example, the company has seen engine manufacturers change designs over the past few years, substantially increasing horsepower ratings on their marine diesel engines based on customer requirement and possible future regulations.

For more information on Marine Gears
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EASY KOTE is a water based modified asphaltic coating that dries to a semihard finish. It is safe to torch, heat resistant, and inexpensive to use.

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Lindenau Delivers Tanker

Lindenau GmbH recently delivered the *Jian She 52*, the second of two double hull oil tankers designed and built by the yard and ordered by China National Machinery, Import & Export Corp. The vessel was delivered to Shanghai Shipping (Group) Co.

The two deliveries were part of a cooperation contract with Bremer Vulkan and MTW Schiffswerft GmbH, a contract for four tankers signed in 1993. The *Jian She 52* and its sister vessel (delivered in May) are the first double hull oil tankers built by Lindenau for the People's Republic of China. They both belong to the "Lindenau Double Hull Tanker Class 2000," of which there are 150 different designs between the sizes of 3,000 and 40,000 dwt. The ship is powered by a MaK 6M 552C.

For more information on Lindenau
Circle 182 on Reader Service Card

Sunflower Built For Speed And Comfort

The latest high-speed catamaran from Incat Australia and Advanced Multi-Hull Designs, dubbed *Sunflower*, arrived recently on the west coast of South Korea following a 12-day voyage. The vessel reportedly broke several transit records en route, including a record transit from Hobart to Brisbane, during which the vessel averaged 34 knots. The vessel sports a slender catamaran hull shape and Maritime Dynamic ride control to ensure a smooth ride as well.

It is powered by four turbo-charged V16 Caterpillar diesels, each developing 5,420 kW at 1,000 rpm, driving KaMeWa 80 water-jets. *Sunflower* has a top speed of 52.7 knots and an operating speed of around 50 knots.

Patrol Vessel Grote Stern Delivered

The *Grote Stern*, a patrol vessel built by Damen Shipyards, was delivered in late September. The vessel will be employed by the Surveillance Service in the District of Rotterdam.

The vessel features an aluminum hull and superstructure, designed in accordance with DNV standards.

The 60.7-ft. (18.5-m) vessel is powered by two MTU/Mercedes diesel engines, which allow the vessel to attain a speed of 25 knots. The engines are mounted in-line with the shafts and four-blade fixed pitch propellers. The propellers and rudders are installed in special tunnels to achieve a high propulsion efficiency. These tunnels have a positive influence in reducing vibrations and noise levels. The ZF reverse/reduction

gearboxes are directly coupled to the main engines, which are flexibly mounted.

MAN B&W Introduces New Generation Genset

MAN B&W's L16/24 engine, in the 500-900 kW power range, is reportedly a good indication of the innovation MAN B&W Diesel Holeby has stood for. The L16/24 offers a streamlined exterior, uncluttered by tubes and pipes. It offers many new operating features, including: HFO operation at 1,200 rpm; simplified layout (all support functions have been gathered in a single front-end box for easy access and maintenance); pipeless design; separate cylinder units; and improved noise and vibration insulation.

For more information on the new engine
Circle 183 on Reader Service Card

U.S. Named Official Partner Country At SMM '96

The U.S. is the official partner country for the 1996 exhibitions at the 17th International Shipbuilding, Machinery & Marine Technology Exhibition and Conference, more commonly known as SMM '96. Scheduled for October 1 to 5, 1996, in Hamburg, the event attracts more than 800 exhibitors from all of the leading shipbuilding nations.

"We're coming to SMM in Hamburg with new enthusiasm, new ship designs and new elan, and that means we're returning to the worldwide stage of competitive commercial shipbuilding," said Silas O. Nunn, vice president of the Shipbuilders Council of America.

"The U.S.A. was the partner SMM wanted," said Dr. Jurgen Rohweder, chairman of the SMM '96 Advisory Committee.

For information on attending or exhibiting at SMM '96, contact Ulf Richter at tel: +49 40 3569 2440.

ZF Announces Marine Management Changes

ZF Industries Inc. announced changes in management responsibilities, as the company moves from a functional to a product-oriented organization. Gary Collar, formerly manager, marine products, was promoted to president, ZUA Auto Parts Inc. Paul Lanke will continue as vice president and general manager of ZF1-Chicago and re-manufacturing operations and, in addition, will be responsible for marine products. In support of this responsibility, Russ Polansky was promoted to business unit manager, marine products.

Pressler Introduces Ocean Shipping Reform Act

Proposal would axe FMC

In the first week of November, Senator **Larry Pressler** (R-S.D.), chairman of the Senate Committee on Commerce, Science, and Transportation, introduced legislation designed to deregulate the U.S. ocean shipping industry and eliminate the Federal Maritime Commission (FMC). The deregulation would be phased in through January 1, 1998.

The measure, dubbed the Ocean Shipping Reform Act of 1995, would transfer the duties of the defunct FMC to the Department of Transportation as soon as would be

practical in FY '96. The measure would also eliminate government tariff and contract filing requirements, as well as government tariff enforcement and regulation, effective June 1, 1997. Under the measure, shippers and carriers would be allowed to enter into confidential service contracts; and independent rate actions on con-

tracts would also be allowable, effective June 1, 1998.

"This bill would produce an ocean transportation system that is up to the task of meeting the demands of U.S. businesses which strive to be competitive in the global marketplace ... This phased-in timetable provides for a common sense approach for getting the fed-

eral government out of the business of regulating commercial practices which are better left to the private sector to administer," said Sen. **Pressler**.

The proposed Ocean Shipping Reform Act was created to strengthen U.S. laws against unfair competition by foreign shipping companies. The measure is a companion measure to legislation approved by the House of Transportation and Infrastructure Committee on August 2, 1995.

Mobil Donates \$450,000 To Woods Hole Oceanographic

Mobil Foundation, a charitable organization supported by Mobil Corporation, will donate \$450,000 over the next three years to the Woods Hole Oceanographic Institution to help train Kazak and U.S. scientists in environmental and oceanographic factors affecting the Caspian Sea. The grant to Woods Hole, one of the world's leading scientific institutions conducting research into the effects of pollution, weather, currents and tides on marine life, will fund a special program allowing 10 to 16 Kazak scientists to participate in two, three-month training programs over the next three years. Five U.S. scientists will also do a field study of the Caspian Sea. The Caspian Sea is prime spawning ground for the caviar-producing sturgeon, a critical industry for Kazakstan. In addition, many species of birds, seals and other fish make their home there. This program will help enhance scientific understanding of some of the region's problems, such as a sea level rise (the cause of coastal flooding), industrial pollution, over fishing of sturgeon and the effects of dams on the Volga River, which empties into the Caspian Sea.

Mobil Corporation is part of a consortium evaluating the hydrocarbon potential of a 25 million-acre area of the Caspian Sea, one of the world's most prospective areas. The Kazak government selected Mobil to join the consortium in part because of its operating experience in an environmentally sensitive area like Mobile Bay in the Gulf of Mexico, where conditions are similar to those in the Caspian Sea.

"The scientific training and research program, made possible by this grant from Mobil Foundation, continues the Institution's efforts to understand coastal environments such as the Caspian Sea," said Dr. **James Luyten**, associate director for research of Woods Hole. "We welcome this opportunity to work with environmental scientists from Kazakstan to train them in state-of-the-art techniques of observing and analyzing the environmental conditions in the Caspian Sea."



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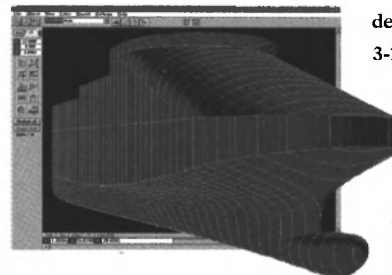
Next, we define all the tanks and compartments in **Autohydro**. Calculating volumes and balancing the ship is easy and quick, so we can spend more time to optimize the layout.

We define the structural members in **Autobuild**; the program automatically checks for interference and generates a bill of materials and a complete list of weights. That eliminates manual drafting, saves the yard manhours, and reduces the usual worry about weight.

To save even more, we can export directly to NC cutting machines, radically reducing lofting and nesting costs.

Yes, all these programs come from the same place - Autoship Systems, the world's largest developer of Windows™-based marine software. With Autoship, the entire design process, from concept to cut plates, is a smooth, seamless flow.

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OSI: ECDIS Pioneer Predicts Retrofit Market To Provide Big Business

Offshore Systems International is a leader in Electronic Chart Display and Information Systems (ECDIS) technology, providing the marine industry with leading edge technology which meets the needs of the mariner. Specifically, ECDIS has emerged as a new aid to maritime navigation with significant benefits in terms of piloting and safety. It is expected that the IMO will this month adopt ECDIS as a worldwide standard for electronic ship navigation.

Since 1980, the company has developed three generations of integrated navigation systems, with Electronic Chart Precise Integrated Navigation System (ECPINS) being the latest, and most successful. ECPINS is a real-time geographic information system capable of integrating radio navigation (e.g. GPS, DGPS, Loran), depth sounder, gyrocompass, radar and electronic chart into one display. As a navigation system, ECPINS also displays such information as cross-track distance, course-made-good, speed-over-ground and time-to-go.

The real power of the new systems lie in its capability to integrate all navigation sensors necessary for all aspects of safe piloting and maneuvering. When ECDIS and radar/ARPA are integrated onto a single display, they provide a dual function system that can be used both for navigation and collision

avoidance.

Regarding market potential, OSI's **Helmut Lanziner** points out that the product is well suited for the retrofit market. "We see the retrofit market as much larger than the newbuild. The system is developed to work with virtually any type of radar system." Mr. **Lanziner** has also noticed that the shipping community has become more receptive to new technologies, as owners and operators realize the bottom line potential. He said that as the equipment becomes more widely accepted, and as authorities allow ships equipped with ECDIS to operate in reduced visibility conditions, the "time is money" factor will help over rule most qualms about new technology.

OSI recently announced orders for ECPINS systems from August through September, 1995, totalled 22, from a variety of clients, including the company's largest sale ever, 10 ECPINS systems to American Steamship Co. of New York. Canada Steamship Lines of Montreal was the first company in the world to install ECDIS on its entire fleet. Another prestigious contract was to supply four ECPINS to Marinette Marine Corp. for supply on the Juniper and Keeper Class U.S. Coast Guard ships. The first of the Juniper class was launched in June.

For more information on OSI
Circle 199 on Reader Service Card

New Ship To Be Christened In New Orleans

Panalpina World Transport Ltd. announced the christening of its newest cargo ship, the *MV African Star 2*, will take place in late November. The vessel, built by Trinity Marine Group at its Equitable Shipyard in New Orleans, is a high-speed, multi-purpose ship that will be put in Panalpina's active African Star service. "We chose to build the African Star 2 in the United States because the technology, delivery and price we were looking for were just better here than at alternative shipyards," said **Hans Toggweiler**, executive vice president, Panalpina USA.

Brooks Appointed VP For ACBL

American Commercial Barge Line Co., Jeffersonville, Ind., announced that **Stephen J. Brooks** was named assistant vice president of sales. In his new position, Mr. **Brooks** will be responsible for the management of the Bulk, Steel, and Coal departments.

IMO: Need For Emphasis On Ship Safety

At World Maritime Day IMO Secretary General **William A. O'Neil** delivered his annual message to the maritime community, calling for a change in attitude towards ship safety. "The difficult economic conditions of the last two decades have discouraged ship-owners from ordering new tonnage

and there is evidence that, in some cases, the maintenance of vessels has suffered. The combination of age and poor maintenance has obvious safety implications ... Recently there has been a disturbing rise in accidents and our fear is that, if nothing is done, the progress we have diligently fought for over the last few decades will be lost," said Mr. **O'Neil**.

Ingalls Christens Ninth Destroyer

The ninth DDG 51 Class Aegis guided missile destroyer to be built by Ingalls Shipbuilding division of Litton Industries was christened *Milius* in ceremonies at Ingalls. Serving as Ship's Sponsor was **Annette Milius**, daughter of the ship's namesake, Navy pilot Captain **Paul L. Milius**, who was lost in action over Laos in 1968.

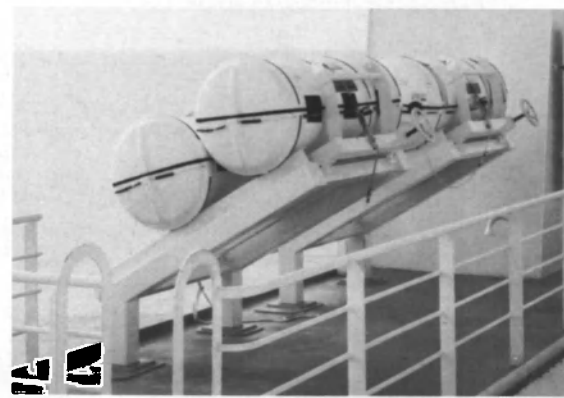
ASRY Gains ISO 9002 Certification

The management of the Arab Shipbuilding and Repair Yard Co. (ASRY) in Bahrain announced that DNV completed the final audit of all aspects of the yard, which was recommended for ISO 9002 certification. ASRY is the first major yard in the Arabian Gulf to complete the ISO 9002 certification procedure. The yard recently announced an \$87 million expansion program aimed at increasing berth space, as well as facilities for carrying out major repair and conversion projects.

For more information on ASRY
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Maritime Administration News

Secretary Pena Tout's MarAd's Record At Industry Event

In addressing the Maritime Trades Department, AFL-CIO 1995 Biennial Convention, Secretary of Transportation **Federico Pena** told the audience that this is a time of great hope and optimism in America — an unusual time when we have both peace and prosperity. Secretary **Pena** used the opportunity to talk about the administration's record. "We have a long list of accomplishments," he said. "The longer we've been in office, the longer it gets."

The Secretary said that two and a half years ago "you sent the President to Washington to generate jobs, to cut the deficit, to give America a better, stronger future." Since then, he said, 14 million working Americans, who could afford it least, have had a tax cut under President Clinton and for 1.5 percent of the wealthiest Americans, the tax rate went up slightly. At the same time, the deficit has been reduced by 40 percent and 7.5 million jobs have been created — 400,000 in transportation. Alluding to a "healthier" maritime industry, he said, "I contended, from the day I took office, that revitalizing America's maritime industries is essential. Essential to rebuilding America's economy; essential to our transportation infrastructure; essential to fortifying our national security."

Secretary **Pena** pointed out that American carriers move 40 percent more cargo today than 25 years ago, and that in 25 more years, the world will have 300 percent more trade than we have now. He told the audience that U.S. ports have to be ready to handle it and to that end, "we've worked to improve them, dredging a number of them to allow better access from the

sea."

Touching on the bill the administration re-introduced to Congress that would allow America to maintain a modern fleet; provide sealift for national emergencies; ensure a continuing American presence in the transportation of our commerce; and preserve jobs, Secretary **Pena** said that he still supports it and so does the President. He also voiced his support of the Jones Act.

"For 200 years, the Jones Act and its predecessors have worked on a very simple theory," he said. "If you move from one American port to another, you use American-flagged ships so our country can maintain reliable domestic shipping services." He said that it is a law that "provides jobs for Americans ... protects the environment ... ensures our national security — and does it at no expense to the taxpayer and without a dime of subsidies from Washington." He mentioned that Germany, Canada, France, Mexico, Japan and 35 other trading partners have a law like this, so "why shouldn't we?"

Reminding the audience of how hard **Michael Sacco** and **Lane Kirkland** fought to up-grade the industry's technology, to end unfair foreign subsidies, to make loan guarantees possible, and preserve American jobs, Secretary **Pena** said, "Do you realize, right now Greece, Russia, Denmark, Sweden, China, Indonesia, and Vietnam are all shopping around American shipyards, for American-built vessels?"

He told them that U.S. shipyards have moved from 30th place among the busiest in the world to 23rd.

Brookville Shipping Asks Subsidy Board To Use Unused Operation-Differential Subsidy

Brookville Shipping, Inc. has asked the Maritime Subsidy Board for contractual authority to use unused operating-differential subsidy under MA/MSB Contracts 272 and 166(a). Brookville is a contractor under the above contracts, under which five U.S.-flag dry bulk carriers operated by Liberty Maritime Corporation are eligible for subsidy. Under the contracts, 3,638.5 subsidy days were available to — but not used by — Brookville from 1989 to 1994.


In connection with its request, Brookville asked the board to extend those contracts for an additional five years beyond their expiration dates of April 13, 1996, and October 9, 1994, respectively.

Further, Brookville asked the board to permit it to share the unused subsidy days among the five dry bulk carriers without limitation as to the number of days that may be used in any one year; and to permit Brookville to substitute on a one-for-one basis any or all of the four newly constructed Panamax bulk cargo carriers that Brookville or an affiliate would build and operate under the U.S. flag.

The application, assigned Docket S-925, has been published in the *Federal Register*.

MarAd Establishes Voluntary Intermodal Sealift Agreement

MarAd announces the establishment of the Voluntary Intermodal Sealift Agreement (VISA), pursuant to section 708 of the Defense Production Act of 1950, as amended (50 U.S.C. App. 2158). The VISA is scheduled for publica-



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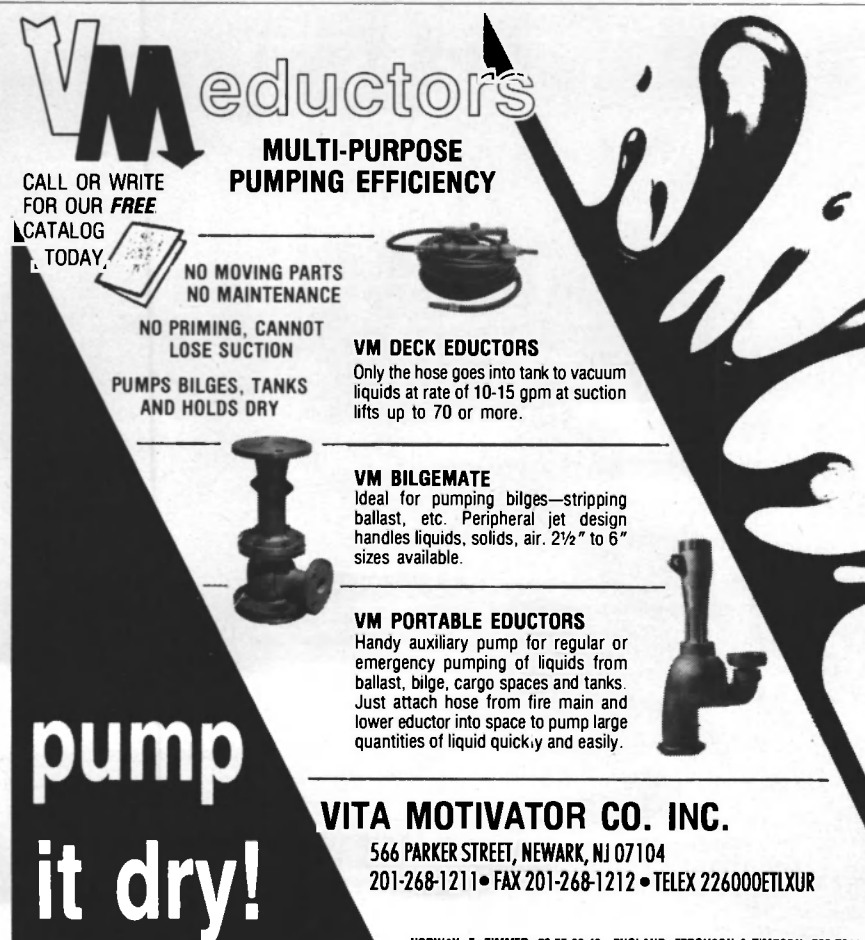
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Maritime Reporter/Engineering News

tion in the *Federal Register*.

The purpose of the Agreement is to promote and facilitate the use of intermodal transportation systems, including ships, ships' space, intermodal equipment and related management services, and to maximize Department of Defense's use of commercial transportation resources to support the emergency deployment and sustainment of U.S. military forces through cooperation among the maritime industry, the Department of Transportation and the Department of Defense.

Copies of the VISA are available to the public upon request from MarAd's Office of National Security Plans.

For further information contact: **Thomas M.P. Christensen**, Director, Office of National Security Plans, Maritime Administration, 400 Seventh St., SW, Washington, D.C. 20590; tel: (202) 366-5900; fax: (202) 488-0941.

MarAd Modifies Rules

MarAd is publishing a final rule in the *Federal Register* amending regulations prescribing procedures for obtaining seamen's service awards to conform to the provisions of the PL 100-324, Merchant Marine Decorations and Medals Act of 1988.

This rule modifies 46 CFR Part 350 by specifying the medals, awards and decorations that the Secretary of Transportation may issue, and by establishing the procedure for determining eligibility to receive these indicia of recognition for service in the U.S. merchant marine. The rule, assigned Docket No.R-162, is effective upon publication.

For additional information, contact **Patricia Thomas**, Maritime Industry Analyst, Office of Maritime Labor and Training and Safety, 400 Seventh St., SW, Room 7302, Washington, D.C. 20590; tel: (202) 366-5755.

MarAd Updates Brochure

MarAd has updated its brochure, "Introducing MarAd." Limited copies are available from MarAd's Office of Congressional and Public Affairs, 400 Seventh St., SW, Washington, D.C. 20590; tel: (202) 366-5807.

Requests Received

Marine Bulkcarriers seeks to sell bulk carrier

MarAd has received a request

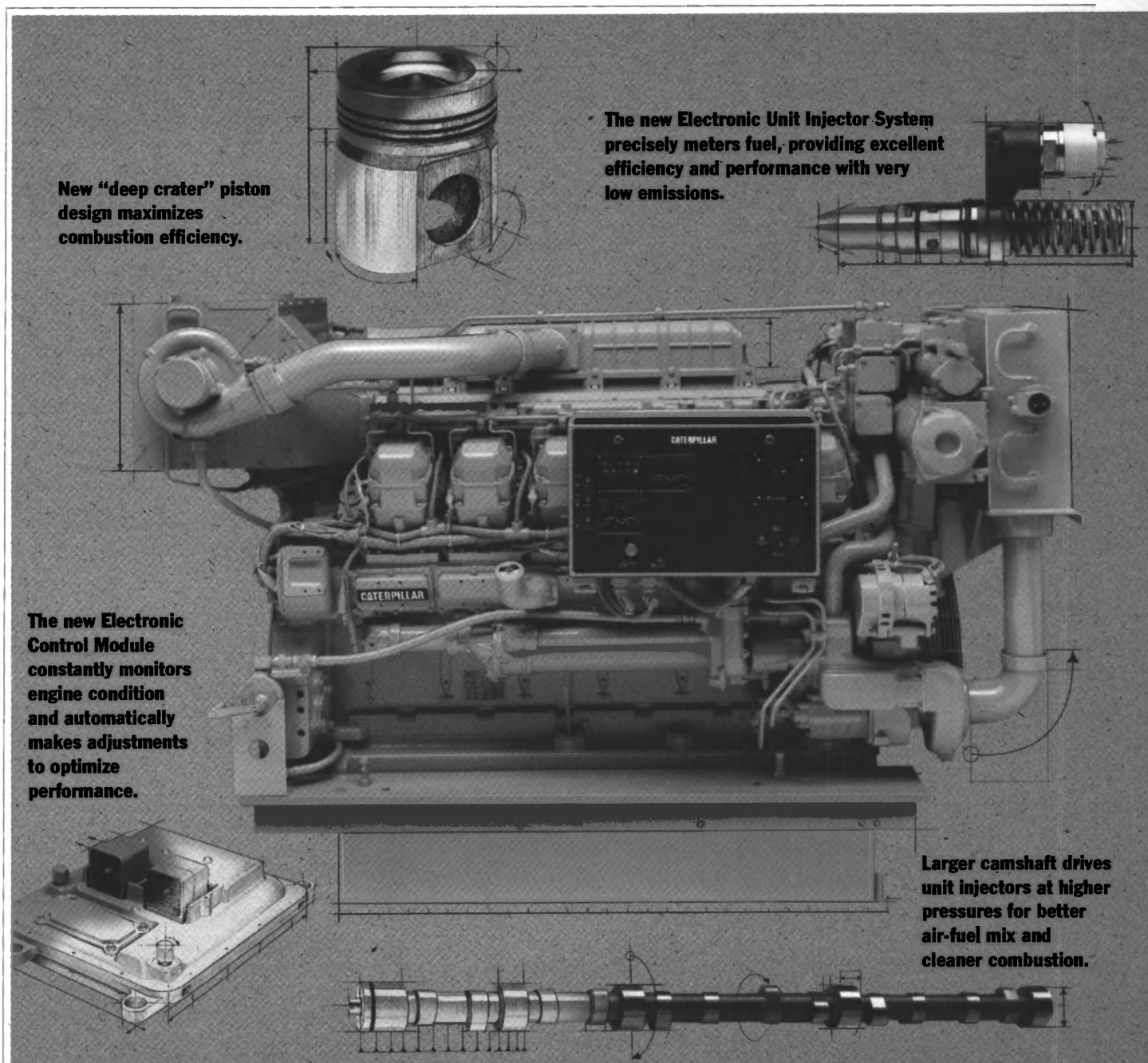
from Marine Bulkcarriers, Inc., Weehawken, N.J., for permission to sell the 52,179-dwt bulk carrier *Marine Princess*. The proposed purchaser is A.H. Offshore Ltd., of Gibraltar. The vessel was built in 1967 in Sunderland, U.K. MarAd's

permission is required under section 9 of the Shipping Act, 1916, as amended.

Mormac asks to operate ships in domestic trade

Mormac Marine Transport, Inc.,

(Mormac) has asked written permission from MarAd to operate the 39,300-dwt *Mormacstar* and *Mormacsun* in the domestic inter-coastal or coastwise trade, effective December 10, 1995, and June 23, 1996, respectively. The vessels



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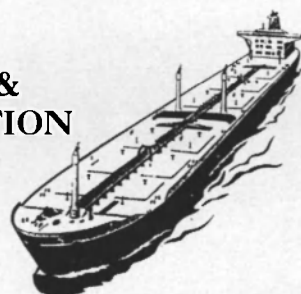
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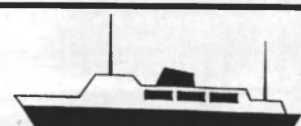


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were built in San Diego, with the aid of construction-differential subsidy.

In its application, Mormac notes the vessels are suitable primarily for the carriage of petroleum products. It hopes to seek employment on the spot market in the domestic trade for the *Mormacstar* after December 9, 1995 and for the *Mormacsun* after June 22, 1996, possibly moving petroleum products from the U.S. gulf or the west coast. The two vessels are well equipped and maintained, and in capacity, speed, and condition they will be well suited to the proposed trade, according to Mormac.

The application, assigned Docket S-924, is scheduled for publication in the *Federal Register*.

ACL asks to transfer registry of 11 barges

MarAd has received a request from American Commercial Lines, Jeffersonville, Ind., to transfer 11 barges to Panamanian or Vanuatu registry. They include:

Barge#	gt	Year Built	Place Built
ACBL 404	1,081	1981	Jeffersonville, Ind.
ACBL 409	1,081	1981	Jeffersonville, Ind.
ACBL 420	1,102	1981	Jeffersonville, Ind.
ACBL 1408	1,048	1981	Jeffersonville, Ind.
ACBL 1414	1,048	1981	Jeffersonville, Ind.
VLB 8120	1,124	1981	Jeffersonville, Ind.
ACBL 426	1,048	1981	Jeffersonville, Ind.
ACBL 130	1,048	1981	Jeffersonville, Ind.
ACBL 122	1,081	1981	Jeffersonville, Ind.
ACBL 115	1,102	1981	Jeffersonville, Ind.
ACBL 3142	1,019	1980	Jeffersonville, Ind.

MarAd's permission is required under section 9 of the Shipping Act, 1916, as amended.

Request Approved

Central Gulf Lines gets go-ahead

MarAd has granted written permission to Central Gulf Lines, Inc., to operate the U.S.-flag bulk carrier *S/S Energy Independence* in the coastwise trade until the duration of Waterman's operating-differential subsidy contract.

As a condition of the approval, title to the vessel is to be transferred to New England Power Co. or to a wholly-owned U.S. subsidiary of Central Gulf, Enterprise Ship Co., Inc. The Central Gulf subsidiary will own or bareboat charter the vessel to Central Gulf.

Waterman's ODSA expires on December 31, 1996. Central is a corporate subsidiary of Waterman. A notice of the application, assigned Docket S-917, was published in the *Federal Register*. Comments were filed by Intercoastal Bulk Carriers, Inc., (IBC) and Attranco, Inc. IBC has since withdrawn its opposition to the application.

Section 805(a) of the Merchant Marine Act of 1936, as amended, prohibits subsidized operators and their affiliates from participating in domestic shipping activities without written permission from MarAd.

Western Overseas gets O.K.

MarAd has approved an application filed by Western Overseas, Inc., Sylvania, Ohio, to sell the 16,226-gt cargo vessel *Margaret Lykes* to Ruby

Maritime Reporter/Engineering News

Enterprises, Inc., for resale to Mayur Steel Corp., of India. The 1968-built vessel will be scrapped in India.

Coastal Tug to sell oil barge

Coastal Tug & Barge, Inc., Miami, Fla., has received permission from MarAd to sell the 1,291-gt oil barge *Coastal 29* to Serenity Navigation Co., a Panamanian corporation. The 1960-built barge will be transferred to Panamanian registry.

Sale of drilling unit O.K.'d

Sedco Forex International Drilling, Inc., a Panamanian corporation, has been given permission to sell the drilling unit *Sedco 709* to Triton Holdings, Ltd., a British Virgin Islands corporation, without change in the Liberian registry. The 7,983-gt vessel was built in 1977 in Halifax Nova Scotia, Canada.

15,949-gt cargo vessel sale O.K.'d

Neptune International, Inc., Elk Grove Village, Ill., has obtained approval to sell the cargo vessel *Stella Lykes* to Neter Navigation S.A., a Panamanian corporation, for resale to Amar Enterprise, an Indian private limited company. The 15,949-gt vessel was built in 1969, and will be scrapped in India.

Western Overseas given permission to sell barge

Western Overseas, Inc., Sylvania, Ohio, has been given approval to sell the 25,456-gt container barge *American Veteran* to Ruby Enterprises, Inc., a British Virgin Islands corporation. The vessel will be resold to Bharat Ship Breakers Corporation, an Indian corporation. The vessel was built in 1973 in Avondale, La., and will be scrapped in India.

Derrick barge sale approved

Global Movable Offshore, Inc., Lafayette, La., has received permission to sell the 2,402-gt derrick barge *Movable No. 1* to Global International Vessels, Ltd., a Cayman Islands corporation. The barge was built in 1964 and will be transferred to Vanuatu registry.

MarAd Offers New Internet Connection

MarAd has sailed into cyberspace. Information on the U.S. Department of Transportation agency, which works to facilitate domestic and international water-

borne commerce, is now available via the Internet's World Wide Web (WWW). Included is information on the agency and its mission, organization, functions and officials. A historical reference section provides extensive information on the role of the American Merchant

Marine during World War II. MarAd joins the Department of Transportation and several other agencies in using the Internet to communicate their activities to the public.

MarAd's WWW posting complements its existing computerized

bulletin board, known as Marlinespike, which contains information of interest to the maritime and transportation industry and its customers. The agency expects to provide access to Marlinespike through its Internet posting shortly. WWW access



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requires connection via computer to an Internet service provider and appropriate software.

The address for Marad's WWW home page is <http://marad.dot.gov/>. It also can be accessed via the DOT home page at <http://www.dot.gov/>. Technical information about accessing Marad's home page is available via electronic mail at bill_bowie@postmaster2.dot.gov, or, by telephone at (202) 366-4181. Marlinespike is accessible by tele-

phone from any computer with a modem.

Information can be read online or downloaded for future reference. The telephone number for Marlinespike is (202) 366-8505. (Modem setting: 8 bits, no parity, 1 stop bit [8n1].) It also can be accessed via the Fed World Gateway (#72). Additional information on how to access or use the service is available by calling (202) 366-4181.

APL Thailand Christened At HDW

American President Lines (APL) held a christening ceremony at the Howaldtswerke-Deutsche Werft (HDW) shipyard for its new C11-class containership, the *APL Thailand*. The 4,800-TEU post-Panamax vessel, measuring 905 ft. (276 m) long with a 131-ft. (40-m) beam, will be phased into APL's

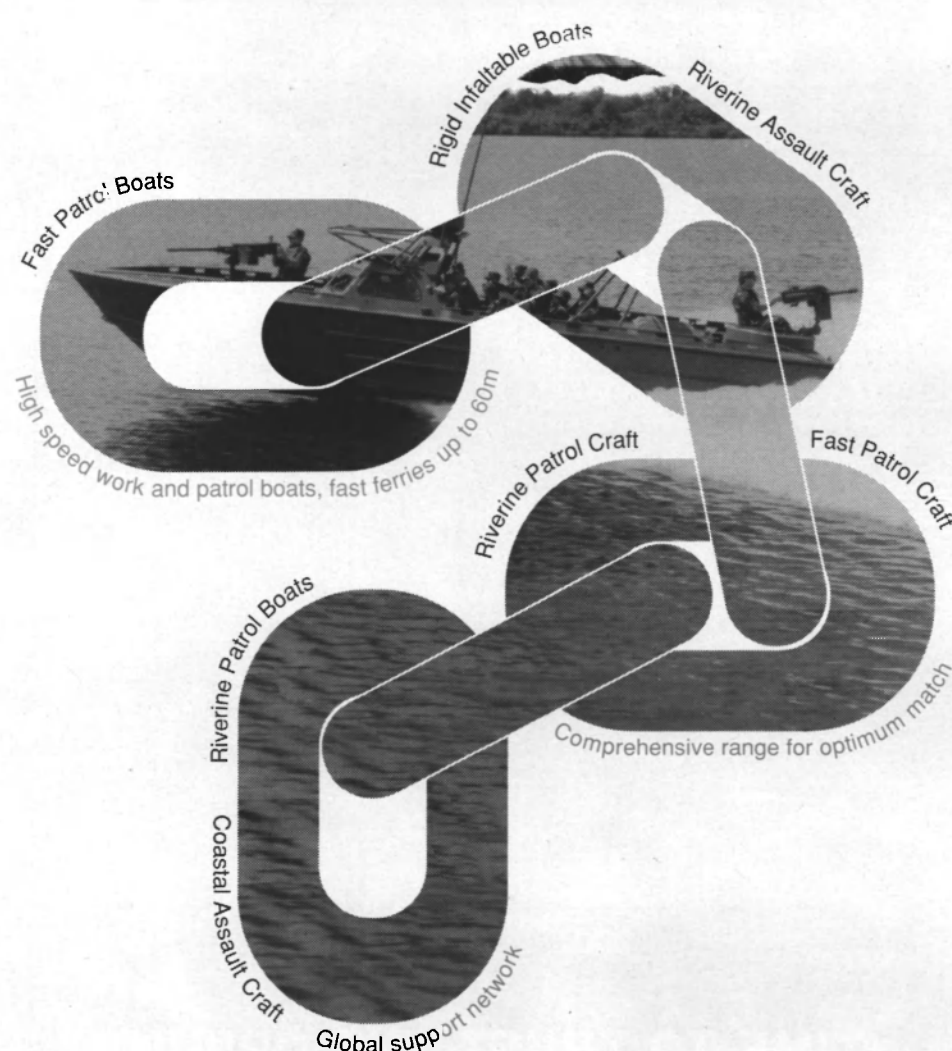
trans-Pacific services, joining its five identical sisterships. The *APL Thailand* is the third of three C11s that APL has built at HDW; the other two C11s built by HDW were the *APL China* and *APL Japan*, which were christened in April 1995 and delivered in June and September, respectively. Two other C11s, the *APL Singapore* and the *APL Korea*, were christened at the Daewoo shipyards in Okpo, Korea, in July. In addition, currently under construction at Daewoo is the sixth and last C11, the *APL Philippines*, scheduled to be christened in November.

The *APL Thailand* was christened by its sponsor, **Valarie Burgess**, wife of **John G. Burgess**, an APL executive vice president. The christening ceremony included representatives from APL, its European customers and the European business community. Speaking at the ceremony was **Tim Rhein**, president and CEO of American President Companies, Ltd. (APC), the parent company of APL. "We congratulate HDW for the brilliant work they have done in the design and construction of the C11s. These ships are expected to set the standard of excellence for post-Panamax vessels in the trans-Pacific trades for APL and the Global Alliance well into the 21st century." The *APL Thailand* and its sisterships feature a 66,385 horsepower MAN B&W diesel engine, capable of powering the vessels at speeds up to 24.6 knots. Other features include highly advanced, bridge navigation equipment; a large capacity shaft-powered main generator; and an on-deck lashing bridge container securing system developed by APL.

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Circle 253 on Reader Service Card

CWF 0943

Viking To Introduce New Fender

Viking Fender Company will be displaying its new loop-style fender at the International Workboat Show. This high energy absorption fender measures 6 ft. (1.8 m) high, 12 ft. (3.6 m) across, and 2.5 ft. (.76 m) thick. Viking's new loop-style fenders can be custom-made to fit any hull configuration. These fenders are reportedly ideal for use on tractor tugs, bow and stern, harbor and escort boats, sides of pilot boats to enable soft landing, or submarine docking tugs.

Henschel Delivers Control And Monitoring System

Henschel delivered what is reported to be the first shipset of its Machinery Centralized Control System (MCCS), including a combined Announcing/Alarm System, to the Sealift conversion program at Newport News Shipbuilding. According to **Don Roussinos**, vice president of marketing for Henschel, the system is "the largest, most advanced system of its kind in the U.S."

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Circle 206 on Reader Service Card

VT Launches Second Oman Corvette

The second of two corvettes Vosper Thornycroft (VT) is building for the Royal Navy of Oman (RNO) has been launched at the company's Southampton, U.K. shipyard.

The 272.3-ft. (83-m) vessel was named *SNV Al Mua'zzar* by her sponsor, His Highness **Sayyid**

Fahad bin Mahmoud Al Said, deputy prime minister for the Council of Ministers, during a special ceremony to mark the occasion.

The launch of the second RNO corvette reflects another busy period at VT, which currently has an orderbook comprising 15 ships. This month, work has also started on the first new batch of seven Sandown class minehunters for the Royal Navy.

A combination of VT's advanced production techniques and experience from building the first-of-class RNO corvette has meant increased efficiency in the construction of the second, which was much further advanced at launch — and VT is on schedule to complete both ships during 1996.



Propulsion is provided by four Crossley Pielstick medium-speed, 16-cylinder V form diesel engines, which will drive two controllable-pitch propellers through reduction gearboxes. Each machinery set operates independently and one engine per shaft is sufficient to obtain speeds in excess of 20 knots.

VT Shipbuilding Director **Dick Taylor** commented: "We have achieved a new level of performance in building the second RNO corvette and it is a tribute to everyone involved."

The first of the RNO corvettes, *SNV Qahir Al Amwaj*, is due to arrive in Oman late in 1996 after an intensive period of sea trials and training in U.K. waters. Initial sea trials have already gone well and weapons trials will start next month. The second corvette will follow early in 1997.

The corvette design is a versatile base design that has already attracted strong interest worldwide. An identical hull form can be used to provide a platform for a range of vessels including light frigates and offshore patrol vessels. The hull form with small variations has already been offered to other customers seeking ships which vary slightly from a lightly armed OPV version to more heavily armed vessels.

"This particular version has state-of-the-art electronics and weapons systems," said **Laurence Gandar**, VT director of ship sales, "but the design can be adapted to accept a wide range of weapons systems, meaning that it can perform an extensive range of tasks for navies throughout the world."

For more information on VT

Circle 125 on Reader Service Card

The Parts Information Network That Speaks For Itself

Broadcast from: Hull, United Kingdom

"Motorized landing craft type vessel. Capable of carrying 90 tonnes of deck cargo. Please contact: (Overhaul & Service Company) via ILS DIRECT."

Broadcast from: Republic of Korea

"Requisition for ships spare M/T K Prime --- Oil content meter for oily water separator, model ET-25 Drawing No. 321-28401. Maker: Shimadzu Seisakusho Ltd. Interchangeable models O.K. If you quote other maker, please send drawings. Please contact: (Shipowner)"

Broadcast from: Aalborg, Denmark

"For Sale: 1pc reconditioned lifeboat, maker Shigi Shipbuilding Japan, Dimension 8.50 M Length/2.90 M wide/1.10 M Deep. Capacity: 39 persons, DNV Certified engine 2 cyl Mitsubishi. Propeller: 3 blade, fixed pitch Call (Chandler)"



Broadcast from: LaPorte, Texas

"For Sale: B&W L60MC Engine - Forty (40) complete fuel injectors Sulzer RLB 90 - Four (4) fuel injectors, one (1) exhaust valve, one (1) exhaust valve seat MAK 551 - Two (2) cylinder covers, Two (2) connecting rods Call (Marine Repair Company)"

Broadcast from: Singapore

"Please advise cost and delivery time for the following: (A) one unit fully reconditioned Caterpillar Aux. Generator Complete with alternator and certificate. Spec: 430 KW/550 KVA at 1500 RPM, 380 volts, 50 hertz. Please contact (Trading Company)"

Broadcast from: Piraeus, Greece

"Required: For D/G MEP-MAN Type R8V 16/18 TLS One crankshaft (brand new). For ship arriving in Houston ETA 26/5/95. Contact: (Shipowner) via ILS DIRECT"



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Fax 1-901-794-1760

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Each month, more than 1,500 messages like those above are broadcast via the ILS network to buy or sell marine parts, equipment and services. This is just one of the ways ILS brings marine buyers and suppliers together. ILS also gives customers:

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- Communicate with other buyers and sellers across time zones using your own secure electronic mailbox - for much less than other methods

Discover the fastest, most efficient trade route ever to buy or sell marine parts and equipment. *Call or fax today!*



The Marine Parts Information Network

Circle 267 on Reader Service Card

APL Japan Arrives In Port Of Hamburg

Another mega-containership of the post-Panamax HDW Generation 6000, the 4,832 TEU *APL Japan*, recently arrived in the Port of Hamburg, Germany. Her sister-ship, the *APL China*, had already called in the Port in its maiden voyage from Kiel to the U.S. The newly completed *APL Japan*, which was built for the trans-Pacific traffic of American President Lines (APL), was handled at the Eurokai container terminal. With tonnages of 4,502 grt, maximum speeds of 26 knots, and drafts of 46 ft. (14 m), *Japan* and *China* are among the world's largest and fastest containerships.

Singmarine Delivers Second Of Two Product Tankers To Petroships



Singmarine Industries Ltd., through its wholly-owned subsidiary Singmarine Dockyard & Engineering Pte. Ltd., has completed and delivered a 6,500-dwt product tanker to Petroships Pte. Ltd.

The vessel was named *Petro Opti* by **Mary Loh**, wife of Dr. **Robert Loh**, president of the National Council of Social Service, at a ceremony held in Singmarine Dockyard's Main Yard.

Petro Opti is the second of two vessels Singmarine Dockyard has built for Petroships under a \$35 million contract. The first vessel, *Petro Venture*, was delivered on schedule in April.

"*Petro Opti* will join the Petroships fleet to serve mainly the oil majors in the East Asian region. We are confident that she will be able to perform well, just like *Petro Venture*," said **Alan Chan**, chairman of Petroships.

Teh Kong Leong, chairman of Singmarine dockyard, said, "The need for modern and more efficient product tankers to renew the aging tanker fleet worldwide is expected to be translat-



Officials gathered at Singmarine for the naming ceremony of *Petro Opti*, second of two tankers for Petroships.

ed into growing demand for such newbuildings. With our track record of building a variety of tankers including LPG carriers and chemical tankers, Singmarine is well placed to benefit from this trend."

Measuring 360.9 ft. (110 m), MT *Petro Opti* has a cargo capacity of 7,800 cu. m. with two cargo pumps, each delivering 750 cu. m. of oil per hour. Powered by a Hanshin engine, the vessel, which will have a crew of 20, is capable of a service speed of 12 knots. It is built in accordance with the classification rules of Nippon Kaiji Kyokai (NKK) of Japan with the notation NK NS* (Tob) MNS*.

The Petroships Group owns and operates 10 tankers and handles another four owned by its associates in Malaysia. It is a member of a consortium involved in the development of a port on the Changjiang river in Changshu, north of Suzhou.

Presently, Singmarine is busy with the construction of a containership for Steamers Containerships Holdings Pte. Ltd., and two tugboats for Keppel Smit Towage. It has just finalized a \$34 million contract to build two coastal tankers for F.T. Everard & Sons Ltd., a U.K. shipping firm.

For more information on Singmarine
Circle 121 on Reader Service Card

November, 1995

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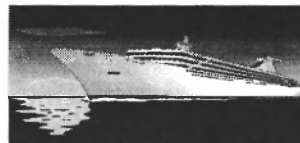
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Circle 234 on Reader Service Card

Astilleros de Santander Converts, Lengthens RoRo Ship



Astilleros de Santander recently delivered the RoRo vessel *Dana Maxima* to owner DFDS AS of Denmark after a lengthening and conversion operation designed to make the vessel more suitable for operations in North Sea trade. The RoRo cargo capacity of the vessel was increased up to 2,800 lane meters or 210 trailers.

The vessel was lengthened by a total of 103 ft. (31.5 m). Double bottom and heeling tanks were modified, and existing lifts and flush covers were removed, as was an existing gantry crane. A new rudder arrangement was implemented which entailed the rudderstock center being moved aft and the installation of two new Becker rudders, each with a new Frydenboe steering gear.

Other work performed included raising the forecastle deck, renovation of firefighting and detection systems — including removal of the existing Halon system and the installation of a new low-pressure refrigerated CO₂ system to protect the engine room, trailer hold and trailer spaces. A new deckhouse was installed on the vessel's port side to accommodate the CO₂ room and sprinkler system, and hawsepipe modifications were carried out to improve seakeeping with new anchors. A new self-tensioning mooring winch was added, as was an automatic IPH remote tank sounding system.

Two new bowthruster electric motors were installed, increasing power from 550 kW to 800 kW for each bowthruster. The order for the work was placed in December 1994, and the vessel arrived at the Santander yard on June 1, 1995. Redelivery took place on July 18 after successful sea trials.

For more information on Astilleros de Santander
Circle 120 on Reader Service Card

Dana Maxima Particulars		
	Before	After
Length o.a.	464 ft. (141.5 m)	578 ft. (176.2 m)
Breadth (molded)	66.9 ft. (20.4 m)	66.9 ft. (20.4 m)
Draft (max)	21.7 ft. (6.6 m)	20.7 ft. (6.3 m)
DWT	6,552 t	8,546 t

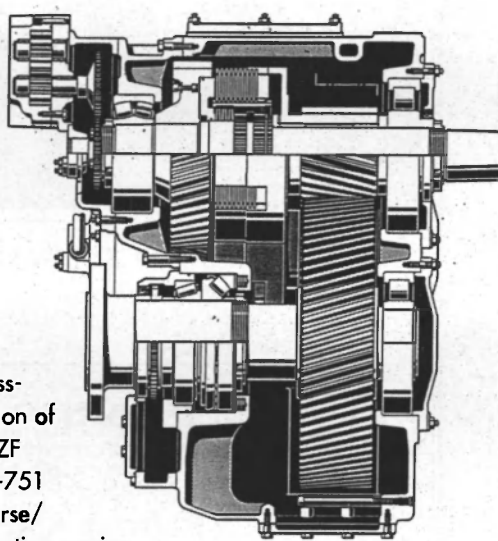
ZF Introduces New Reverse/Reduction Gear To North American Market

ZF Industries has now introduced to the North American marine markets its BW-751 reverse and reduction marine transmission for continuous-duty, single- or twin-screw propulsion applications. The new transmission is a deep ratio version of the company's popular BW-750 family, a design that makes it well suited for workboats and fishboats, large yachts and merchant vessels. Like other transmissions in the ZF series, the BW-751 meets ABS and NATO AQAP-1 quality assurance program standards.

Six gear ratios from 4:1 to 6.83:1 are offered

standard with this transmission, and according to **Richard Graff**, application manager, marine, at ZF's headquarters in Vernon Hills, Ill., up to 2,368 hp can be transmitted continuously at a maximum input speed of 1,800 rpm. Also, the transmissions provide equal power ahead or astern, and reportedly are easily adapted for non-standard, counter-rotating engines. This is achieved by a 180-degree rotation of the main oil pump mounted externally on the back side of the transmission housing. This pump is gear driven via the engine driven input shaft.

To meet the rigorous demands of continuous duty service, the Model BW-751 has an extremely torsion-resistant cast iron housing. The transmission has three shafts with multi-



Cross-section of the ZF BW-751 reverse/reduction marine transmission unit.

disc clutch packs fitted to the input and reverse shafts. In the event of service requirements, the main components, including the clutch packs, are accessible through openings in the housing of the transmission.

All load carrying bearings are of the anti-friction type. The output shaft flange is designed for use with standard bolts, and this in turn permits installation of custom-built prop shaft flanges, if required, in place of the standard prop shaft flange. The transmission is available with an optional trailing pump which is prop shaft driven and fully operational at all times. The model BW-751 offers four different PTO options for SAE standard hydraulic pump drives. Also available is a wide range of torsional couplings; a customer-specified coupling can readily be installed.

Optional for application with ZF's complete family of BW-750 transmissions is the company's Autotroll system. The electronically-controlled trolling system allows the operator to make use of an infinitely-variable propeller speed range beneath the vessel's engine idling speed. This system can be used without restrictions for both ahead and astern travel, enabling low-speed maneuvering in narrow waterways, docking, position holding, and similar requirements.

The first BW-751s are now in service in the U.S. via a retrofit installation aboard the 91-ft. (27.7-m) push tug *Southern Kraft-16*. Owned and operated by International Paper Co., headquartered in Memphis, Tenn., the push tug normally operates on the Southern waterways with eight loaded barges in tow, averaging 9,200 tons of wood products. The ZF transmissions are matched to a pair of counter-rotating 3512 TA turbocharged and intercooled diesels installed during repowering in 1990. Each are rated 1,060 hp at 1,200 rpm.

For more information on ZF
Circle 122 on Reader Service Card

Mitsui Delivers Bulk Carrier *Baltic Hawk*



The 46,638-dwt bulk carrier *Baltic Hawk*, built at the Tamano Works of Mitsui Engineering & Shipbuilding Co., Ltd. (MES), was recently completed, and delivered on September 8 to its owner, Green Spanker Shipping SA.

The handysize bulk carrier, which will carry a crew of 25, has five cargo holds with four cranes in total. The 623-ft. (190-m) vessel is powered by a Mitsui MAN B&W 6S50MC diesel, which drives the vessel to a speed of just over 14 knots.

Classed by NKK, the *Baltic Hawk* flies the flag of Panama.

For more information on MES
Circle 123 on Reader Service Card

Baltic Hawk Particulars	
Length o.a.	623 ft. (189.8 m)
Breadth (molded)	102 ft. (31 m)
Depth (molded)	54 ft. (16.5 m)
Draft at full load (molded)	38 ft. (11.6 m)
Gross tonnage	27,011 tons (metric)
Speed	14.14 kn

Ingalls-Built Aegis Destroyer, *Stethem*, Commissioned



DDG 63, USS *Stethem* — the sixth DDG 51 class Aegis guided missile destroyer built for the U.S. Navy by Ingalls Shipbuilding Division of Litton Industries — was commissioned and reported for Pacific Fleet duty at ceremonies held at the Naval Construction Battalion (Seabee) Center at Port Hueneme, Calif.

Commander **Steven C. Miller**, USN, will assume command of the new ship, which will be homeported in San Diego. DDG 63 is the 13th destroyer in the DDG 51 class, and the sixth to

be delivered by Ingalls, of 14 under contract. Fabrication work began in May 1992, keel was laid in May 1993, launching took place in June 1994, and the vessel was christened *Stethem* in July 1994.

The vessel was named to honor the life and service of Petty Officer **Robert Dean Stethem**, USN (1961-1985). Steelworker Second Class (DV) **Stethem**, a Seabee and a Navy diver, was posthumously awarded the Purple Heart and the Bronze Star for bravery and heroism as a victim of the terrorist hijacking of Trans World Airlines Flight 847 to Beirut, Lebanon, in June 1985.

For more information on Ingalls
Circle 124 on Reader Service Card

BT Inmarsat Introduces Services For Cargo/Inland Waterway Customers

EuroPort '95 in Amsterdam was the site of BT Inmarsat's preview of new satellite services for cargo and inland waterway customers. Sharing the BT stand at the show was Telenor Satellite Services, the Norwegian national telecom operator who is involved in strategic business alliance with BT.

BT Inmarsat's goal was to generate awareness of its B-Sat service, the digital successor to the BT Inmarsat-A analog service. B-Sat Data is a company service that allows customers to transmit medium-speed data at rates up to 9.6 kbit/s, which means lower costs. BT SatMail is an electronic mail system which allows integration of mobile and land-based office systems worldwide, a service normally provided by C-Sat. Other services include mobile-to-mobile messaging, and digital voice communications for smaller vessels. Telenor also offers the Elk Credit Card Telephone, allowing billing by Telenor via any major credit card company, reportedly lowering costs.

For more information on BT Inmarsat
Circle 27 on Reader Service Card

Draft Indicator Pinpoints Diver Position

A new draft indicator technology developed by Dive Time Systems, Inc. of the U.K. eliminates the effects of wave motion and allows calculation of divers' exact positioning. The microprocessor-based system consists of a central control unit, two or four draft sensors, a bridge display, and up to four other displays. The bridge display has a serial output for interfacing to loading computers or tank gauging systems. All the displays around the ship show forward, aft, port, and starboard drafts to one centimeter. Additional data displayed includes heel angle, trim, remaining draft to the amidships loadline, and remaining tons to load.

Reportedly, the system has proved to be reliable and cost-effective,

allowing increased loads to be carried. Dive Time Systems has fitted more than 200 ships with the technology to date. The systems are approved for use by the U.K. Marine Safety Agency. FCS, Inc., of Centerbrook, Conn., is the exclusive distributor of the product in North America.

For more information on
Dive Time Systems, Inc.
Circle 26 on Reader Service Card

Zodiac North America Appoints Board Members

Zodiac of North America, a subsidiary of the Paris-based Zodiac Group, has appointed three new members to its board of directors. The recent announcement was made by **J.J. Marie**, president, CEO, and chairman of the subsidiary's board. The new board members are: Colonel **William R.**

Foley, U.S. Army (Ret.); **George Worthington**, Rear Admiral, U.S. Navy (Ret.); and **Charles H. Pitman**, Lieutenant General, U.S. Marine Corp. (Ret.).

Zodiac of North America, based in Maryland, manufactures and distributes inflatable boats, rigid-hulled craft, liferafts, and associated safety equipment.

For more information
Circle 2 on Reader Service Card

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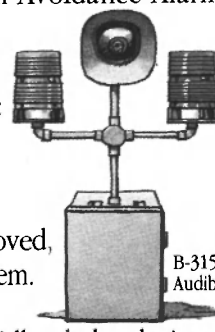


B-3595
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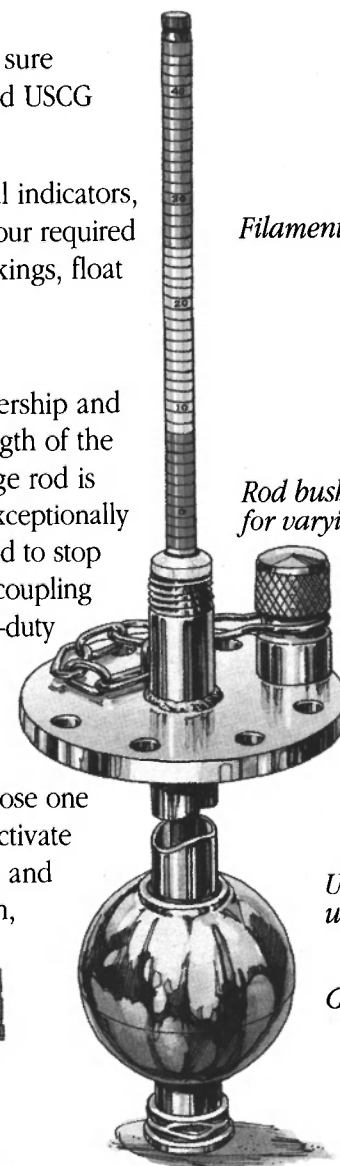
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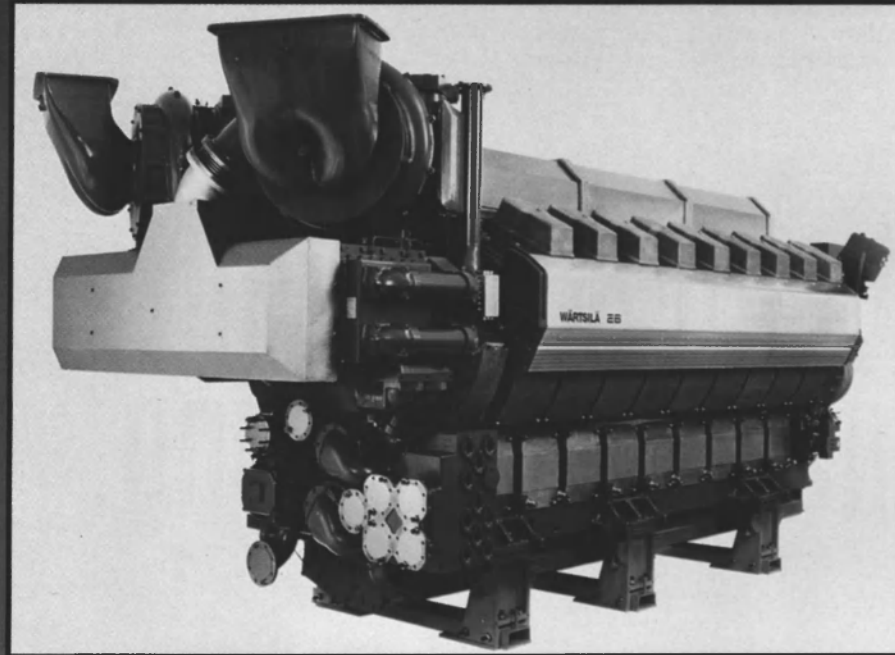
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Circle 282 on Reader Service Card

PROPULSION UPDATE

Wärtsilä Introduces New Low NO_x, High-Performance Engine



The Wärtsilä Diesel Group has developed a new heavy-duty, medium-speed diesel engine — the Wärtsilä 26 — which is designed as an economical and environmentally friendly engine with high reliability, easy maintenance and excellent performance.

Debuted to the technical press in Zwolle, the Netherlands, on September 28, the development of the Wärtsilä 26 at Stork-Wärtsilä Diesel was completed within two years.

The Wärtsilä 26 is meant for vessel propulsion, generating electricity for industry and on board, and for (dredging) pump drives. The engine capacity lies between 1,450 and 5,850 kW at a speed of 900 to 1,000 rpm. The engine will be available in six, eight and nine cylinder in-line and 12, 16 and 18 cylinder V configurations. It is also suitable for various types of fuel: the standard version is suitable for heavy oil and a gas oil version with increased power output is also available.

Design Technology

The Wärtsilä 26 reportedly offers a new combustion technology — combining higher injection pressure, shorter injection time, higher compression ratio and higher combustion pressure — all of which combine to deliver what the company reports is an unprecedented high performance level with low emissions and low fuel consumption.

"In the Wärtsilä Diesel Group we restrict emission levels as much as possible with primary methods," said **Ron Borsboom**, director of technology, Stork-Wärtsilä Diesel BV. "The development of the Wärtsilä 26 has therefore concentrated on the combustion process...

The low NO_x combustion principles are based on increasing the injection pressure to 2,000 bar, as a result dramatically reducing the injection duration, increasing the compression ratio to 1:16, the maximum cylinder pressure to 210 bar, and the bore/stroke ratio to over 1.2."

The engine is also designed for easy installation and maintenance, based on its shorter, lower and lighter dimensions. The simplicity of installation is also possible because numerous parts, such as pumps, coolers, filters, and temperature regulators are integrated. This has reduced the number of parts by 30 percent, and the engine was designed in a way which makes the components easily accessible for inspection and maintenance work.

The Engine Control Unit (ECU) in the Wärtsilä 26 protects engine operation through multiple sensors in order to realize maximum yield. The ECU also gives early warning of problems, helping to prevent possible damage.

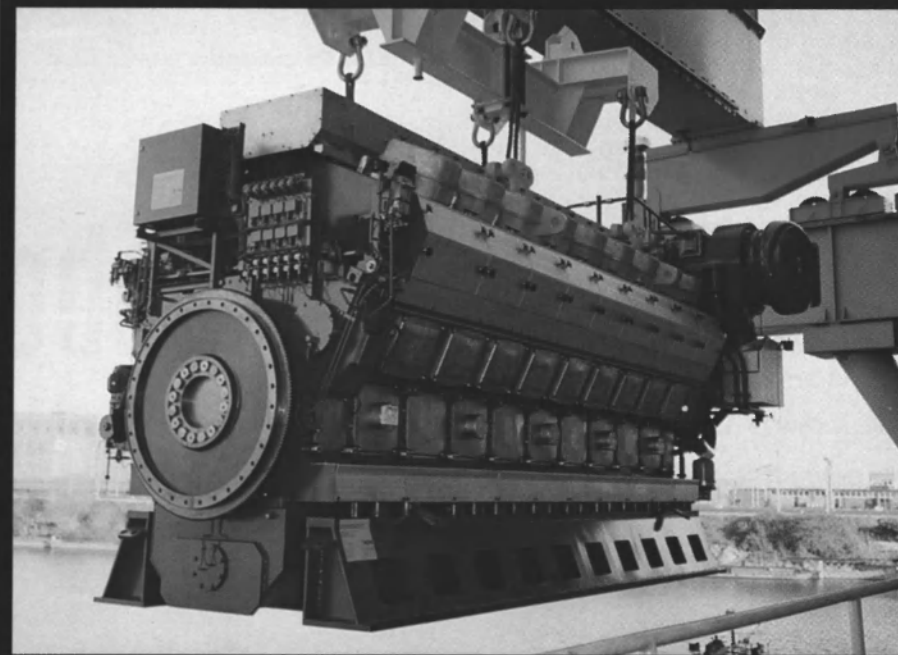
Signals from sensors are transmitted to the ECU via a CAN bus connection. The CAN bus connection is made up of a single cable from one end to the other end of the engine. The ECU communicates via a modbus connection with the control room. Digital technology and a reduction in the number of cables reduce the chance of malfunctions to almost zero.

Building Blocks

The integration of as many functions as possible into the design of the Wärtsilä 26 influenced the design of the engine block. Pipes for cooling water and lubricating

(Continued on page 32)

Wärtsilä Wins Contract For Engine Supply To Multiple Carnival Cruise Vessels



The seventh and eighth Fantasy-class cruise liners for Carnival Cruise Lines (CCL) will be equipped with main engines supplied by Wärtsilä Diesel. The vessels that are to be built at Kvaerner Masa-Yards in Helsinki, Finland, will each have six 12-cylinder Wärtsilä 38 engines arranged in a diesel-electric installation. The engine output is 7,920 kW at 600 rpm, the total output of the installation being 47,520 kW. The vessels are scheduled for operation in 1998. The engines will be delivered from the Stork-Wärtsilä Diesel factory in Holland.

The Wärtsilä 38 represents Wärtsilä Diesel's latest medium-speed technology. Introduced in 1993, it has already gained interesting references in different kinds of installations, from container vessels and chemical tankers to land-based power stations. The railway ferry *Polonia*

operating between Sweden and Poland is also equipped with Wärtsilä 38 main engines.

The Wärtsilä 38 has an output range of 3,960 - 11,880 kW at 600 rpm, with the cylinder number varying from six to eight.

The Wärtsilä Diesel Group, part of the Finnish Metro Corporation, is reportedly the world's largest manufacturer of medium-speed diesel engines and a major supplier of high-speed diesel engines. The Group has production facilities in six European countries, India and the U.S., supported by a network of sales and service companies around the world. It designs and manufactures engines to satisfy customers' needs for economical and reliable power systems through custom-built units based on engines of over 300 kW.

For more information
Circle 118 on Reader Service Card

Also part of the Wärtsilä Propac system for the seventh and eighth Fantasy class vessels is the ABB Azipod, developed jointly by Kvaerner and ABB, a model of which is shown at right.



A MESSAGE FOR THOSE WHO MAY NOT UNDERSTAND RADAR LEVEL GAUGING TECHNOLOGY

TRUE OR FALSE?

Radar-based level gauging in tanks is a relatively new technology. Just 20 years ago we launched Saab TankRadar, the very first system of this type. Since then, ongoing development has resulted in system enhancements, with the third generation introduced to the market just last year.

Today there are several suppliers in the market-place—each one claiming that their system is the best. We are not ashamed to admit that we are worried about this. In fact, we are really upset. And this has nothing to do with the competition, which just makes us try even harder. Our concern is that some manufacturers simply don't understand the principles of radar level gauging. And this lack of basic knowledge costs both shipyards and shipowners a lot of money. Not to mention how all of this affects the reputation of our business. Radar-based level gauging is a very advanced technology that requires considerable knowledge. So let's be straightforward and discuss what is true and what is false on this subject.

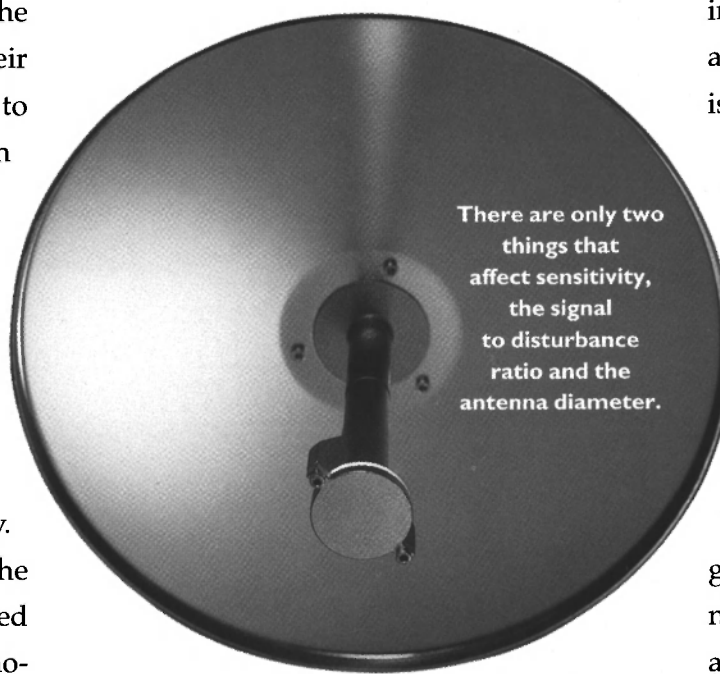
INTRINSICALLY SAFE OR FLAMEPROOF.

It is true that an intrinsically safe instrument is the best way to improve safety on board. There is not enough electrical energy in an intrinsically safe instrument to cause a spark that could ignite the explosive gas. Furthermore, an intrinsically safe instrument is resistant to human error, and can be safely opened and serviced while it is powered.

On the other hand, **it is false** to claim that a flameproof instrument is equally safe. A flameproof instrument allows an explosion to take place inside the enclosure. Therefore the enclosure must be able to

withstand the pressure, and must have well-defined, clean gaps that release the flames to the outside in a controlled way, so as not to ignite the explosive gas. Before servicing a flame-proof instrument, the deck must be gas-free, or the instrument must have been switched off for about one hour.

When it comes to safety on board, ship



owners, crew and the environment all benefit if you choose an intrinsically safe instrument.

SENSITIVITY OR MORE POWER.

It is false to say that there are any advantages in increasing the power when using radar to measure the distance to the liquid surface in tanks. **The truth is** that sensitivity is the single most important factor in the performance of a radar level gauge. And sensitivity is unaffected when the transmitted power is increased. In fact, there are only two things that affect sensitivity; the signal to disturbance ratio and the diameter of the antenna. The signal to disturbance ratio is also totally unaffected by the amount of transmitted power. The more power, the

more noise. It's comparable to listening to a radio that is not correctly tuned into a station. If you increase the volume, you increase the noise as well. But if you carefully tune into the correct frequency, you hear sweet, static-free music.

And, one more fact about sensitivity. **It is true** that a large diameter not only improves the sensitivity of an antenna. It also produces a narrow radar beam, which is an advantage when you're measuring in difficult conditions such as deep tanks, when there are waves on the surface or in tanks with a lot of internal structures. The most practical way of having a large antenna diameter is to use a parabolic antenna.

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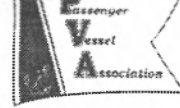
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PROPULSION UPDATE

(Continued from page 30)

oil on the outside of the engine have disappeared. The inlet air receiver was completely incorporated into the engine block casting. "Integration of the lubricating oil and water channels in the castings result in a compact design; leaks are virtually eliminated," said **Kees van Son**, design manager, Stork-Wartsila.

The engine block was given a flat top in order to provide optimal support of the cylinder liners. At the fuel pump locations, attention was paid to the optimal transmission of forces from the pumps to the camshaft bearings. The block has separate engine feet, allowing for easy installation in various configurations.

The engine has flanged liners with tangential cooling water flow. The liner is supported symmetrically at the top by the cylinder block and it is sized so that the temperature on the inner wall remains high enough to prevent low temperature corrosion and low enough to ensure good lubrication.

Wärtsilä 26 Technical Data

Cylinder bore	210 mm
Piston stroke	180 mm
Speed	900-1,000 rpm
Mean piston speed	9.6-10.67 m/s
Mean effective pressure	23-22 bar
	24-23 bar
Fuel specification	HFO MFO

Rated Power: Propulsion Engines

Engine type	900 rpm				1,000 rpm			
	HFO	MFO	HFO	MFO	HFO	MFO	HFO	MFO
6L26	1,770	1,860	2,405	2,525	1,860	1,950	2,585	2,680
8L26	2,360	2,480	3,205	3,370	2,480	2,600	3,370	3,535
9L26	2,655	2,790	3,605	3,790	2,790	2,925	3,790	3,975
12V26	3,540	3,720	4,810	5,055	3,720	3,900	5,055	5,300
16V26	4,720	4,960	6,410	6,740	4,960	5,200	6,740	7,065
18V26	5,310	5,580	7,215	7,580	5,580	5,850	7,580	7,950

Weight

6L26	17.5t
8L26	22t
9L26	24.5t
12V26	29t
16V26	35.5t
18V26	39t

Trogdon Joins C. Plath As General Manager

C. Plath North America, a division of Litton Systems, Inc., has appointed **Peter W. Trogdon** as general manager. C. Plath manufactures sophisticated autopilots and gyrocompasses for oceangoing vessels, and a line of marine consumer accessories. Mr. Trogdon was most recently the vice president of Vessel Information Systems, Inc. in Seattle, Wash.

C. Plath, located in Annapolis, Md., plans to release a fiber optic gyro in 1996, which is being marketed as next-generation, state-of-the-art navigational equipment.

For more information on C. Plath
Circle 1 on Reader Service Card

Maritime Reporter/Engineering News

Miller Joins CYBO Robots As Software Engineer



Dana Miller

Dana Miller has joined CYBO Robots, of Indianapolis, Ind., and will serve the company as a software engineer. Mr. Miller has more than eight years' experience in robotic software engineering, and began his career at NASA's Goddard Space Flight Center in Maryland. Most recently, he was employed by Logicon, Inc., in Indianapolis.

CYBO Robots specializes in the integration of production welding robots and is currently heading a team of companies developing welding robots that will serve to automate the construction of warships and commercial vessels under a Department of Defense contract.

For more information on CYBO Robots
Circle 7 on Reader Service Card

Aker Omega Appoints New President



A.J. Cortez Ulf S. Henriksen

Aker Omega, Inc., of Houston, Texas — a company which provides project management, engineering, and construction management services for the offshore oil and gas and marine industries — has appointed A.J. Cortez to the company presidency. Mr. Cortez joined the company in 1978, and for the past two years has served as vice president of corporate support.

Aker Omega's former president, Ulf S. Henriksen, has been appointed to the post of executive vice president of Aker Oil & Gas Technology, Inc., the parent company of Aker Omega.

For more information on
Aker Omega, Inc.
Circle 9 on Reader Service Card

Panamanian Vessel Sunk To Create Artificial Reef

In late September, the U.S. Coast Guard (USCG) reported that it supervised the sinking of Panamanian motor vessel *Antares* 20 miles south of Pensacola, Fla. Approximately \$516,000 was spent from federal funds to prepare the vessel for the sinking, a task given to the Navy's Explosive Ordnance

Disposal Mobile Unit Six Detachment from Panama City, which detonated explosives to cause the sinking.

In December 1993, *Antares* was discovered sinking approximately 10 miles south of the Mobile, Ala., sea buoy. Flooding was brought under control and the ship was allowed to enter port. As part of the Coast Guard Port State Control Program, USCG Marine Safety inspectors boarded *Antares*

and deemed the ship an environmental hazard.

Antares was detained until cleanup costs were paid and repairs were completed to make the vessel safe for voyage. In March 1994, the ship was abandoned and cleanup costs were not paid by its owners. In November 1994, the USCG prepared a contract to have the vessel sunk as a reef as part of the State of Florida Artificial Reef Project.

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Avondale Lays Keel For AHL Product/Chemical Tanker



Left to right: **Julius Laurent**, Avondale's assistant program manager; **Jim Noyes**, Avondale's engineering project administrator; **Alan Anderson**, MarAd; **Barry Heaps**, Avondale's Boat Division vice president; **Rene Meric**, Avondale corporate vice president of Industrial-Commercial Group; **Tom Doussan**, Avondale vice president of commercial ship construction; **Larry Lindvall**, American Heavy Lift; **Ronald McAlear**, Avondale vice president of advanced programs and marketing; **Bruce Wismar**, Avondale's AHL program manager; **Gene Rodrigue**, Avondale's AHL lead production engineer; **Grant Gooding**, American Bureau of Shipping; and **Sujit Ghosh**, MarAd.

On Sep. 18, 1995, Avondale Industries laid the keel for Avondale Hull Number 2380, the first of four double-hulled product/chemical carriers for American Heavy Lift Shipping Company (AHL) of New Orleans, La. This event occurred four months after contract signing. Delivery is scheduled for the third quarter of 1996.

When delivered, the vessel is expected to be the first Jones Act vessel qualified under the

Oil Pollution Act of 1990 (OPA 90), and the first commercial ship delivered by Avondale since 1984. Attending the ceremonies were representatives from AHL, the Maritime Administration (MarAd), the American Bureau of Shipping (ABS), and Avondale.

The keel modules were some of the first modules that were produced in Avondale's new "Factory" — a 575,000-sq.-ft. steel processing facility. The facility is part of a \$20 million modernization effort that was supported by the MarAd Title XI program.

Construction of the new tankers will incorporate the sterns of AHL's existing fleet. The existing sterns, which will have extensive enhancements, will be joined to the new forebodies in one of Avondale's floating drydocks.

AHL, one of the leading tanker operators in the U.S., was a recent runner-up for the first William M. Benkert Awards, which recognize outstanding achievements that exceed compliance with industrial and regulatory standards.

For more information on Avondale
Circle 126 on Reader Service Card

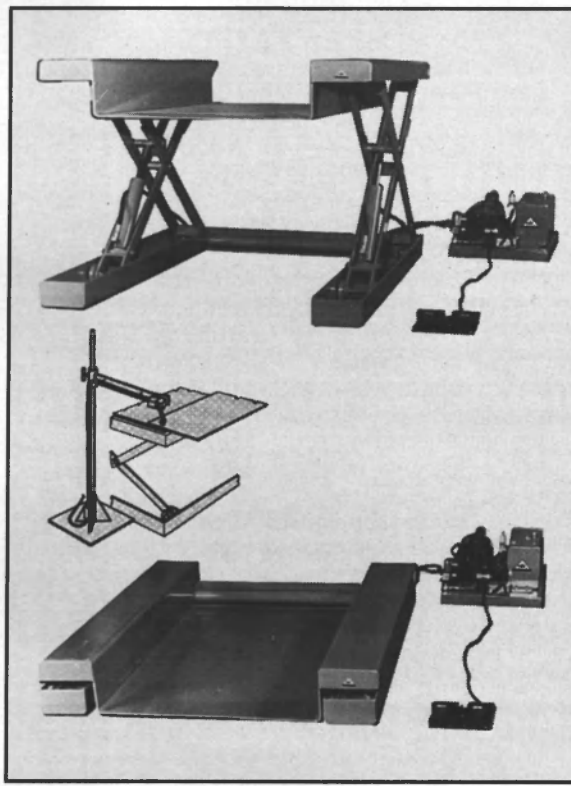
A.T.I. Debuts Zero-Low Lift With Automatic Height-Sensing Capability

Air Technical Industries (A.T.I.) of Mentor, Ohio, has added an automatic height-sensing capability to its Zero-Low-Lifts. The lift now reportedly lowers flat to ground level, and then rises to the desired height. As the parts or sheets lifted are removed, the unit will automatically lift to bring the next piece to the same place. The operation can also be reversed for automatic lowering. The lifting and lowering can be manually controlled with a push button or foot pedal.

The standard Zero-Low-Lift tables are available in capacities from 250 lbs. up to 50,000

lbs., and platform sizes from 26 ft. x 36 ft. (7.9 m x 10.9 m) to 72 ft. x 192 ft. (21.9 m x 58.5 m), and lifting heights up to 144 ft. (43.8 m). A.T.I. believes this new feature will improve safety and reduce worker fatigue, saving time and increasing productivity.

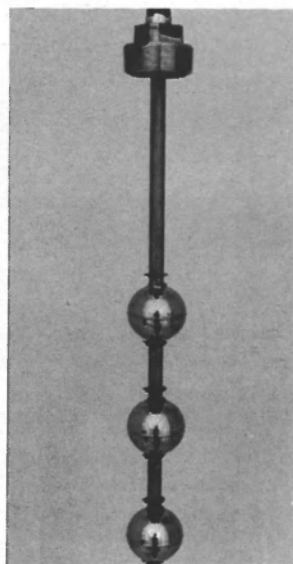
For more information on A.T.I.
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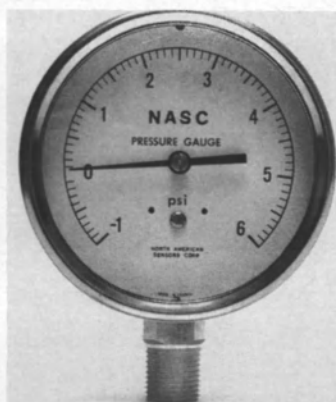
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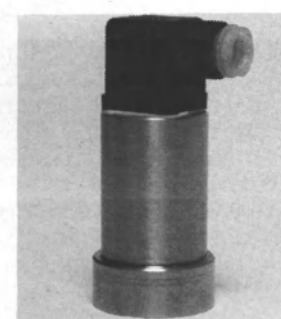
Multi-level switches



Pressure Switches



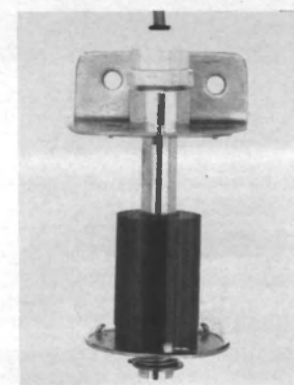
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Pressure Transmitters



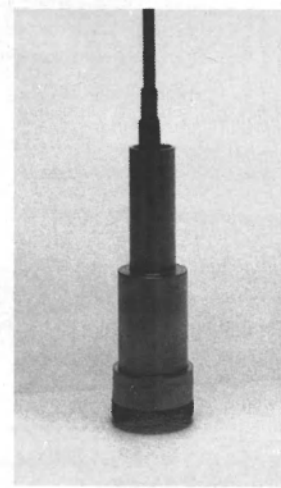
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International Launches New Self Polishing Copolymer Range

International has launched a new range of Self Polishing Copolymer (SPC) antifouling tailored to meet the specific operating profiles of vessels in three operating sectors: the coastal; deepsea bulk cargo; and scheduled liner sectors. The company's Inter-smooth 100, 200, and 300 series antifouling balance polishing rates and biocidal potency, providing vessel operators a choice based on vessel performance and substrate tolerance requirements. Among advantages offered by the SPC antifouling, International lists: excellent levels of fouling control; prolonged drydock intervals; self-smoothing in service, minimized drag from reduced hull roughness and a reduction in fuel costs; lack of paint build-up due to successive drydocks; excel-

lent mechanical properties minimizing film defects; and rapid hard dry times speeding up drydock work and improving newbuilding productivity.

For more information on International Circle 25 on Reader Service Card

Sonsub Expands Facility, Provides Subsea Service In Trinidad, Gulf of Mexico

On September 25, in Western Australia, Sonsub Inc.'s Asia-Pacific regional center relocated to new, larger premises in order to accommodate the center's expanding engineering, testing and administrative requirements. The Perth, W.A., facility acts as a focal point for administration, engineering, and marketing opportunities for territories which include the Middle East, the People's Republic of China, India, southeast Asia, Australia, and New Zealand. It

also liaises closely with the company's joint venture operations in Malaysia, Indonesia, and the Philippines.

Also in late September, Sonsub fulfilled a contract which involved mobilizing a 75-hp Discovery Advanced Remotely Operated Work System (AROWS) to Trinidad to support the installation of a British Gas platform in approximately 360 ft. (109.7 m) of water. Working under contract to Field Enterprises Ltd. of the U.K., Sonsub performed bathymetric surveys and provided general platform installation support.

Sonsub also recently completed a contract with Global Industries, Ltd., providing Remotely Operated Vehicle (ROV) services to install Shell Offshore Inc.'s Rocky pipeline in the Gulf of Mexico. The pipeline will connect one of several subsea wells to Shell's Bullwinkle platform in Green Canyon 65A. The work included monitoring the touchdown and placement of pipeline termination skids, and the

deepest dual J-tube pull ever performed.

J. Ray McDermott, S.A. awarded Sonsub three major projects to provide ROV support from its construction barges. The company supplied a 75-hp Triton AROWS and a 20-hp Viper ROV which was used to support Mobil's Pearl platform installation, Agip's East Breaks pipeline installation, and Tatham Offshore's platform installation. All the work was carried out in the Gulf of Mexico.

For more information on Sonsub Circle 29 on Reader Service Card

Port Of Göteborg Reports On 1995 Shipments, Recent Port Developments

Officials at the Port of Göteborg, Sweden, have reported that in the first six months of the year, general cargo shipments increased by nine percent, showing an increase

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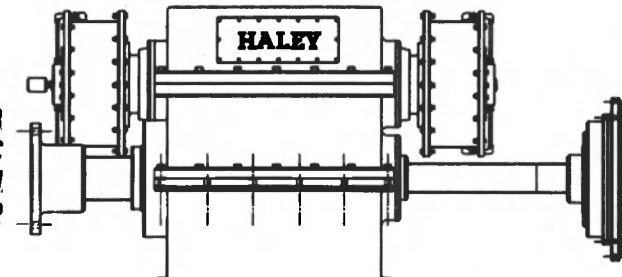
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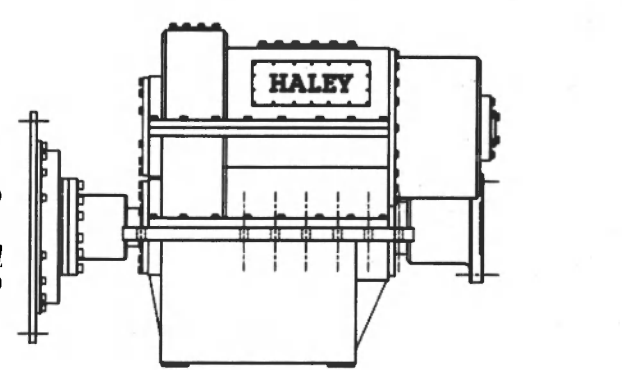
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in imports as well as exports. During the same period, oil shipments via the Port slipped by 17 percent, most likely due to the fact that refineries have been discouraged from high production by the level of crude oil prices on the world market. However, due to the sheer volume of the oil sector of the Port, the total cargo turnover decreased by eight percent.

The industrial district around the Swedish east coast town of

Norrköping has been added to the markets that have direct rail access to the container RoRo terminals at the Port. The service, dubbed "The Atlantic Express," was launched by the Port together with Rail Combi, the unit-load arm of the Swedish State Railways. The service runs five nights a week, with departure and arrival times adjusted to the needs of the industry, and also to the time tables of important shipping con-

nections. There is no marshalling of these cargo trains; the entire trains are moved directly to dockside rails at the Skandia and Älvsborg Harbors, which specialize in cellular and RoRo traffic, respectively.

Also taking place at the Port is a reorganization of operations, in an effort to focus on the needs of consumers. The Port will establish Deep-sea, Feeder, Cars, and Terminal Departments, and each

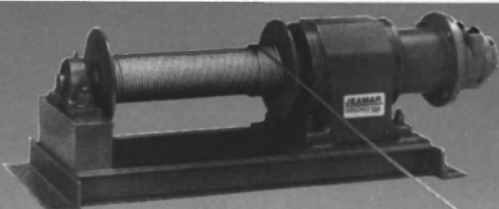
of these departments will be responsible for the entire process of receiving a certain cargo, moving it, storing it, and loading it onto the ship. Up until now, Skandia Harbor, the profit center of the Port, has been divided into departments for dockside operations, yard operations, and shed operations.

The Port has also moved its headquarters to a new office at the center of its operations in the Skandia and Älvsborg Harbors, effecting a change in telephone and fax numbers, the new telephone number being +46 31 731 20 00; and fax number: +46 31 731 22 51.

For more information on
the Port of Göteborg
Circle 30 on Reader Service Card

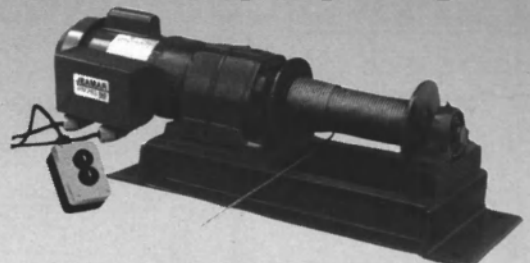
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BV '94 Report Measures Success Of Class Withdrawal Program

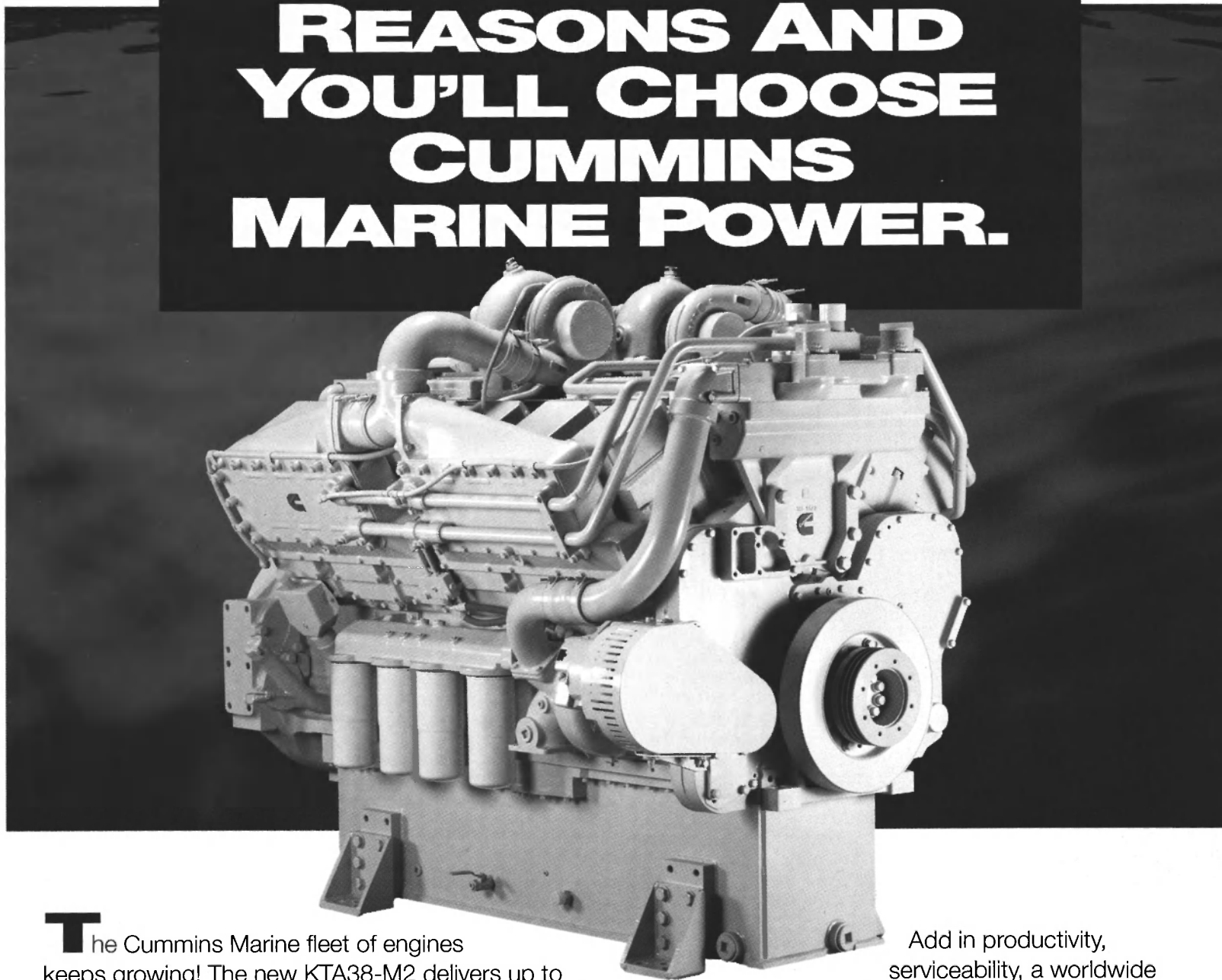
The 1994 annual report of Bureau Veritas (BV) shows that its Marine Division accounted for 25 percent of the Group's sales last year. A major project begun by the Marine Division aimed at consolidating the quality of its service led to the re-examination of maintenance of class of 400 vessels, and a subsequent withdrawal from the Register of no less than 280 vessels for failure to comply with BV rules. By the end of August 1995, an additional 146 ships, totaling 760,740 grt, had their class withdrawn.

BV's improvement in control of the quality of the classed fleet is being achieved by several actions, namely: certification of all its surveyors of ships in service; surveyor training, in parallel with the certification scheme; and by setting up a technical audit scheme for surveyors. In March 1994, BV was also issued a Quality System Certification Scheme (QSOS) certificate of conformity by the International Association of Classification Societies (IACS).

The past year's report also indicates the determination of the Group to expand into new areas; evidenced by the development of the Asia/Australia region, which has a regional committee comprising 60 members. The report also shows increased BV involvement in the classification of ships under construction in Korean yards. One example of BV's involvement was its constructional survey and design examination of a 135,000 cu. m. methane tanker built at Hanjin Heavy Industries Corp. yard. Last year the Group also re-established itself in South Africa, and remained active in Latin America, where the formation of an "Andean Pact" will allow it to adapt better to local markets.

For more information on Bureau Veritas
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PORT STATES AND FLAG STATES:

WHAT THE FLAG STATE CAN DO TO HELP THE SHIPOWNER WHEN THE PORT STATE INTERVENES

By

Guy E. C. Maitland, executive vice president, International Registries, Inc.

Before describing how the flag state can assist when there has been a port state intervention, it is important to stress that port state control is not a "stand alone" system, but rather, is part of a larger system that encompasses the responsibility of the flag state as well. The Earl of Caithness, U.K. Minister of State Transport, best expressed this inter-relationship in stating that "Port state control is very limited. It is but the last line of defense. If one presses too much on port state control, it diverts attention from the more important issue of flag state control."

International Acceptance

The responsibilities of the flag state, or state of registry, have been defined through a myriad of international conventions and regulations. Such conventions have set parameters for the roles of both port and flag states, and the system has been based on the roles as described in the following conventions: the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78); the International Convention for the Safety of Life at Sea (SOLAS); the

International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978; the Convention on International Regulations for Preventing Collisions at Sea (COLREG) 1972; the International Convention on Load Lines (LL) 1966; and the 1982 United Nations Convention on the Law of the Sea (UNCLOS). These six instruments have in effect become the charter of port and flag state safety and environmental protection.

Duties of the Flag State

The flag state's role is perhaps most clearly described in the 1982 Convention on the Law of the Sea (UNCLOS). In particular, Articles 94 and 217 greatly contribute to a comprehensive understanding of how a flag state can and should work within the system to prevent port state interventions, and if an intervention does take place, how it should react.

The "Duties of the Flag State" are set forth in Article 94, which delineates the jurisdiction and control the flag state may assert over the administrative, technical and social matters of vessels flying its

flag. This Article establishes steps that may be taken by the flag state to ensure safety at sea, utilize qualified surveyors and proper navigational equipment, maintain appropriate manning and crew qualifications, and cooperate in marine casualty and incidents of navigation.

The measures that may be taken by the flag state to enforce these standards are described in Article 217, which specifies that a procedure must be established to ensure that vessels failing to comply with the applicable international rules and regulations are prohibited from sailing. In addition, the flag state must provide for immediate investigations and proceedings in the event that a vessel is found to be in violation of these standards.

UNCLOS was sent to the U.S. Senate for ratification in March 1995; and although the U.S. does recognize its contents as applicable law, the U.S. Senate has yet to ratify the convention.

Duties of the Port State

The SOLAS Convention contains provisions that have helped to define the roles of port and flag

state. In particular, Regulation 19 sets forth the duties and responsibilities of the port state in cases of intervention. The Convention specifies procedures that should be followed with regards to verification of vessel certificates, detention of vessels, and reporting of interventions. Regulation 19 focuses on the port state's power to intervene; however, it also provides the caveat that: "When exercising control under this regulation, all possible efforts shall be made to avoid a ship being unduly detained or delayed. If a ship is thereby unduly detained or delayed it shall be entitled to compensation for any loss or damage suffered."

Article 6 of MARPOL 76/78 contains a balanced description of how the systems of port and flag state should work together. Article 6 entitled, "Detections violations and enforcement of the convention," includes reference to every "player" within the system: parties to the Convention (states); vessels to which the Convention applies; and flag states. In its focus on the improper discharge of harmful substances, Article 6 sets forth the ideal cooperation levels for these



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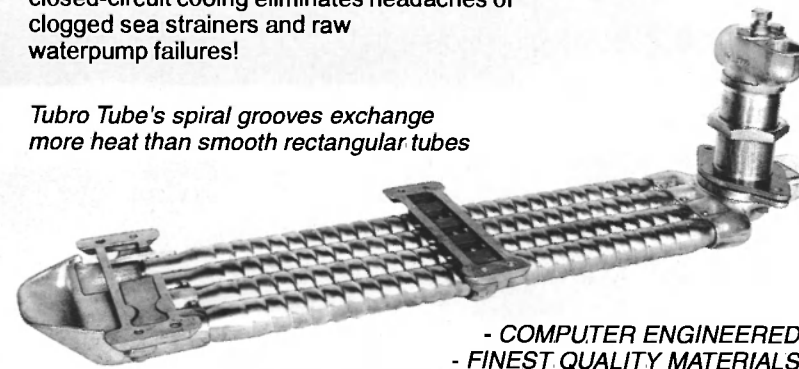
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parties with regards to vessel inspection, the discovery of violations, notification, investigation and enforcement proceeding.

First Aid from the Flag State

The flag state's role is not a new one, nor has it only recently been defined. In fact, over 2000 years ago, Pericles highlighted the importance of continual involvement: "Shipping, unlike any other technical matter, depends mainly upon constant training, and it is not appropriate to deal with it in an incidental or occasional manner. On the contrary, one has to be constantly involved, without being distracted by anything else." This constant involvement is a quality that must be exhibited by a flag state if it is to be effective.

A flag state's efficiency in rendering assistance to an owner is perhaps most jeopardized by poor communication. The expertise of a flag state does not help the shipowner who fails to contact the administration when a problem arises. Prudent shipowners should always be equipped with the telephone, fax number, and other details necessary for contacting the administration's key marine safety personnel in the event of an intervention. Similarly, an effective flag state administration should provide port state authorities with a communications contact list which will ensure that port authorities interface with the appropriate representatives of the flag state administration.

As administrator of the Liberian and Marshall Islands flags, International Registries, Inc. (IRI) has found that surveys conducted to ensure compliance with SOLAS and MARPOL requirements reveal areas that are frequently deficient, and that often result in detentions; for example: (1) poor maintenance of lifesaving equipment; (2) lack of appropriate firefighting equipment; (3) improper navigation of equipment; and (4) inadequate maintenance of overboard discharge maintenance equipment (O.D.M.E.). IRI's Marine Safety division draws on inspection reports, and deficiency and detention data to give shipowners information that will help them avoid inconveniences, delays, and detention costs.

A flag state that is actively involved in interventions and detentions has several methods at its disposal by which it may favorably conclude a detention, as well as prevent such problems from occurring in the future. Since so many interventions involve equipment inspections pursuant to various conventions, an operational/safety checklist provided by the flag state can be extremely useful. Such a checklist should be used weekly and monthly, and signed by the vessel safety officers and masters at the end of every month. Attention to the checklist is an important confidence-building measure for crews, and will ultimately be conveyed to port state officials when vessels are inspect-

ed. A safety/operational checklist not only functions as a foundation for a successful vessel maintenance routine and a plan for avoiding detentions, but it also serves as an important reference tool, if and when a vessel is detained.

In light of the experience gleaned from participating in the intervention/detention process, flag states

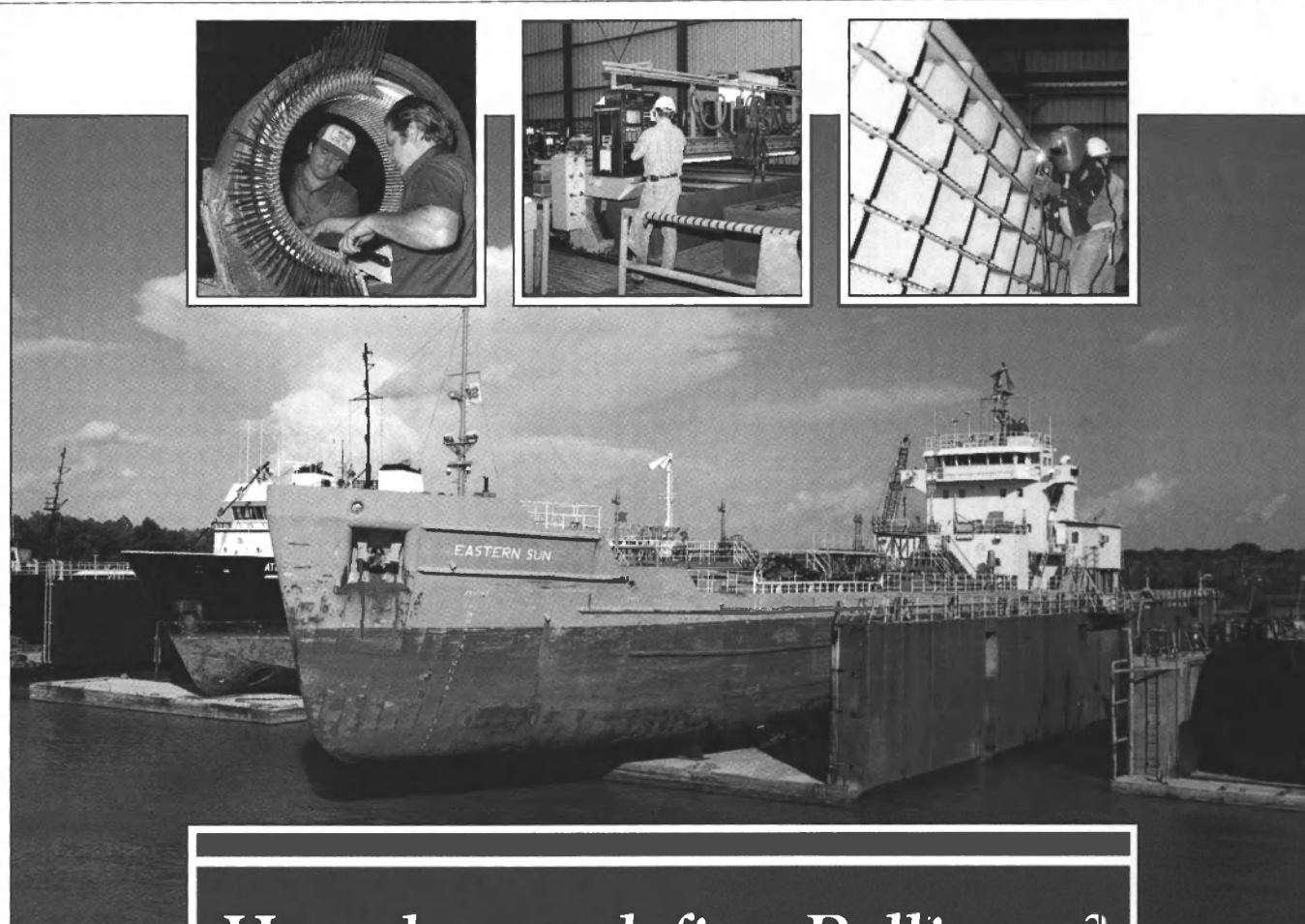
are in a unique position to assist owners in preparing and implementing an effective vessel maintenance plan that will be successful in ultimately avoiding detentions.

The System

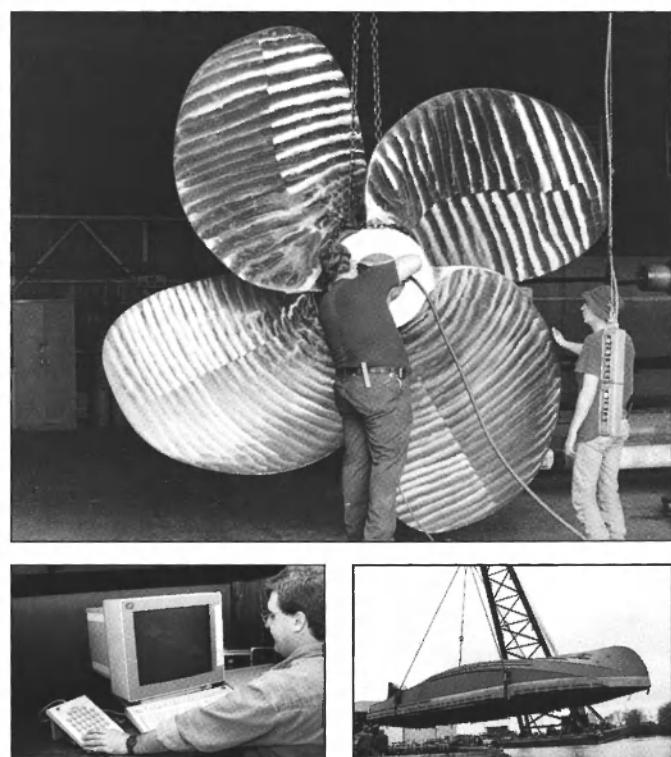
The system has been designed to be, and usually is, self-reinforcing. Environmental and safety con-

cerns have recently become major issues for many states, and consequently, as time has passed, port and coastal states have adopted many additional requirements above and beyond those imposed by international agreement. Despite the fact that there really is only one set of internationally

(Continued on page 42)



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MTU Powers On Into Fast Ferry Market

MTU has engaged in several recent projects to provide propulsion for fast ferry newbuilds, ranging widely in size, but most intended for operation in various European locations.

MTU-Powered *Kattegat* Goes Into Service

The new 311.7-ft. (95-m) high-speed fast ferry, *Kattegat*, is now in operation between the Danish islands of Jutland and Zealand — running at a cruising speed of 32 knots, provided

1996. The "Elbe City Jets" are each fitted with two 8V 396 engines and will ply between Hamburg and Stader at a cruising speed of 35 knots.

The orders were placed by ferry operators SAL and Hapag, and the vessels are to be built by Norwegian shipbuilder Lindstol and its German partner Abeking und Rasmussen at a cost of approximately \$3.6 million each. The splitting of the contract came about as a result



LEFT: The *Kattegat*, powered by four 20-cylinder series 1162 MTU engines, recently entered service. ABOVE: Austal Ships will build a 270-ft. (82.3-m) ferry for German operator TT Line, powered by four 20V 1163 MTUs. BELOW: Each Elbe City Jet — reportedly the first catamaran ferries to operate on the Elbe — will have two 8V 396 engines from MTU. A spare will be kept at the MTU Product Support Center in Hamburg to ensure adherence to the vessels' rigorous schedules.



by an MTU Friedrichshafen propulsion system consisting of four 20-cylinder series 1163 engines with a total output of 23,200 kW (almost 32,000 bhp). During sea trials, the vessel attained a speed of 38 knots.

The *Kattegat*, operated by Danish shipping company Driftsselskabet Grenaa-Hundested AS, completes the 100 km crossing from Jutland to Zealand in an hour and forty minutes, a full hour faster than is reportedly the case with conventional fast ferries. The vessel's three decks can accommodate 600 passengers and 160 cars; with fewer cars loaded, it is even capable of carrying up to 12 buses.

MTU has since received a follow-up order for four more 20V 1163 engines for an identical vessel to be built by Mjøllem & Karlsen. The *Dursland*, as the ferry will be known, is also intended for service on the Jutland to Zealand route, and will be commissioned in 1996.

In supplying an all-diesel propulsion system, MTU has added another dimension to its range of propulsion systems for high-speed ferries of this class. Previously, the company had only supplied combined diesel and gas turbine propulsion systems for ferries of this size.

MTU Powers First Two Fast Ferries On The Elbe

The first two catamaran ferries to operate on the Elbe are due to enter service in June of

1996. The approach which will be used again for future catamaran projects on German waterways.

With a length of 90 ft. (27.5 m) and a beam of 29.5 ft. (9 m), each Elbe-Jet can accommodate 210 passengers. In order to ensure that the ferries can keep to their scheduled services at all times, a spare MTU engine will be kept at the MTU Product Support Center in Hamburg for emergencies, or for when the other engines need to be overhauled.

Four MTU Engines Half Crossing Time For Austal-Built Ferry

Hamburg ferry operator TT Line has ordered a 270-ft. (82.3-m) twin-hulled, high-speed ferry from Australian shipbuilder Austal Ships, to be fitted with four 20V 1163 engines supplied by MTU Friedrichshafen. The vessel, which will have a beam of 75.5 ft. (23 m), will reportedly be the largest catamaran of its type in the Baltic — as well as the first commercial order placed by a German shipping company with an Australian shipbuilder.

Each engine drives a KaMeWa waterjet via a separate gearbox and propeller shaft, resulting in an expected cruising speed of 36 knots. The catamaran is due to go into service in the Baltic Sea between Rostock and Trelleborg in 1996.

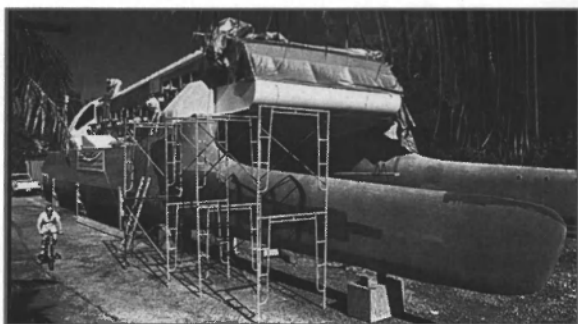
The four engines produce a total of 24,000 kW of power (32,600 bhp). The MCS-5 monitoring

system supplied by MTU Elektronik is the central element in the ship's automation systems. In accordance with classification society requirements, the bridge control room is equipped for fully automatic operation using the very latest technology. Color monitors inform the crew of all operating conditions for the power units, the on-board power generation system and the ship's general services. Control commands are entered directly on the monitor. To complement the MCS-5 system, MTU Elektronik is also supplying a "Power Management System" for automation of the electricity generation and distribution systems.

The aluminum catamaran will take about two and a half hours for the journey of 82 nautical miles (153 km) between Rostock and Trelleborg — reportedly half the time required by conventional ferries currently operating on that route. It will have a capacity for approximately 600 passengers.

A feature new to MTU engines is a computer-assisted system which enables maintenance to be performed on a preventive basis according to operating data stored by the system, as opposed to the conventional practice of carrying out maintenance at specific intervals according to engine running time.

For more information on MTU
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Gold Coast Ferry Nears Completion

A new "FastCat" wave-piercer from Gold Coast Yachts in St. Croix, Virgin Islands is nearing completion. The 104-ft. (31.7-m) craft was developed based on the company's experience constructing six previous vessels of the same type.

The ferry will have a beam of 32 ft. (9.75 m) and a draft of 2.5 ft. (.76 m). Propulsion power will come from four 800-hp MAN diesels connected to four AmJet 1400

waterjets. Two Northern Lights 30-kW generators will supply electrical power.

Carrying 122 passengers at a cruising speed of 35 knots, the ferry will have a range of 1,000 miles.

The vessel was financed by Chase Manhattan Bank under the MarAd Title XI Ship Guarantee Program.

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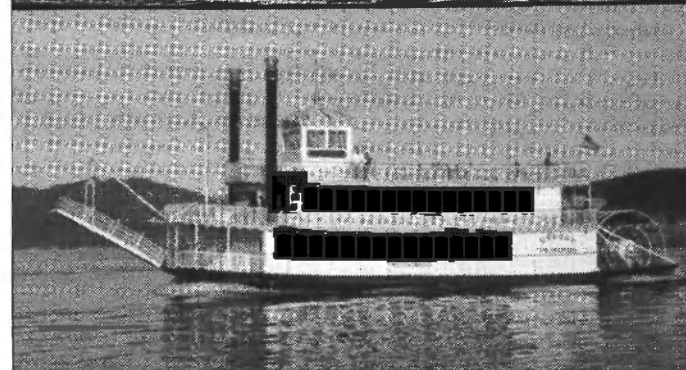
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(Continued from page 39)

accepted standards and one system of enforcement, many conflicting interpretations of these standards by both port and flag state have developed.

In cases where interpretation varies, port state inspectors frequently find the opinions of the flag state and classification societies to be helpful and even per-

suasive.

The participation of the class societies is essential to the successful operation of the system of port state control, as the documents issued by the societies either certify compliance with, or note departure from applicable regulations. Consequently, class societies should always be invited to partic-

ipate in situations where port authorities are about to detain a vessel or have already done so.

The problems caused by regional safety and environmental requirements can frequently be resolved by the participation of the flag states. For example, the U.S. Code of Federal Regulations (CFR) requires that certain equipment,

such as vapor recover systems, be approved by the U.S. Coast Guard. When a chemical carrier, gas carrier or tanker is in an U.S. port, there may be a question as to whether the U.S. standard differs from that of the flag state, and if so, what standards should apply. A responsive flag state should supply port inspectors with guidelines of its interpretation of the international requirements, such as those found in MARPOL and SOLAS. If reasonably constructed, such guidelines may persuade the port state from imposing its own. In addition, the guidelines describing the flag state's interpretation may lead to a favorable outcome for the owner, especially when the vessel is manifestly safe and seaworthy, but has been questioned regarding a minor infraction such as chart corrections.

Looking Ahead: The Role of Flag States

The flag state's role should be proactive rather than reactive; with its focus directed towards decreasing the number of vessels that are detained.

The International Safety Management (ISM) Code, which will become mandatory for some vessels in 1998, will require vessel operators to establish a written plan with policy objectives in support of safety management and pollution prevention. As the ISM Code is implemented, the role of flag state in both pre- and post-intervention situations will change, and the code will further solidify ties between the vessel operator, port authorities, and the flag state administration.

Despite the tendency of many to focus on the inequities and problems with the system, the fact remains that the system of port/flag state implementation does work. The system may be flawed; however, flag and port states do work together effectively overall.

The future is certain to bring new laws that will strengthen the base upon which the system has been founded, and further reinforce the relationship between vessel owners, port and flag states.

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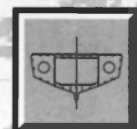
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G.E.C. Maitland, Esq., is executive vice president and general counsel for International Registries, Inc. He is a member of the Legal Committee for the International Maritime Organization (I.M.O.), London, a U.S. Representative for the Commission of Sea Transport, International Chamber of Commerce, Paris, and a U.S. Representative for the Commission on Sea Transport, International Chamber of Commerce, Paris.

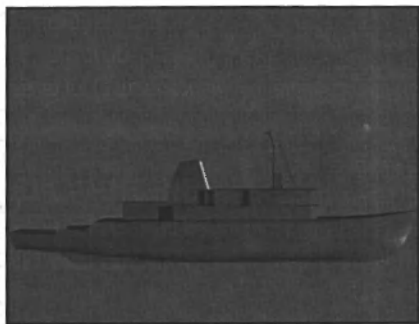
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Integrated Ship Design and Production (ISDP) Product Model Output software from Intergraph supports output requirements for ship design and production, including manufacturing data, database queries, drawings, analysis records, and visualization data. These images illustrate examples of output derived from the digital ship model. ISDP software produces true bills of material based on design data. The design database supports ad hoc queries by providing information on the status of work in progress on the digital model. Automated drawing extraction capabilities streamline production of ship installation drawings and schematics. ISDP software also provides output to manufacturing applications including nesting, burning and shell expansion. The system generates and tracks different types of analysis data such as stress analysis

November, 1995

results and mass properties evaluations. Visualization data includes renderings and detailed virtual environments.

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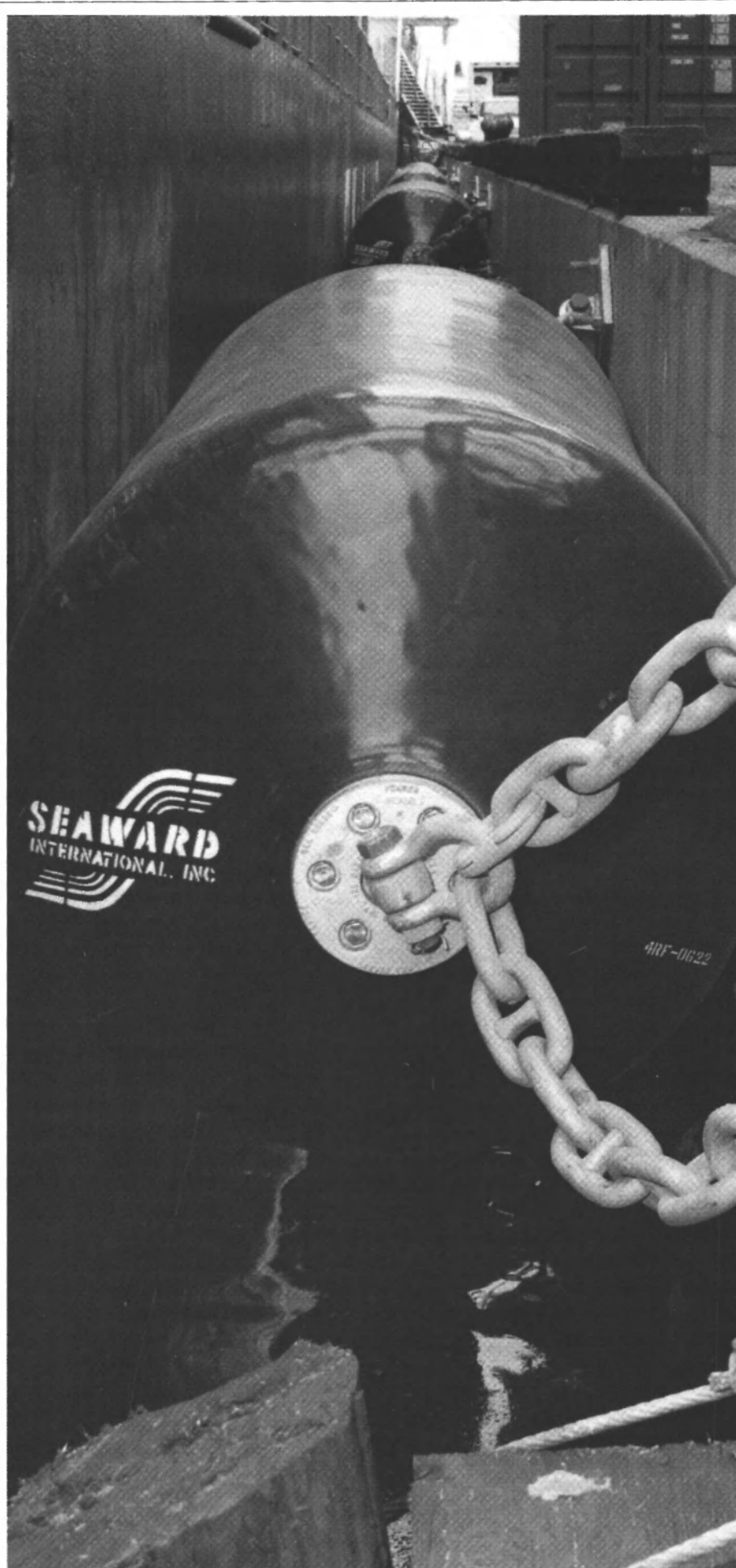
Lytron Announces Modular Cooling Systems

Lytron Inc., a manufacturer of compact tube-fin and plate-fin heat

exchangers, announced the release of its international Modular Cooling Systems (MCS) — a new product line of integrated cooling systems suitable for use with metric and English interface requirements. The MCS product is a self-contained, closed-loop, liquid-to-air cooling system packaged in a lightweight, compact chassis 33 cm. tall. MCS coolers reportedly provide cost effective cooling of process fluids in laser, hydraulic,

medical, scientific and industrial applications. The MCS10 and the MCS20 models are available in 16 different configurations. Options include: a choice of heat exchanger material and capacity; pump construction; electrical system interface; and rack-mountable or stand alone chassis. Lytron's MCS provides more than 1,400 watts of cooling performance.

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Blohm + Voss' Mekat Ready For First Commercial Orders

by
Greg Trauthwein,
editor

Six years in development, the MEKAT-type fast vessel from Hamburg-based Blohm + Voss is now attracting substantial — in terms of quality and quantity — inquiries from potential owners, yard officials report. Blohm + Voss was recently running the prototype MEKAT 150 Corsair through its paces for the marine technical community at FAST '95, an international event held in Travemunde, Germany, which attracted more than 325 delegates, predominantly from the research and development ranks.

The demonstration was effective in many ways, particularly in emphasizing performance particulars. It is one thing to read about a 45-knot maximum speed on a specification sheet; quite another to be on the bridge when the captain calls out a water depth of "3.5 meters" at a speed of 42 knots.

The name MEKAT is derived from "Mehrzweck Katamaran" and literally means multi-purpose catamaran. Blohm + Voss has held up its end in designing the vessel to fit the name. While the yard is currently focusing on a Coast Guard version of the vessel, it has been designed to fill many roles, including: military vessel; patrol vessel; fisheries protection vessel; and sea traffic control vessel, to name a few.

The MEKAT 150 is a 170-ton displacement vessel which measures 115.8 ft. (35.3 m) x 42.65 ft. (13 m) with a 7.54-ft. (2.3-m) draft off cushion, and a 2.62-ft.

(.8-m) draft on cushion. For passenger vessel configurations, it is available in the Corsair 300 and Corsair 600 models, both with speeds to 44 knots.

The Corsair is powered by two MTU 16V 396 TB94 diesel engines, rated at 2,133 kW each. The lift fan engines are two MTU 6V 396 TB 93 engines rated at 400 kW each.

The MEKAT 150 is the upper limit in size and full load displacement for a coast guard/police version. Customer demand required the yard to come up with a smaller MEKAT design, the result being the MEKAT 80. The MEKAT 80 series is available in lengths from 85.3 ft. to 98.4 ft. (26 to 30 m) and speeds from 40 to 58 knots.

OTHER FAST SHIPS

Blohm + Voss' efforts in the area of fast vessel design are not limited to the MEKAT, and in fact the yard is developing an entire product family based on the fast monohull principle. The vessel family is characterized by a very slender fore-

body and a semi-tunneled aftbody, giving space for one or two large diameter propellers.

The hull form is designed to provide low resistance combined with high stability performance, and superior propulsion

(Continued on page 50)

FAST '97

The fourth international conference on Fast Sea Transportation — FAST '97 — is scheduled for July 21-23, 1997, in Sydney, Australia. FAST '97 will bring together the maritime community for a conference and exhibition.

FAST '97 aims to contribute to the design, construction, and safe and economical operation of high-speed marine craft. Every aspect of these craft and their operations is open for examination and discussion.

Provisional session topics are: monohulls and hybrids; catamarans; machinery; structural design; waterjets; propulsion systems; testing techniques; performance on inland waterways; and the environment, to name but a few.

A call for papers is expected for July 1996, and abstracts will be due to the conference secretariat by October 30, 1996. For additional information on FAST '97, contact the conference secretariat at: tel: +61 39826 8741 fax: +61 39827 0704.



FAST '95 Showcases The Fastest Vessels Afloat

Will it soon be possible to design, construct and conduct sea trials for a vessel on a system which simulates all facets of the surrounding environment in real time? Is it possible to more efficiently build and operate a vessel which is a mix between a Swath and a hydrofoil? These questions — and many others — were addressed at a conference renowned for its technological view of the maritime industry.

Travemunde, Germany, was the site of FAST '95, a technical conference which offered attendees a look into the future of the marine industry. The international event attracted more than 325 attendees from 30 countries, all interested in the in-practice and under-development technologies which are designed to make vessels faster, safer and more economical to build and operate. In total, there were 110 technical papers from 20 countries.

(Continued on page 50)



Travemunde, the site of this year's FAST '95, a technical conference which offered attendees a look into the future of the marine industry.

Swath/Hydrofoil Hybrid Presented At Fast '95

Hybrid hydrofoil monohulls (HYSWAS) combine hydrostatic and hydrodynamic lift, in effect, merging Swath and hydrofoil technology. Conceptual studies have been carried out in Germany for a 500-ton passenger car ferry design of the HYSWAS type. Preliminary studies have found that the design is favorable when compared to other fast ferry designs if the owner's concerns include operating on long, exposed routes (such as the North Sea or the English Channel), and preventing speed losses due to waves and good seakeeping.

The excellent seakeeping behavior of the HYSWAS makes it an ideal candidate for fast service on exposed routes according to its designers. Consequently, the first design is anticipated to sail a relatively short route on the channel

— for example, on the Oostende - Ramsgate (72nm/2hr.) service, where hydrofoil boats (Boeing jet-foil) are already employed.

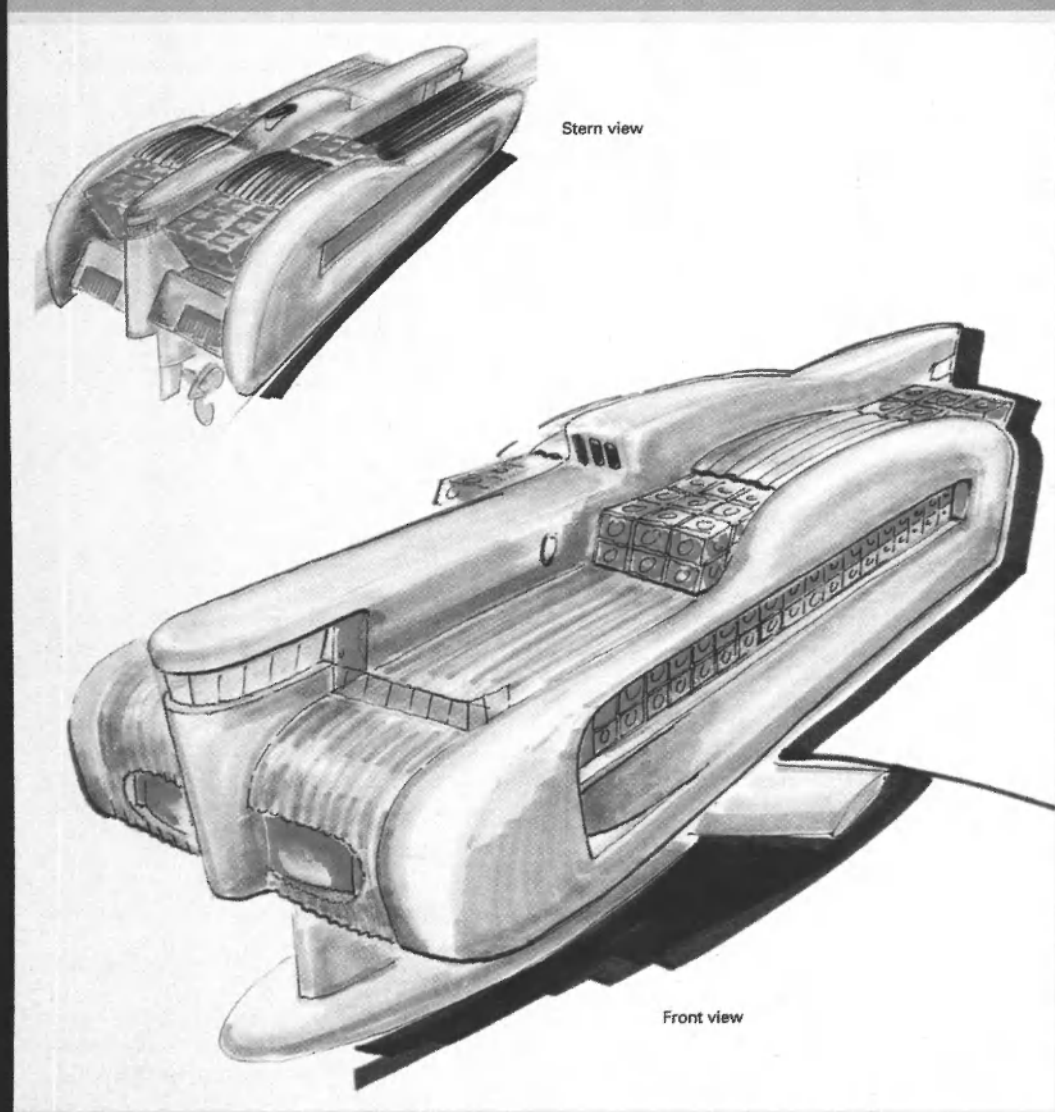
Future routes include longer trips such as the Vlissingen - London route, which would measure about 134 nm and four hours long.

The vessel under study has a full-load displacement of 500 tons, a cruising speed of 39 knots in three meter waves, and a maximum operability in waves up to four meters. The vessel is designed to carry 80 cars and 350 passengers, to a maximum range of 500 nm. The INCAT 74-m wavepiercing catamaran has a similar combination of payload and speed. However, the HYSWAS will be designed and equipped with a comfortable passenger area and with a restaurant to keep passengers comfortable on longer routes.

GENERAL LAYOUT

Two versions of the vessel are currently under investigation, the diesel-powered Mark IV and the turbine-powered Mark VI. The two versions differ in several aspects related to the propulsion plants and the design of the foil systems. The present design incorporates an "airplane-type" foil configuration and a longer strut capable of supporting a rudder behind the propeller. This configuration was chosen because:

- An internal investigation at the Hamburg Ship Model Basin came to the conclusion that investigated canard



(Continued on page 46)

Swath/Hydrofoil Hybrid Presented At FAST '95

(Continued from page 45)

configurations perform worse than airplane configurations due to downwash and other effects;

- Yamanaka et al. (1991) deal with the hydrodynamic effects at the aft foil of a tandem foil configuration. Large changes in flow direction at a foil positioned aft of a forward

foil are described. The magnitude of the effect causes lift of the aft foil to decrease by 60 percent at design speed and to even less at lower speeds.

- Conventional airplanes are optimized for long range performance and to avoid downwash of wings or

stabilizers positioned in the front. The main wing then operates in "clean flow." Canard configurations are found in fighter airplanes and missiles to provide maximum maneuverability.

- The roll/heel stabilization of HYSWAS can be best performed by a main foil of as much span as pos-

sible. Therefore the span of the main foil shall be maximized.

Mark IV has a cantilever main foil. Mark VI has a main foil with struts at its tips to reduce drag and to maximize roll stabilization by larger profile chord and higher lift slope near the tips.

The Mark IV is the latest stage of EMIT's HYSWAS developments, and is designed to be powered by a pair of MTU 20V 1163 TB73L diesel engines of approximately 13,000 kW. At 90 percent MCR, the available shaft power after the rear gearbox is about 11,400 kW and fuel consumption 206 g/kWh. The thickness of the strut shall make it possible to remove the engines through the machinery pit which has an inner breadth of at least 5.6 ft. (1.7 m) over 32.8 ft. (10 m) length.

The Mark VI is designed to fit two Allison 571-K liquid fuel gas turbines mounted side-by-side. The thickness of the rear strut shall make it possible to remove the engines through the machinery pit, which has an inner breadth of at least 3 ft. (.9 m) and a useful cross section area of more than 4 sq.-m. for the gas turbine's fresh air and exhaust fume ducts. The rated shaft power of the two engines together is 11,400 kW. At a realistic service rating, the available shaft power after the rear gearbox is about 9,300 kW, fuel consumption 251 g/kWh. As gas turbines are not designed primarily as economical operators at low ratings, an additional propulsion system is required to supply the propulsion system power for low speed. Also, according to preliminary calculations, 9,300 kW is not sufficient shaft power to achieve 39 knots. Therefore MTU 8V 396 TE 74L diesels rated at 1,000 kW are designed to be installed on each side near the strut to drive a traction propeller via z-drive through the side strut. The traction propellers are mounted where wing tip and side strut join and reportedly will supply excellent maneuverability.

SEAKEEPING CHARACTERISTICS

MARK shall be able to pierce regular waves up to 13.1 ft. (4 m) high. Piercing means that heave, pitch and roll motions can be kept to a minimum, if not zero. When MARK encounters regular waves higher than 4 meters, the ride control system will switch from piercing to contouring mode. Contouring waves of 16.4 ft. (5 m) seems to be the limit of passenger acceptance. Therefore, the maximal operational seaway for MARK was defined by a significant wave height of four meters, when the probability for occurrence of waves higher than 5 meters is less than 5 percent. Draft on foils was selected so that the propeller would not emerge in the trough of a 4-meter wave. Also, submergence of re-

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 M/V Phyllis II-McCall-135' - Gulcraft Inc. -4-KTA19M3

SPECIFICATIONS

Four Stroke Cycle, Water Cooled Turbo and Aftercooled, In-line,
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MARINE MEDIUM CONTINUOUS

Crankshaft Power	550-700bhp	(410-507KW)
Rated Speed	2100	(2100)
Fuel Consumption at rated rpm	27.1/34.7 U.S. g/hr	(1025-126.5 L/hr.)
Bore and Stroke	6.25x6.25in.	159x159mm
Displacement	1150 cu.in.	(19L)
Oil Pan Capacity	19 U.S. Gal	(38L)
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 M/V Candy Cane-Candy Fleet-120' - Camcraft Inc. -4-KTA19M-550 (REPOWER)
 M/V Adam-McCall-145' - Gulcraft-5-KTA19M3

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Swath/Hydrofoil Hybrid Presented At FAST '95

(Continued from page 46)

tracted side floaters and slamming of the wet deck will be avoided in 4-meter waves.

Along with current technical studies, in collaboration with the Bremerhaven based Design Laboratory, new concepts are currently being investigated for: superstructure design; passenger

compartments; and efficient loading and berthing of fast vessels. These studies will lead to additional modifications, particularly in the area of the superstructure and the interior design of the vessel. General aspects of improving passenger transportation at sea will be central to these studies.

The information in this feature was presented in a paper titled Hybrid Hydrofoil Monohulls at the FAST '95 conference in Travemunde, Germany. The authors of the paper include: V. Bertram, University of Hamburg; H.J. Schmidt, EMIT GmbH; and J. Marzi, EMIT GmbH. EMIT is the development center for maritime and industrial technology of Germany's Bremer Vulkan Verbund.

Sizing Up MARK

This table provides weight predictions for both versions of the MARK HYSWAS.

Description	mass (t)	
	MARK IV Diesel	MARK VI Gas Turbines
Structure (aluminum).....170	170	170
Foil system (steel).....20	20	20
Machinery (incl. shafts, propeller, gearbox, pumps, firefighting, water supply, electric equipment).....100	100	59
Auxiliary diesel.....5	5	5
Side floaters.....30	30	30
Equip., furniture, AC.....65	65	65
Fuel (max. 200 nm).....13	13	16
Water.....5	5	5
Car (max. 83 @ 1 ton).....83	83	83
Passengers & crew (max. 350).....25	25	25
Total.....516	516	478

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Autohelm Expands SeaTalk Instrument Range

Autohelm, a Raytheon company, introduced its latest integrated ST30 product, the ST30 Compass system. The ST30 Compass, aimed at the small and mid-size boat markets, joins the SeaTalk instrument range.

The ST30 Compass is a steering compass housed in the standard 3.46 in. X 4.33 in. ST30 waterproof casing. This compass is designed to complement the ST30 range of speed/log, depth and wind instruments.

The ST30 unit consists of an LCD display head and also provides average heading for use in heavy sea states. Automatic linearization is said to provide correction for deviation errors, allowing direct readout of the magnetic heading on the display. This can be offset by variation to display true heading.

The ST30 Compass provides a Man Overboard (MOB) feature. When activated, the display will continuously show heading back to the point at which the MOB was activated.

Sea Talk integration allows the ST30 Compass display to be used either as a repeater, or to utilize the heading information from a SeaTalk Autopilot locked heading.

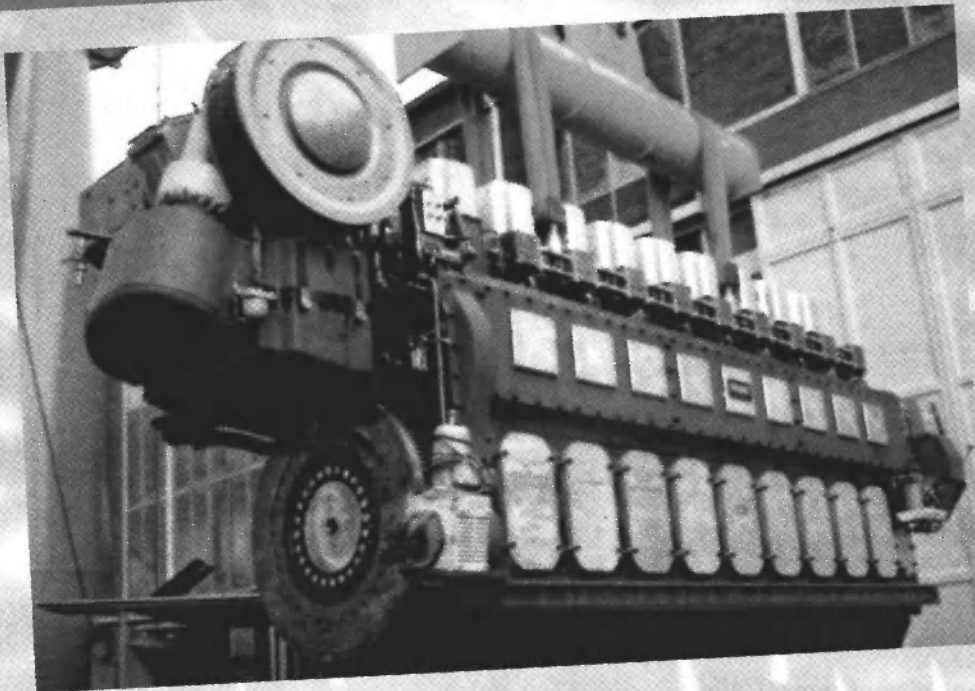
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MEKAT Ready For Commercial Orders

(Continued from page 44)

efficiency (the company reports it achieves 20 percent higher efficiency than conventional designs; almost 40 percent higher than designs with waterjet propulsion). The fast monohull from B+V is a displacement type hull, capable of carrying high payloads, combined

with high speed.

The vessel design is less sensitive to weight, and heavy fuel oil-burning medium-speed engines can be installed. Reportedly, even two-stroke engines can be considered.

B+V has carried out extensive tank testing on several sizes,

speeds and displacements. From this, the yard has proven results for various projects, and the family comprises:

- Fast trailer carriers, ranging from 426.5 ft. to 606.9 ft. (130 to 185 m) long, with service speeds from 26 to 30 knots.

- Fast passenger/vehicle ferries ranging from 377.2 ft. to 492.1 ft. (115 to 150 m) long, with service speeds from 27 to 29 knots and various combinations of passenger numbers and car/trailer capacities.
- Fast car/truck carriers.
- Fast container vessels, 472.4 ft. to 515 ft. (144 to 157 m) long, with service speeds from 24 to 27 knots, and capacities from 700 to 1,050 TEU.

For more information on Blohm + Voss
Circle 151 on Reader Service Card

FAST '95 Showcases Fastest Vessels Afloat

(Continued from page 45)

The range of papers presented was impressive in terms of breadth and scope, tackling every aspect of testing, engineering, building and operating fast vessels. There was also lively discussion centered on new technologies recently introduced — either through real commercial products or life-size prototypes. (Note: The answer to the first question above is maybe, as Advanced Marine Enterprises continues to break ground in simulation; the second question is yet to be answered, but the referenced technology is presented in the story on the HYSWAS, beginning on p. 45.)

Techno-Superliner: Bigger & Faster

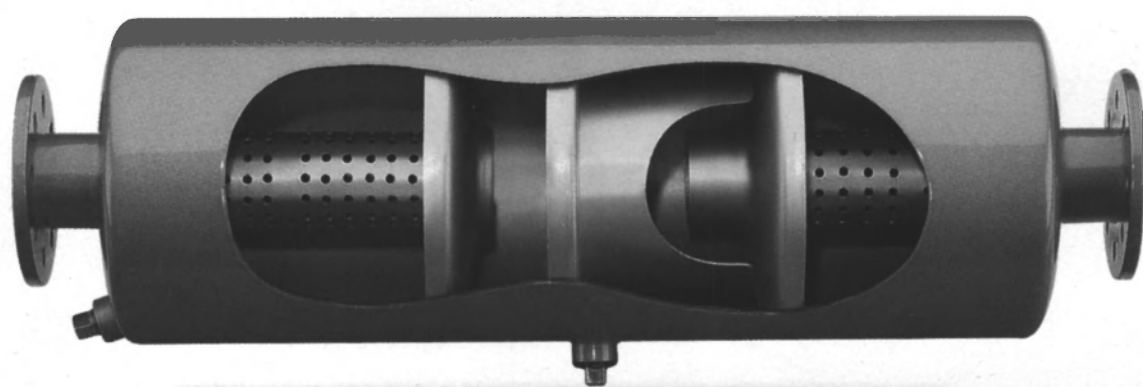
Kazuo Sugai, managing director of the Technological Research Association of the Techno-Superliner, presented a discussion on the progress of the TSL program, which was started in 1989, and was intended to result in a vessel which would deliver 50 knot speeds carrying 1,000 tons in payload over a 500-nautical-mile range. The program centers on many technologies key to all fast vessel development, namely: hybrid hull form concepts; lighter materials and rational ship structures; powerful, high-efficiency propulsion systems; and a sophisticated motion control system.

The program has resulted in large-scale model tests of two vessels, the TSL-F model and the TSL-A model (Figures 1 and 2 respectively). The Techno-Superliner is reportedly best suited for a liner which commutes along specific routes in a middle distance range.

In the tests, the TSL-F model attained a speed of 41 knots in still water, as predicted by tank tests. It reportedly exhibited excellent maneuverability, and was able to execute bank turns without a loss of speed.

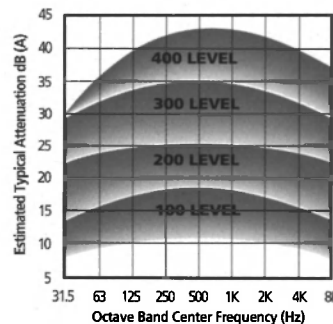
The testing of the TSL-A vessel was equally encouraging, as the model succeeded in attaining a

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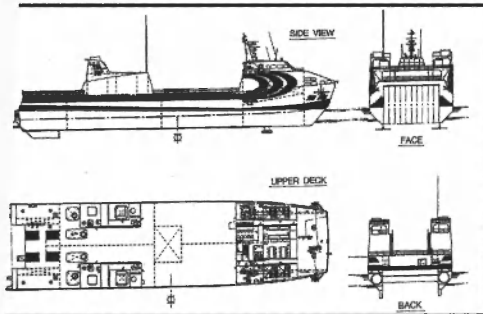


Diagram of the TSL-A.

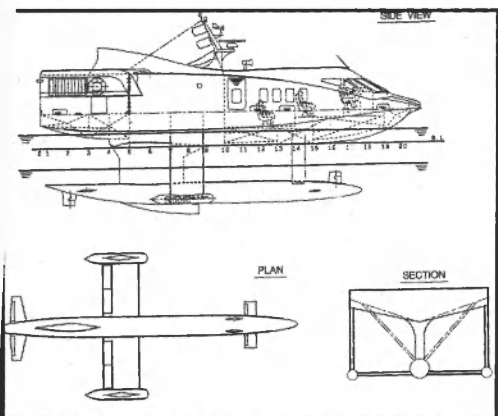


Diagram of the TSL-F.

maximum speed of 54 knots, much faster than the design speed. Maneuverability tests showed that the ship model has almost the same maneuverability as a conventional high-speed craft. From the tests, the ships developers concluded that the debut of the actual ships should occur by the end of the century.

Goodway Announces Fall Catalog and Newsletter

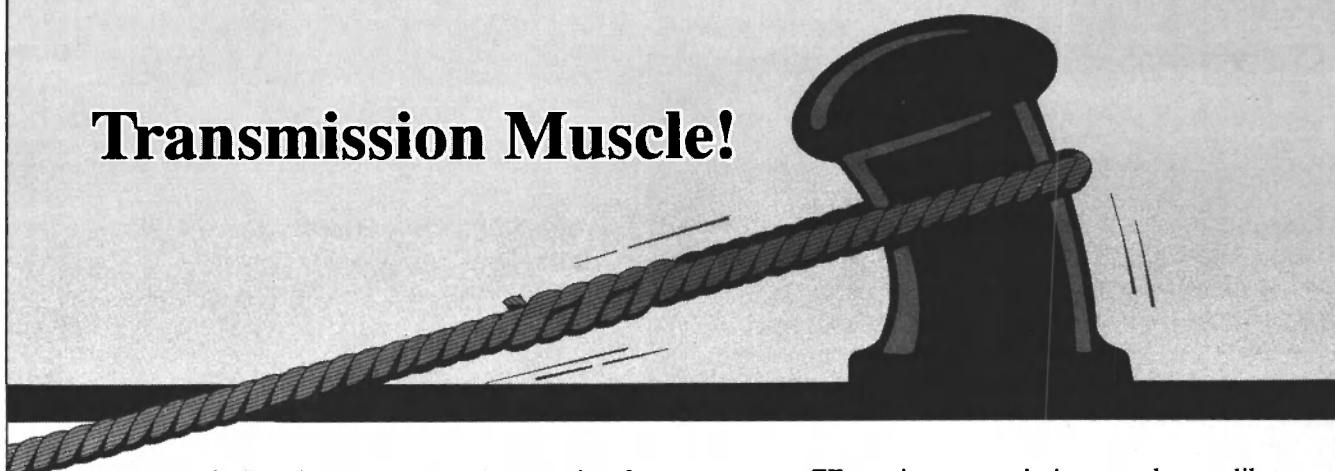
Goodway Technologies Corp. announced the publication of its fall 1995 catalog and newsletter. The publication consists of a 64-page catalog and eight page newsletter displaying a variety of Goodway products which include tube cleaners, test equipment, vacuums, and high-pressure washers. For more information on Goodway Circle 141 on Reader Service Card

Hella Names Sorensen Sales Manager For North America

Soren Sorensen has been named sales manager for the North American operation of Hella, Inc., a manufacturer of lighting products and safety accessories for marine and other markets. In his new position, Mr. Sorensen, previously the company's OEM sales manager, will be responsible for all OEM and aftermarket sales for all of Hella's markets, including the marine, heavy duty, off-highway, automotive and agricultural markets. In addition to the Hella and Optilux brands, Mr. Sorensen will also manage products for which Hella, Inc. handles exclusive North American distribution, including Pierburg fuel pumps.

November, 1995

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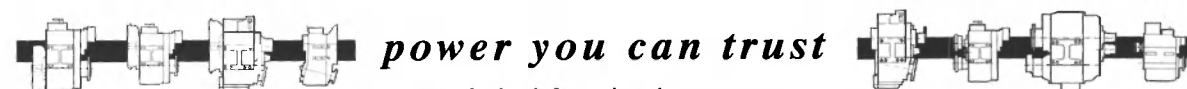


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Båtservice Delivers First 40-M Cat



The Norwegian ship and boat builder Batservice Holding AS continued its successful SeaLord series by delivering the *SeaLord 38*.

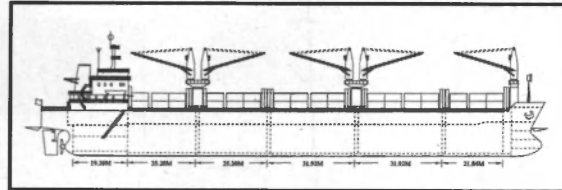
This is the largest catamaran which has been built by Batservice Holding to date. The fast ferry is now sailing on the route from Harstad-Tromsø in Norway and carries 336 passengers plus a crew of five, including living quarters. The *SeaLord 38* is also specially designed to suit handicapped passengers. It is, for example, the only known catamaran equipped to be flexible, due to the special width of 38.7 ft. (11.8 m), allowing the possibility of increasing the number of passengers to 449.

Also new is the use of four smaller engines instead of two larger ones. Four MTU 183 TE92 engines, each with 625 kW, drive two Servogear CCP propellers via two Servogear 250 gearboxes, providing a speed of 34 knots. Using four instead of two engines increases flexibility and reportedly reduces the maintenance and operational costs. For example, for four smaller engines the Time Before Overhaul (TBO) is 15,000 hours, as compared to 6,000 hours for larger engines.

For Batservice, this is an important step into the 125-ft. (40-m) class of catamarans. It is even claimed by the company to be the most economical catamaran in the 40-m class. This is very much due to research aiming at economical hulls, resulting in very low resistance through water and very good maneuvering performance. "Our hull constructions result in substantially reduced fuel consumption for our clients," said Managing Director Bjørn W. Fjellhaugen. "The *SeaLord 38* needs only 600 liters of fuel per hour, while similar catamarans use 800 to 900 liters per hour. Furthermore, we achieve the same service speed with cheaper engines, and experience lower maintenance costs for the engines."

For more information on Batservice Holding
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Cargo Vessel *Clipper Fantasy* Launched By Dalian Shipyard

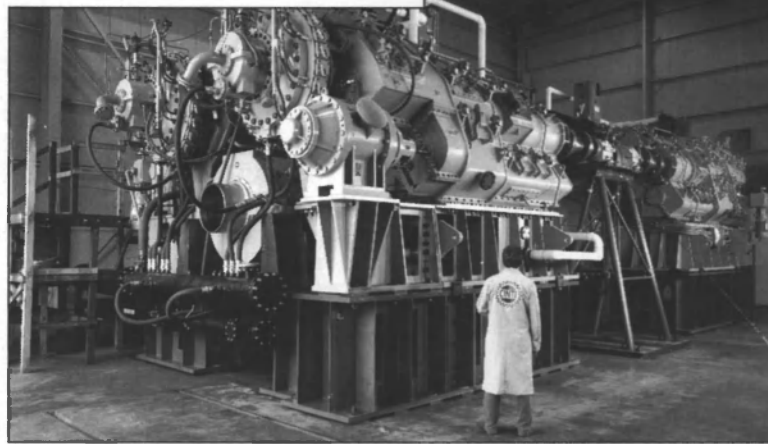


The launch of the 28,000-dwt *Clipper Fantasy* for the Fantasy Shipping Co. of Nassau, at the Dalian Shipyard in China, marks the return to shipbuilding of GTR Campbell, of Athelstan, Quebec.

The multi-purpose cargo vessel is the first of a new class, for which eight orders have been placed so far — three each for Dockendale Shipping of Nassau and Clipper Americas of Houston, and two for Egon Oldendorff of Lubeck, Germany — and it follows in the footsteps of the **George Campbell**-designed *Freedom*, *Fortune* and *Friendship* classes produced between the 1960s and the late 1980s, with some 300-plus examples being built.

The *Fantasy* is heir to this tradition, yet incorporates more recent innovations. It is the con-

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cept of **Antony Prince**, president of GTR Campbell, who has been with the organization 23 years and was **George Campbell's** right-hand man. The design was developed jointly by GTR Campbell and Algoship Designers Ltd. of Nassau, the Dalian Ship Design and Research Institute, and the Dalian Shipyard, which is to build all eight vessels on order.

Fantasy was conceived as an open, multi-purpose dry cargo, container and self-trimming dry bulk carrier, 594 ft. (181 m) long overall, with a 28,000-dwt capacity on a draft of 31.8 ft. (9.7 m) and a beam of 85.3 ft. (26 m); depth is 47.2 ft. (14.4 m). Grain capacity is 36,300 cu. m. while a total of approximately 980 TEUs (including the provision for 12 TEU reefers) can be carried, 300 on deck in two tiers, and the remainder in the five holds in five tiers. Five 30-ton-capacity electro-hydraulic deck cranes are installed — one on the fore-castle and two twin units between holds 2 and 3, 4 and 5.

Propulsion is from a Dalian-built MAN B&W 5S50MC, producing 5,706 kW at 120 rpm for a fully-laden service speed of 14 knots on a daily fuel consumption of 23.5 tons.

Scanmix Announces New Line Of Single Lever Faucets

Scanmix Corp. announced a new line of single lever Marine Quality faucets for commercial marine use. These faucets provide internal mechanical presets for hot water and for volume flow. The faucet can be preset by ship's engineering to conserve water without sacrificing passenger comfort. The single lever also has a built-in device which reportedly reduces the flow to 70 percent when the handle is released. Full flow is attained by holding the lever fully open. All faucets have the safety feature of a hot water "child" stop which can be preset to avoid scalding. All Marine Quality faucets use a single, standardized, interchangeable cartridge and have the patented "soft closing," anti-water hammer system built in. Faucets have ceramic sealing (no rubber washers) and are constructed from solid cast marine brass with a chrome finish.

For more information on Scanmix
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IMO Approval Sought For Vecom's Response Products

Vecom has begun procedures for getting its tank cleaning products approved by the International Maritime Organization (IMO).

Vecom has introduced Ve-Clean Enviro OSD, a ready-for-use oil spill dispersant that reportedly prompts quick dispersion of oils, contains no petrochemical sol-

vents, and is totally biodegradable, user friendly, and non flammable.

This product has been tested by Warren Spring Laboratory, approved by the U.K. Ministry of Agriculture and Fisheries and Food (MAFF), and listed by the EPA.

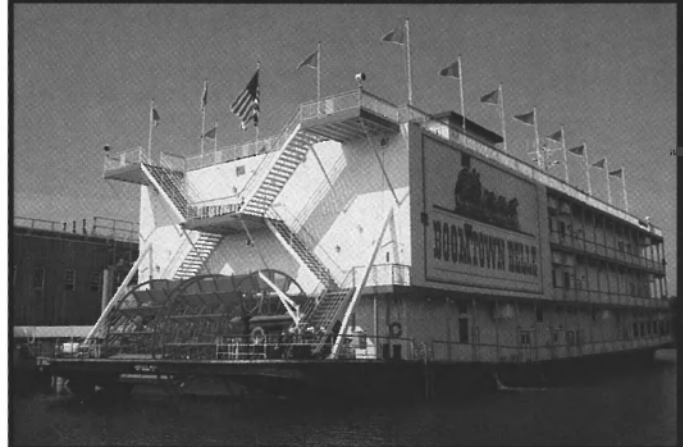
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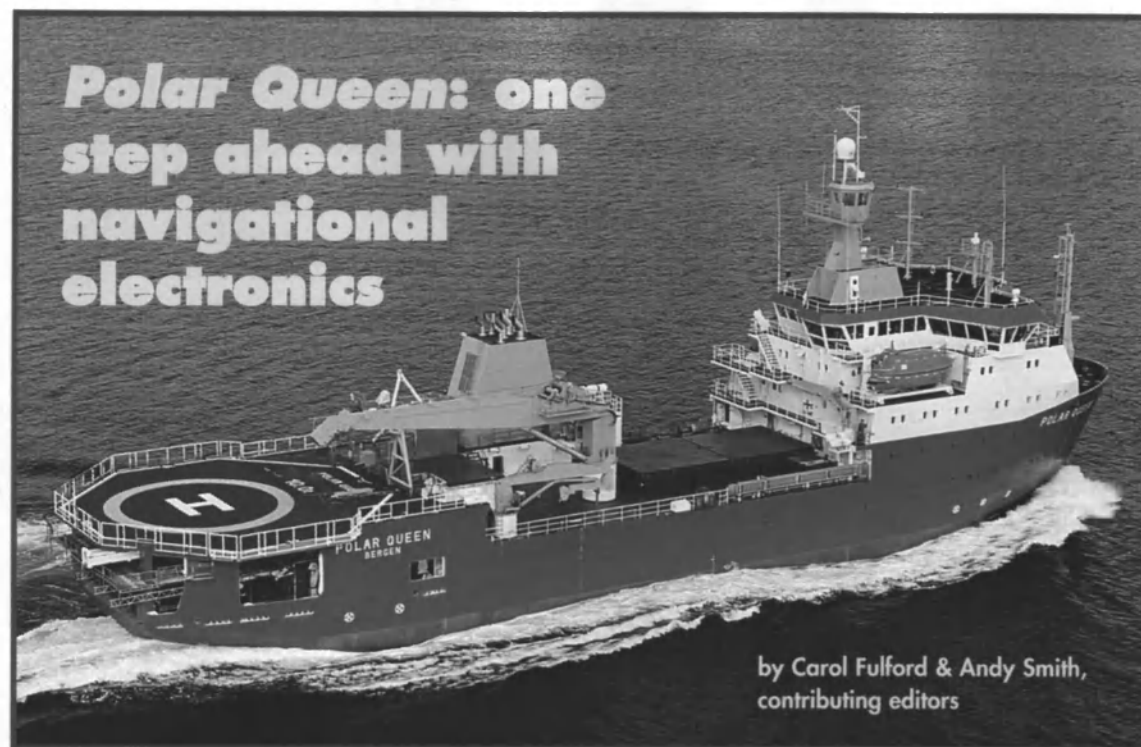
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EUROPEAN UPDATE

Polar Queen: one step ahead with navigational electronics



by Carol Fulford & Andy Smith,
contributing editors

The recent christening of M/V *Polar Queen* in Bergen Harbor, Norway, heralded yet another chapter in the story of innovative ship development for which Reiber Shipping A/S has become renowned. Not only is the vessel remarkable in having been custom-designed to provide genuine versatility, but like another celebrated Reiber creation, *Polar Circle* (now renamed HMS *Endurance*), she is being used as the first major test of an important step forward in navigational electronics.

With vast experience in icebreaking operations as well as seismic survey work for the oil industry, Reiber has attempted to produce a multi-purpose ship which will cater to every eventuality in both fields. "It is obvious that the expertise gained over many years has been built into the new vessel to make *Polar Queen* an extremely flexible and efficient working platform, both for Antarctic support and offshore survey," commented Reiber Managing Director **Sven Rong** in an interview with *MR/EN*.

This latest delivery by the Kvaerner Kleven Leirvik yard which, according to Mr. **Rong**, was on time and to a high standard, is to Reiber's own design and measures 262 ft. (80 m) long overall, with a beam of 56 ft. (17 m), and an icebreaking draft of 21 ft. (6.35 m). The vessel is equipped with a comprehensive suite of research laboratories and facilities for seabed mapping, cable laying, pipeline route surveying and full offshore exploration support. In addition, there is 3,000 cu. m. of under deck cargo capacity and ROV support provision. Mr. **Rong** believes this to be the first purpose-built ROV support ship for many years. "I am certain that the market will welcome a vessel which meets all the modern safety, damage stability and redundancy requirements," he said.

A Norcontrol "BridgeLine" 2020 integrated bridge system — comprising two ARPA radars and an ECDIS — dominates the wheelhouse. Other electronic equipment includes: Simrad 701 Mk II DP system; Trimble GPS; Robertson pilot; two Anschutz gyros; Furuno weatherfax; Inmarsat B and C; Simrad Hydrographic echosounder, and Furuno sonar. More significantly, however,

Polar Queen follows the innovative precedent set by *Polar Circle*, which was provided with the maiden commercial ECDIS installation. Part of a fully comprehensive dynamic positioning package supplied by Simrad is the first-ever application of the Simrad HiPAP High Precision Acoustic Positioning system.

Simrad's **Morten Berntsen** explained the principles. "In pipeline surveying and other detailed seabed navigation, there is a requirement for very accurate positioning of underwater vehicles. Advanced sensors, for use in seabed mapping and other underwater purposes, are installed on these vehicles, but the sensor data is worthless if it cannot be referred to geographical positions. The Simrad HiPAP is a new and improved product for underwater positioning from a vessel, with the best possible accuracy up to 6,500 ft. (2,000 m) in depth. It comprises hull mounted transducers with controlling electronics, software and operator machine interface. Two-way acoustic pulses are sent through the water giving the system a level of accuracy four times better than anything else currently available. A three dimensional position is calculated from the angle and range measurements, automatically compensating for the vessel's roll and pitch." According to Mr. **Berntsen**, this is achieved by importing information into the system algorithms from a new breed of highly accurate Seatex motion reference units.

The ship's main propulsion machinery consists of a pair of Ulstein Bergen BRG-6 marine diesels, each developing 2,650 kW, driving a single Ulstein CP propeller through a Tacke gearbox. The vessel has two 600-kW Brunvoll transverse thrusters at the stern, another pair at the bow, and an 800-kW retractable azimuth thruster. During sea trials the vessel achieved a maximum speed of 15.2 knots which was more than eight percent better than expected. According to Mr. **Rong's** predictions, this will improve the fuel consumption to around 9.5 tons per day at the service speed of 12 knots. Electrical power is provided by two 2,200-kW van Kaick shaft generators and a pair of 590-kW Mitsubishi auxiliaries.

(Continued on page 56)

London's driftwood fleet

While the City of London's busy River Thames is now far cleaner than the horrific days of the last century, when even sittings of the Houses of Parliament had to be abandoned due to the overpowering stench, the problem of floating debris remains. With an annual haul of some 3,000 tons, the Port of London Authority's (PLA) engineers are leaders on the subject of driftwood collection and have developed a substantial fleet of vessels dedicated to the task.

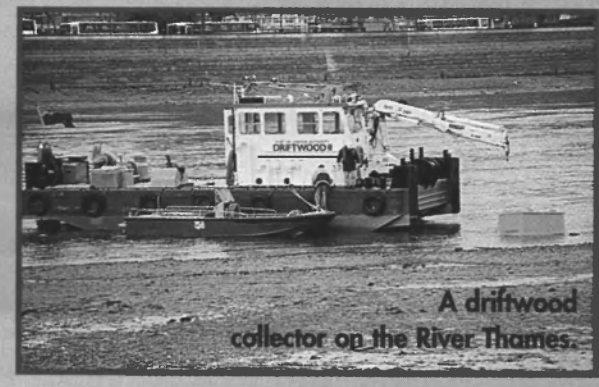
When driftwood became an apparent, prolonged problem, the PLA purchased the U.K. license to build the Disfloater debris collector from IHI of Japan. Used mainly within the confines of a harbor, the original Japanese design comprises a self-propelled catamaran with collection baskets suspended between the hulls at the stern. Normally these would be unloaded and emptied by shore crane, the craft returning to the quay when full. The PLA, however, needed to cover 26 miles of river without convenient shore discharge points, and the craft itself had insufficient stability to carry its own crane.

Nevertheless, it was quick and effective and the PLA solved its particular problem by producing a "dumb" shortened form of the IHI design, minus engine room and propellers. A separate swim-ended 46-ft. (14-m) long I-shaped work platform with crane, wheelhouse, and twin engines provided the maneuverability. The baskets, now able to be twice the size of the original design, are tipped by the crane into barges strategically moored along the river. A full basket contains approximately two tons of driftwood.

The concept has proved remarkably successful and now three of these systems, named appropriately *Driftwood I*, *II* and *III*, are in operation discharging to 24 barges. These are periodically towed downriver to a land-fill disposal site by one of two available PLA tugs. The self-propelled platforms have a free-running speed of more than eight knots — courtesy of a pair of 235 hp Caterpillar diesel engines — and possess the advantage of fulfilling a multi-role function when separated from the Disfloater unit. All are equipped with salvage pumps and pollution spraying systems.

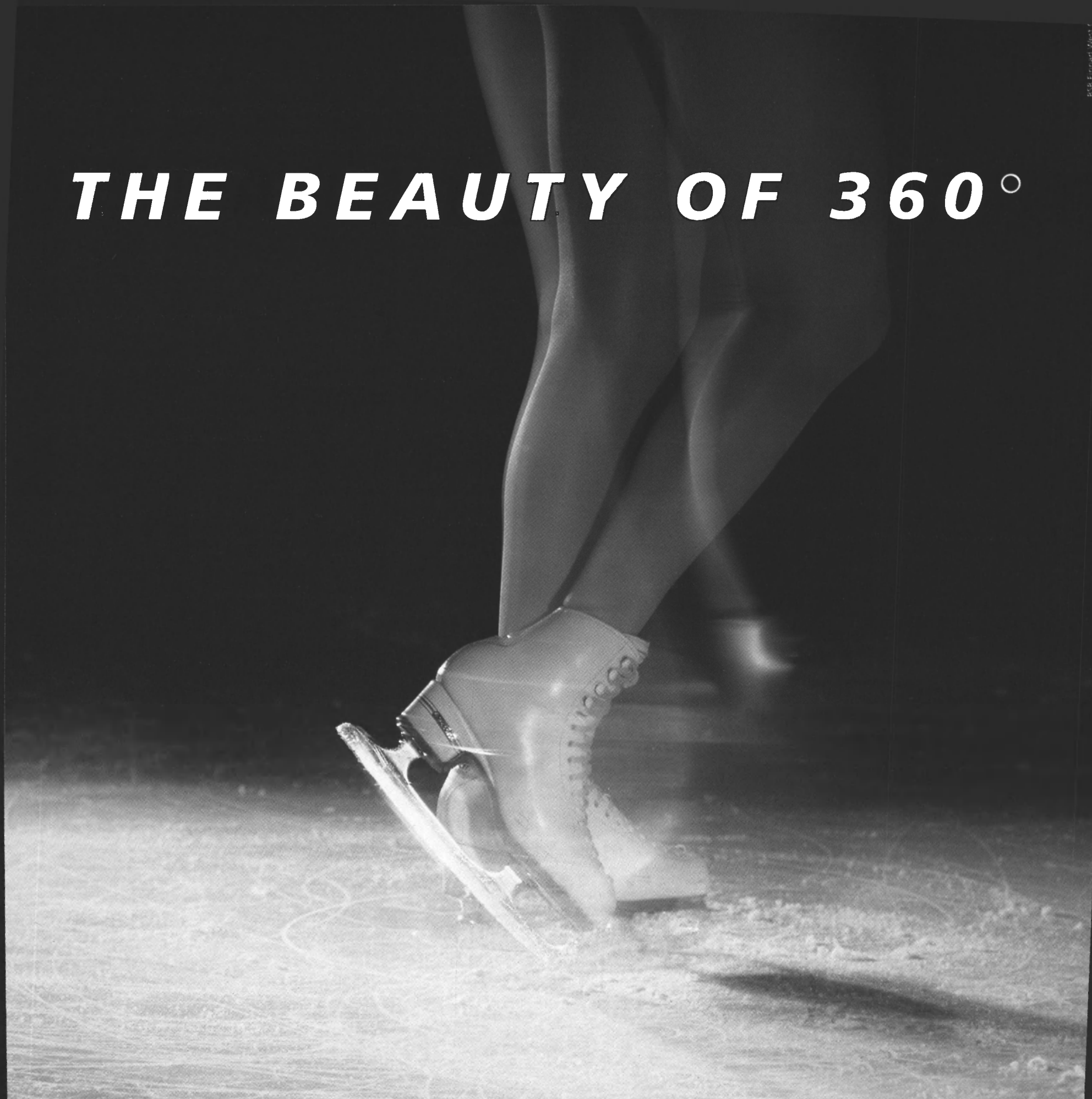
Each of the systems has a fast trihedral hulled aluminum workboat with the combined roles of fast reaction boat (to quickly recover driftwood reported as causing a navigational hazard), diving tender, and for use in foreshore retrieval operations, where plastic is a particular problem. Newly delivered from manufacturer Pepe Boatyard is a 32 knot, 22-ft. (6.7-m) Hamilton waterjet driven ver-

(Continued on page 56)

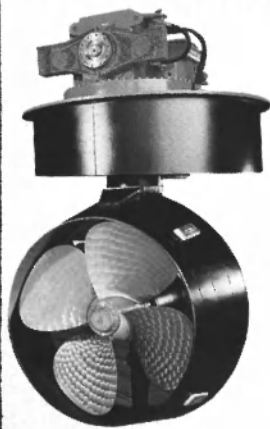


A driftwood collector on the River Thames.

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EUROPEAN UPDATE

(Continued from page 54)

The vessel carries two Harding lifeboats, a Norsafe Magnum 750 rigid inflatable MOB craft, and eight RFD survival rafts, each with a capacity of 20. Four Norlift

cranes, one dedicated to ROV activities, have also been installed. The aft helideck (approved for Super Puma AS 332L) is located above the research deck area, which has direct access to both wet and dry laboratories. The vessel

features 69 berths in 26 cabins with accommodations for 11 crew members in single cabins. Provisions for comfort onboard include a gymnasium and sauna, in addition to the normal dining, day room and hospital facilities.

As of the beginning of October, *Polar Queen* was on final sea and dynamic positioning trials under the command of Peter Brandal, one of Norway's most experienced captains in arctic conditions. Upon completion of these final trials, the vessel sails for Bremerhaven in Northern Germany to load equipment for the German Geomaud expedition to Queen Maud Land in Antarctica, picking up the scientists, helicopters, and remaining stores in Cape Town, South Africa, which will be the vessel's temporary home base. After transporting the shore-based research team, the vessel will also carry out separate ocean exploration projects for the BGR Hannover Group and the Alfred Wagner Institute. This latter work involves preliminary seismic surveys prior to an ocean drilling program.

A busy and varied first season's activity for *Polar Queen* appears to justify the Rieber concept. "Our intention was to build a cost-effective vessel able to combine transport and research, thereby saving on the scientific institutions' shrinking budgets," Mr. Rong said. "Furthermore, she will be back in Europe in April 1996 ready for the North Sea peak season for bottom survey work."

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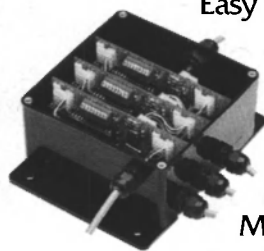
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London's driftwood collectors

(continued from page 55)

sion, which demonstrates, even in such an outwardly simple craft, careful attention to detail and the benefit of long design experience.

One major improvement is a special control system, making it easier for the helmsman to take advantage of the enhanced maneuvering capabilities of the waterjet. Designed by Hamilton U.K. in consultation with the PLA using standard proven components, the system uses the power steering pump fitted to the single 230 bhp Volvo TAMD 42WJ marine diesel to provide hydraulic power to the jet's reverse deflector (bucket).

The deflector is controlled by a heavy-duty waterproof Kobelt jog lever mounted on the console alongside a position indicator comprising 10 high intensity LEDs. Full ahead is indicated when all 10 LEDs are illuminated — astern by a single light.

A waterjet was selected for its shallow draft advantages, but a Borg Warner direct drive gearbox is incorporated in the system to allow backwashing of the jet should debris be drawn into the intake.

EUROPEAN UPDATE

"Limo" RoRo for Middle East

Building a small RoRo ferry for a Middle Eastern client proved an interesting challenge for the Scottish yard, Corpach Boatbuilding Co., as the owner called for a vessel capable of carrying two limousines that were able to be loaded from either a concrete ramp or a sandy beach. The ferry had to have shallow draft at both ends, be simple to operate with a small crew, and fulfill a demanding build specification.

A design by a local Scottish firm of naval architects, A.G. Salmon & Co., resulted in a hull shape which met the draft requirements of 2.7 ft. (0.85 m), propeller protection, stability, and load carrying capacity. At 55.7 ft. (17 m) x 15.5 ft. (4.75 m), the vessel — named *Shilala* — has a double articulating ramp fitted forward and aft with all remote, auto-sequenced controls in the wheelhouse. The latter is elevated and offset to starboard with 360-degree visibility, and a center island console from which the helmsman can easily steer when facing either forward or aft.

Hull construction is of 6-mm steel plate, longitudinally framed with two watertight bulkheads and several deep ring frames. The wheelhouse is also of all-steel construction, with stowage space and engine room access via watertight doors below wheelhouse level, above the main deck. Outfitting is robust, including 3.2-ft. (1-m) high bulwarks with handrails on the car deck, and D section fendering on the mid-length section. Lashing points are fitted for security and lifting eyes are incorporated for shipment and craneage.

Choosing suitable propulsion machinery led the design team to U.K.-based Kort Propulsion. An all-hydraulic package was devised, using two Vickers piston pumps in tandem, driven directly by a 300-hp Scania diesel. The system powers two propulsion units de-rated to about 100 hp each, together with a 30-hp bowthruster and bow and stern ramps, which each require about 6 hp. Three Danfoss proportional valves receive all the output from the two pumps, provide a feedback signal into the pumps to monitor their output to the level required, and monitor the hydraulic fluid to the five services according to the signals received from the wheelhouse. The complex engineering necessary to achieve this is hidden in a small number of integrated assemblies, some of which have been specially designed and manufactured, resulting in a simple layout and minimum pipework.

The ramps are long in relation to the vessel, and are more complicated than typical vehicle ferries.

This is because the outer leaf stows underneath the inner leaf in order to avoid a height restriction on the car deck. Lowering or raising the ramps is a sequenced operation activated by pressing a single button in the wheelhouse and the sys-

tem includes provisions for the ramps to change angle while lowered to allow for tide or turbulence. Care has been taken to ensure smooth lowering and avoidance of the instability which is possible with proportionally controlled sys-

tems. Kort Propulsion supplied the complete hydraulic package, including pumps and valves, for the propulsion motors and switches, with Corpach carrying out installation. Control for the

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propulsion units is simple via a twin-head Kobelt system, operating proportional valves to vary propeller speed. Kort's bowthruster units are belt-driven from hydraulic motor, so the drive housing can be used as a main or auxiliary propulsion unit. Two KT170 propulsion units and KT30 bowthruster unit have been fitted. Currently completing sea trials at Corpach, *Shilala* is to leave for a five-day delivery trip to Hull for onward shipment to Dubai.

Norwegian cat speeds in African oilfields

Nigerian operator, InterOil Services Ltd., has taken delivery of the first of three planned identical aluminum catamarans from Norwegian yard, Hølen. Designed by Multi Maritime A/S, the vessel, named *Ibis III*, has a genuinely multi-purpose role for transporting crew, passengers, and cargo around the offshore oil fields of the west coast of Africa.

First-of-class for Hølen, *Ibis III* has been carefully engineered to maintain high speeds in adverse weather conditions. Her hulls, which are designed on the minimum wetted surface principle, are narrow with curved frames and feature a smaller than usual section at the stern, which is made possible by the vessel's weight distribution.

A breadth of tunnel in excess of 8.2 ft. (2.5 m), well rounded bows, and a high freeboard also help to

ensure seagoing characteristics which the builder claims are comparable with vessels of much greater length.

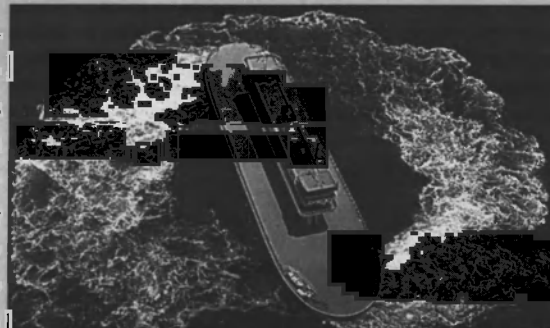
Just 68.8 ft. (21 m) long — with another 5.7 ft. (1.75 m) added to incorporate a special durable fendering system, developed in order to allow safe direct contact between the vessel and offshore installations — and a 25.4-ft. (7.75-m) beam molded, she is able to carry 62 passengers in a spacious air-conditioned passenger saloon. The latter is situated on the main deck and is fitted with aircraft style seats and tables, televisions, centralized radio entertainment system and a kiosk serving light refreshments.

Aft of the saloon is a lobby with three toilets for crew and passengers, and crew rest rooms and shower. Luggage space is arranged forward and on the open main deck, which also houses an electro-hydraulic crane aft to starboard. Further crew accommodation is installed on the bridge deck to the rear of the wheelhouse, offering cooking facilities, sofa, table and television. Navigation and communications equipment is controlled from a modern operation cockpit and a maneuvering station also fitted at the aft end of the deckhouse.

Ibis III is powered by twin MAN D2842 LE 402 diesel engines, each developing 806 kW at 2,300 rpm. These drive through two Servogear variable-pitch propellers with Mekanord V gears and Servogear high effect rudders and brackets. Auxiliary power is supplied by Cummins/Stamford diesel/generator sets, each rated at 52 kW.

TRINITY DELIVERS POCAHONTAS, PASSENGER/VEHICLE FERRY, TO VIRGINIA

Pocahontas, a new 263-ft. (80.25-m), 500-passenger/70-vehicle ferry, was delivered to the Virginia Department of Transportation by Moss Point Marine, Inc., of the Trinity Marine Group. She is now operating between Jamestown and Scotland, Va.



Overall, *Pocahontas* is 263.3 ft. long, with a 65.3-ft. (19.9-m) beam, and a 10-ft. (3.05-m) normal operating draft. She is powered by two General Motors EMD 12-645 E6 diesel engines developing 1,300 hp each at 800 rpm. They drive Voith Schneider propulsion and steering units mounted below the bow and stern.

John Dane III, president of the Trinity Marine Group, said the system is in use on approximately 300 ferries worldwide and that Trinity shipyards have built more vessels with Voith Schneider cycloidal propulsion units than any other U.S. shipbuilder. He added that Trinity holds an option with the state of Virginia for an additional ferry.

Electrical power for the *Pocahontas* is provided by three Lima/Marathon 7AK-150 generators driven by three Detroit Diesel V71-N diesel engines. She is equipped with two Raytheon radars and four ICOM radios, and has a capacity for 20,000 gallons of fuel and 4,500 gallons of potable water. *Pocahontas* is ABS classed A1 Ferry Service and certified by the U.S. Coast Guard.

Trinity has also built ferries for use in the Virgin Islands, Puerto Rico, Panama and the West Indies.

For more information on Trinity
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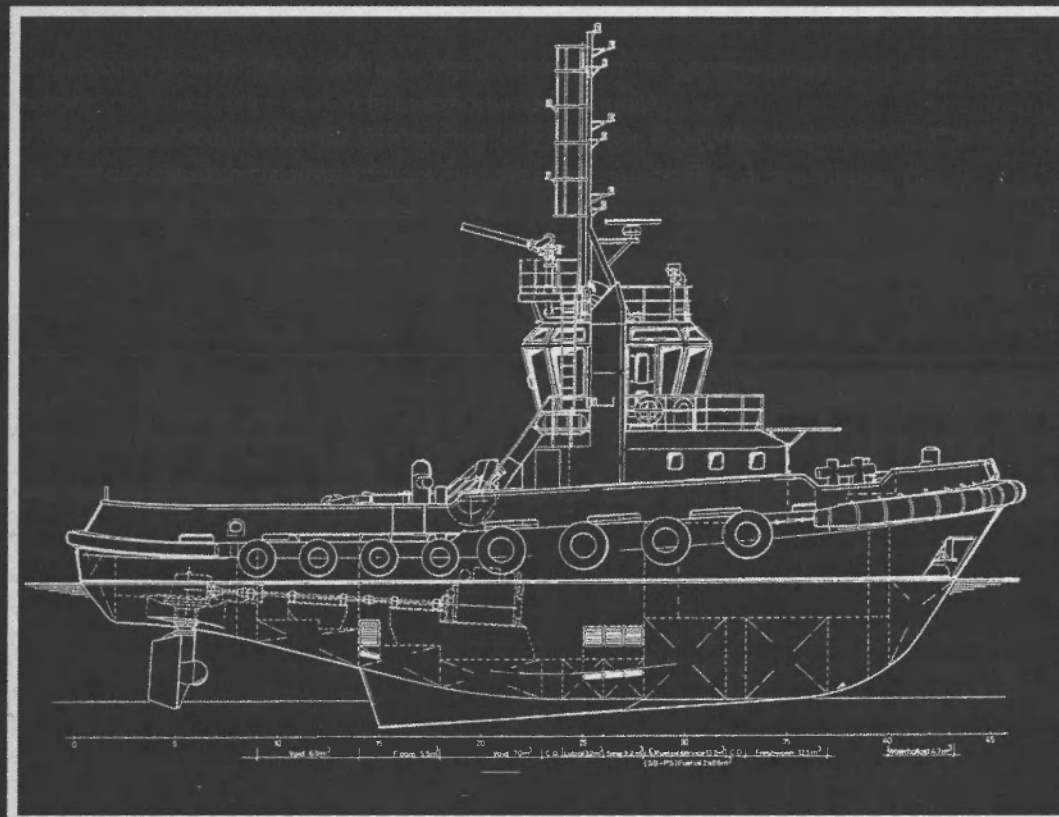
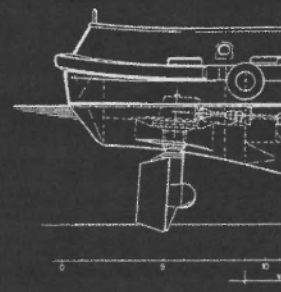
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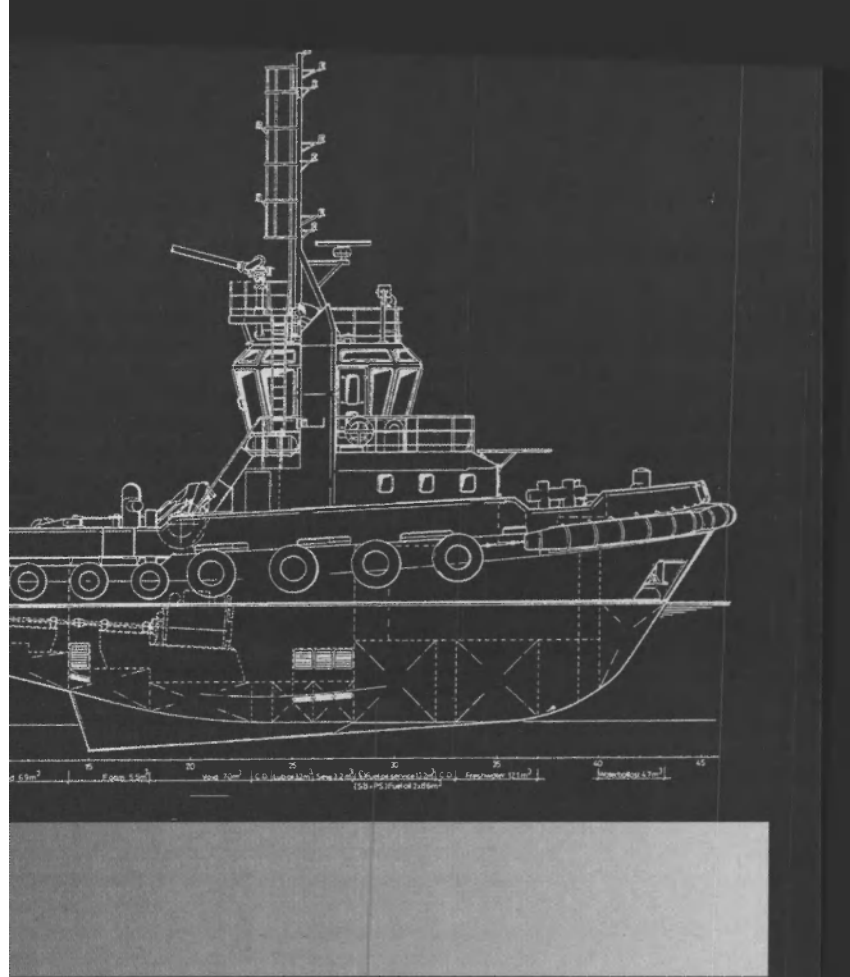
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by Kathleen Gleaves,
contributing editor

The first of a new class of giant liftboats will soon enter the work fleet in Liverpool Bay, England. Built in the U.S., the *Irish Sea Pioneer* was jointly designed by Bollinger Shipyards and Halliburton Energy Services, Inc. to service the oil drill platforms dotting the U.K.'s sector of the North Sea. The self-elevating vessel consists of a 180-ft. by 92-ft. (54.8-m by 28-m) ship hull with a 9-ft. (2.74-m) draft. An electrical-driven jacking system raises and lowers four, 240-ft. (73.2-m) legs to the sea floor, then raises the vessel to the desired working height. Although small OSVs have successfully tended oil drill platforms in the calm, shallow waters of the Gulf of Mexico, the *Irish Sea Pioneer* leads the field in terms of seahardiness, size, and scope of operation.

High Tech Solutions

Considerable technological upgrades and innovations were necessary for a lift vessel to function safely year-round in the hostile, open-ocean environment of England's coastal waters. Where the tripod leg arrangement on con-

ventional vessels has been primarily a means of stabilizing ships against minimal tidal motion, the *Irish Sea's* four triangular lattice/strut legs, measuring 13 ft. (3.96 m) per side, provide stability in tidal currents up to 2.4 knots, in 120-ft. (36.6-m) waters, and provide a maximum working platform height of 200 ft. (60.9 m) above the sea floor. The vessel is built to survive 70-knot winds and 40-ft. (12.2-m) seas.

Unlike previous models, the leg housings on the *Irish Sea* are built into the ship's hull for safety and stability. Most previously manufactured lift vessels utilized a tubular leg. The change to the truss/lattice style was necessary to reduce weight and wave drag, and required a radical change in jacking gear. The boat will provide living and working quarters for roving platform maintenance crews, effectively replacing the separate and expensive live-aboard crews currently crewing the rigs. These reduced housing needs will streamline the platform's profile as viewed from shore, and improve the economic viability of offshore oil production. In addition to its maintenance and monitoring func-

tions, the *Irish Sea* will also provide support facilities during construction of new platforms and in emergency situations. The vessel will follow a regular maintenance route returning to home port in Liverpool at week's end.

Cruising at six knots in a 20-knot wind, travel time between rigs will rarely exceed one day. Approach paths and optimum docking locations are determined with a Laser Positioning System consisting of a laser ranging head, permanent optical reflectors on each platform, and a small computer in the bridge. System accuracy is estimated to within 8-in. at a distance of 1.25 miles. The rack and pinion jacking system lowers the legs at the rate of 12 ft. per minute. Full motor torque is applied to each leg as it reaches the sea floor, firmly grounding the spud-can feet. The inverted, cone-shaped bases measure 18 ft. (5.5 m) across, and are designed to minimize scouring and sliding in the hard sand and clay of Liverpool Bay. According to Klaus Schoener, marketing manager of Marine Systems, Siemens Energy and Automation Services, the most difficult moment of the docking procedure occurs as the legs hit

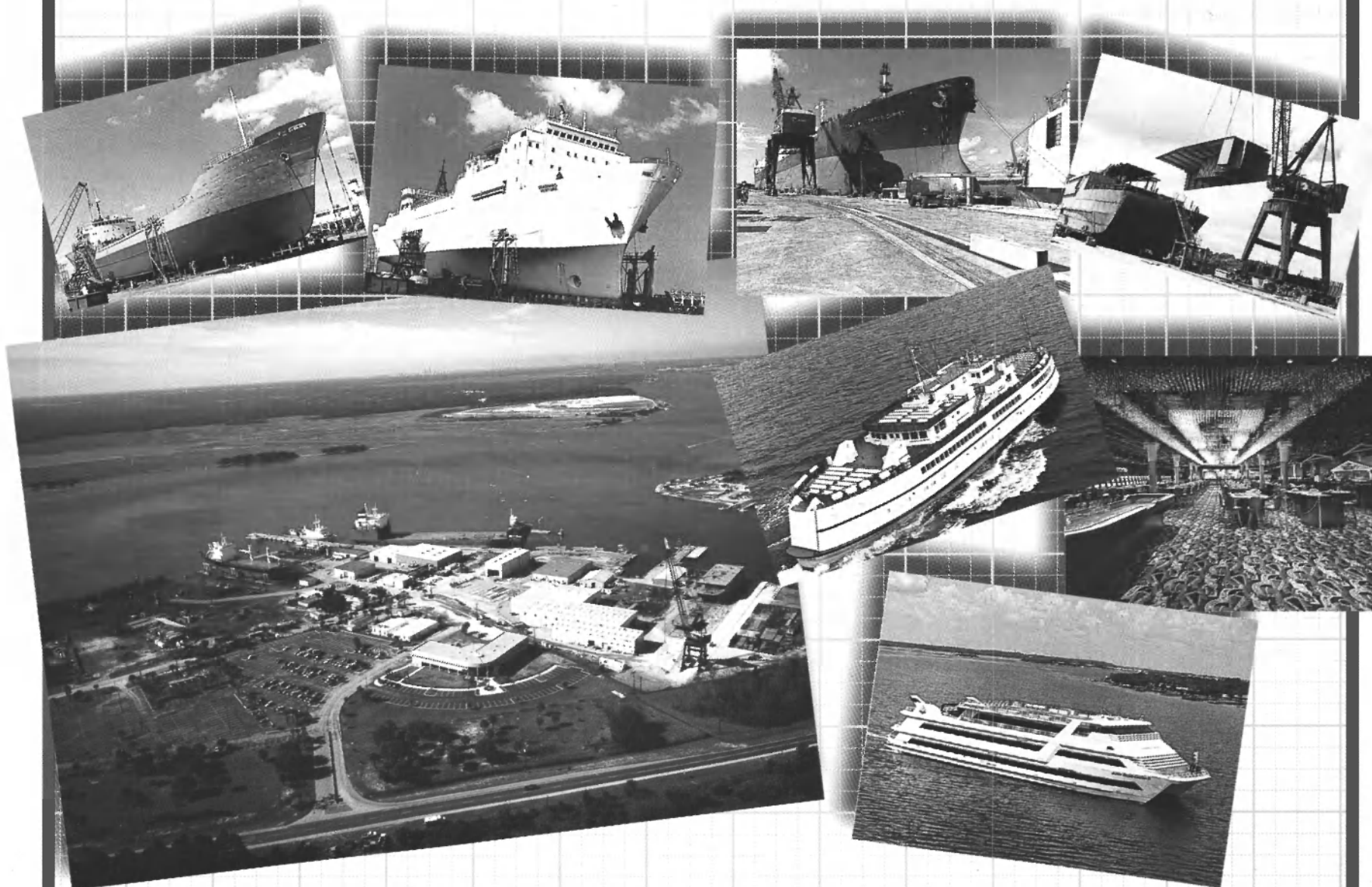
solid ground while the vessel is still floating at sea level. In the few moments between set-down and when the vessel and crew are safely suspended above wave height, an intermediary, "soft torque" system keeps the legs anchored, yet allows the vessel to ride with the sea flow.

Siemens, supplier of the drives and control system, worked closely with LeTourneau, Inc., (the leg and jacking gear manufacturer) to achieve this unique function. Once all four legs are down, the hull begins climbing the legs at a rate of 6 ft. per minute.

Self-leveling sensors automatically control the speed and keep the deck flat. The legs can lock into any position both statically and dynamically. Likewise, the hull can lock into any position along the leg. Preloading occurs as soon as the hull is above wave height. Two diagonally opposing legs are raised slightly and the full weight of the vessel tests and grounds the remaining legs. The procedure is repeated for the opposite legs. With the legs securely set, the vessel resumes climbing to its working height. Once the vessel is in working position, it plugs

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an umbilical cable into the platform's service center assuming direct control of all functions including the fire/water system, an important and necessary safety function while the vessel and crew are in close proximity to the drill rig. The crew reviews and monitors all functions, performing routine maintenance and repairs before unplugging and continuing on its scheduled rounds. Both approach and deployment are accomplished without disrupting platform production activities.

Electric Drives Replace Hydraulics

Among its many innovative features, the new vessel has all electric drives, unlike the more traditional hydraulic systems utilized on smaller workboats. The decision to employ electric lift drives came after engineering analyses revealed a need for more than 20 tons of hydraulic fluid to operate a comparable hydraulic system, a quantity unacceptable in the environmentally-sensitive coastal waters.

The electrical system proved to be less expensive than a hydraulic system of equal performance. The 92 percent overall efficiency rating

of the electrical also meant a reduction in actual installed power allotted for jacking. Finally, the built-in redundancy of the electrical system guarantees uninterrupted performance in spite of multiples. The variable speed electro-mechanical jacking system includes the legs, jacking gear, and control system as an integrated package supplied by Siemens and LeTourneau. The package consists of 48 drive/motor combinations with 12 drives per leg, four on each side of the leg. The motors are connected via a rack and pinion system, and are equipped with fail-safe disc brakes. According to Mike Oser, engineer for Halliburton, over 500,000 ft. of electrical cable were installed on the *Irish Sea*.

Propulsion & Control

The propulsion system consists of four Aquamaster Z-drive units located near the corners of the vessel. The aft thrusters each deliver approximately 1,500 hp; the forward thrusters deliver 1,200 hp. An integrated approach shares power between the thrusters and the jacking system. While underway, full power is given to the thrusters. During positioning, the thrusters and jacking system run

simultaneously. The jacking system, which is only lowering the legs at this point, requires only five to 10 percent of available jacking power. Sufficient power remains to operate the thrusters at full power. Once all four legs are securely anchored in position, power is diverted from the thrusters to the jacking system to raise the hull out of the water.

In addition to the space savings, economic benefits, and system redundancy for crew safety, the all-electric system offers a measure of environmental safety not possible with hydraulic units. With the rigs positioned off of some of England's most valuable and fragile coastline, a spill of hydraulic fluid in the volumes needed to service a vessel of this size would spell disaster for the local tourism and fishing industries, as well as Britain's highly-prized marine and nature reserves.

Deck Layout

The superstructure is located far forward to maximize the separation between the wellhead and the crew's quarters. The vessel provides a helideck, firefighting equipment, operations control and utilities support, as well as two heavy-lift cranes, and deck space for

maintenance equipment. It features comfortable living quarters for a crew of 42 — 10 vessel operators and a maximum of 32 maintenance specialists.

The unique leg structures and the jacking/braking system were built at LeTourneau's facility in Longview, Texas. Siemens' plant in Alpharetta, Ga., built the variable-speed electric drive units. The company also supplied the control panels, brake resistors, level sensors, switchover circuits and phase-shifting transformers. The majority of the construction work took place at Bollinger's shipyard in Louisiana, with final outfitting accomplished in Corpus Christi, Texas. The *Irish Sea Pioneer* is classed and certified by the American Bureau of Shipping (ABS). It was shipped to the U.K. in early October for final commissioning. The vessel will be operated by Seaforth Maritime, Liverpool Bay, England.

For more information on the companies detailed in this article, please circle the appropriate number on the Reader Service Card in this issue.

ABS	47
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THE ARTICULATED TUG/BARGE

More and more, owners are moving toward pushing barges at sea — a transition made possible by the application of the Articulated Tug/Barge (ATB). The ATB has provided the tug and barge industry with a vessel that can effectively compete with ships in two areas: speed and weather reliability. The ATB is designed to shine in both areas, and it does so without sacrificing the economic benefits of tug and barge construction and operation. The modern ATB tug is a fully functional ocean tug, capable of towing on a hawser if required. The ATB barge is designed so that it can work with other tugs and be towed. The difference is the connection between the tug and barge.

Towed barges are often weather-bound when sea states or weather along their trade route are projected to be risky to operation. This has been particularly true along the U.S. East Coast, where tank barges often gathered at the approach of bad weather. Delays of two to three days are not unheard of.

A firm at the forefront of ATB design has been Ocean Tug & Barge Engineering (OT&BE). Central to OT&BE's ATB concept is the use of the proprietary Intercon connection system, of

which OT&BE's principal was a co-patentor. In continuous operation for more than nine years now, this system has reportedly operated without need of a single disconnection at sea due to weather. The six vessels now working with the system have operated in seas that match conditions simulated during the extensive model testing program Intercon undertook prior to construction of the first system. Robert P. Hill, president of OT&BE, filed this report on the progress of the ATB.

The ATB design is not a compromise between pushing and towing, but is touted as the most efficient design possible in pushing the barge. ATB speeds are now at more than 12 knots service speed, and with the new generation currently being designed, speeds of more than 13 knots are possible. Here are some possible benefits of the ATB, particularly with an Intercon ATB.

Reduced bow damage to barges because the tug crew can feel excess pounding.

Reduced fender replacement (virtually none in 7 years) and tow wire replacement costs.

As much as 25 percent fuel sav-

ings vs. towing.

Reduced engineering and construction costs vs. a tanker of equal deadweight.

More control over barge and less dock damage, emergency maneuvers without fear of breaking wires or tripping the tug.

Higher average speeds, light and loaded.

Ship-reliable ETAs.

Ability to sail through a wider range of weather conditions.

Reduced port time/elimination of transfer time from pushing to towing gear and back.

Availability of a large, high horsepower ocean tug for emergency and salvage work, and a means to deploy a spill boom in an accident.

All functions controlled from pilothouse.

Presently, OT&BE is providing the contract design for a 33,000-dwt ATB for Penn Maritime of Stamford, Conn., including the design of the barge and the contract design of the tug based on an adaptation of OT&BE's new Voyager class ATB tug. Penn built the first totally new Intercon ATBs

in 1994-5.

OT&BE is also participating in the Crowley Maritime ATB project by providing subcontracted ATB consultation for the barge design undertaken by Elliott Bay Design Group (Seattle). In addition, OT&BE is providing the design for the 12,000-bhp tugs that will push the barges, with a second adaptation of the Voyager class tug, along with conversion engineering for a group of existing tugs. This unit is also an Intercon ATB.

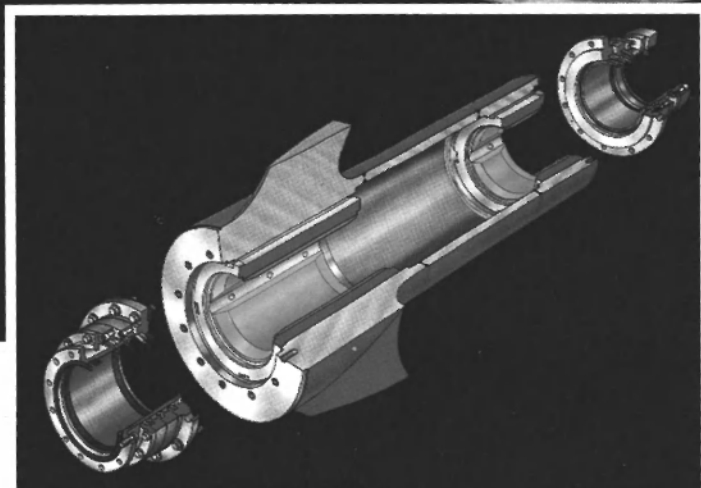
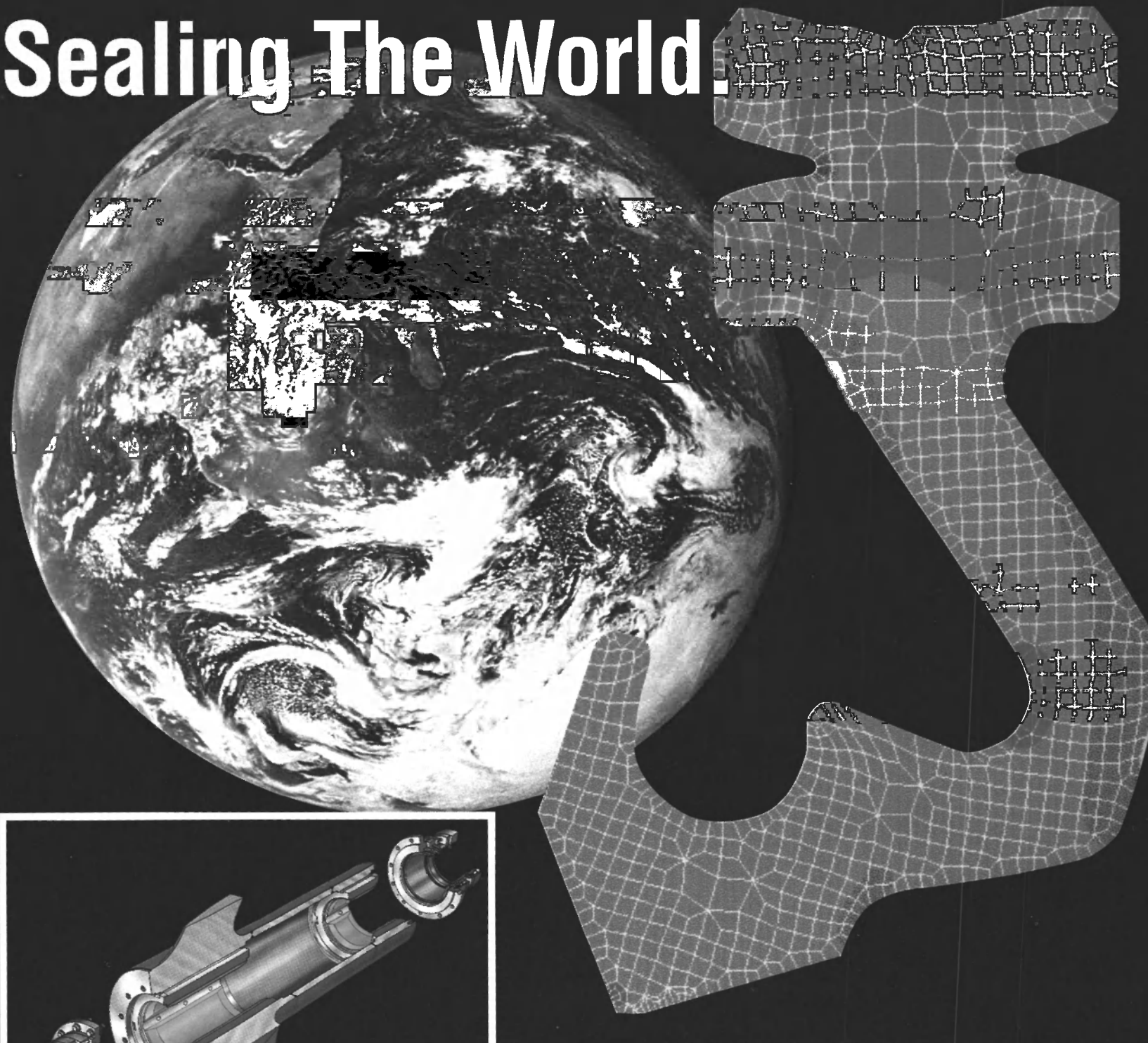
OT&BE client Maritrans Inc. (Philadelphia) was the first Intercon ATB customer and has a total of four units in service. The first, the *Intrepid/Ocean 250*, went into service in 1986. The latest, the *Liberty/Maritrans 300*, has a new type of Intercon system specially designed for use in lightering service. It was delivered in October.

OT&BE engineered both the barge and tug modifications to this unit, and is working with two shipyards, providing conceptual design services for Maritrans.

River/Ocean Systems has begun design of a 10,000-lt. dwt ATB bulk carrier using a contra-rotating Aquamaster Z-Drive propulsion system. The first is to be built in 1996, with major design responsibilities for the ATB-related engineering and barge hull design

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given to OT&BE. OT&BE is working with both the owner and Leevac Shipyards on the project.

The Voyager Class

The Voyager class tug took into account the comments and ideas of shipyards, owners, crews and regulatory bodies. It is designed to be built economically, and to provide the horsepower and fuel capacity to allow for both higher speed and longer range. Equipped with — and primarily designed to — an Intercon connection, the tug is adaptable to all other systems, with only minor overall changes.

With a length (between perpendiculars) of 150 ft. (45.7 m), a beam of 44 ft. (13.4 m) and a depth of 24 ft. (7.3 m), the tug is designed with full towing capability and a single tall pilothouse. It can be produced with a number of propulsion packages.

Current vessel contracts include one group featuring a pair of EMD 20-710G engines, for a total of 10,000 bhp specified. Another group calls for a pair of Caterpillar 3616 engines, producing 12,000 bhp. A third group of vessels will drop down to 8,400 bhp with a pair of EMD 16-710G engines. The tug design has the size and tankage to accommodate a heavy fuel installation.

The hull is designed to provide minimal resistance in the stern notch of the barge, with lines developed to provide smooth flow from the barge to the tug hull. Tankage is designed to trim the tug properly in the presence of the ATB connection equipment, and the stability of the design exceeds current standards. The tug is also designed for ease of maintenance.

The tugs will be classed by ABS and will meet the requirements for U.S. Coast Guard designation as

Dual Mode tug/barge units. Accommodation is provided for up to 10, expandable if required. The tugs can meet SOLAS requirements based on an International Tonnage certificate.

OT&BE has also developed the Atlantic class ATB tug, which is 120 ft. (36.5 m) long, with a 36-ft. (10.9-m) beam and 20-ft. (6.1-m) hull depth. This design is arranged for up to 5,600 bhp.

The Intercon Connection

The operation of the Intercon connection system is straightforward. It is a single degree of freedom connection that, like other systems, establishes a transverse, fixed axis between the tug and barge, around which the vessels are allowed free relative rotation, or pitch. All other movements such as yaw, roll, and heave are restrained. Thus the tug heaves and rolls with the gentler motion of the barge, and the system forces are predictable.

In the system, the port and starboard sides of the notch wall are fitted with a vertical channel member with the open side facing the barge centerline. Notches, or teeth, are incorporated on the fore and aft sides of the channel to eliminate vertical travel. The channel sides are tapered to provide a wider opening to ease connection, and the side taper is flat enough to minimize resultant thrust from higher bow to stern loads imparted on the barge by the tug. The notches lie on the taper of the sides and are of equal angle, peaked to balance forces, and to minimize multi-angle planes of contact when engaged by the tug's connecting helmet. The vertical extent of these connection ladders is determined by the relative draft range desired for operation, and they can

be supplied in a skeg module, pre-fabricated at Intercon for installation as a unit into the barge.

The machined steel connecting heads of the tug, which are inserted into the channels port and starboard to make the connection, are configured to match the channel tooth pattern. Each head is mounted on a spherical support to allow auto alignment to the channel while retaining the greatest load carrying capacity in a minimal space. The connecting head of the tug is thus allowed limited movement in all directions except rotation about the horizontal centerline of the connecting points. Horizontal rotation is transmitted to the ram, which supports the head by guide locks on the top and bottom of the head. The ram is a heavy fabricated steel cylinder supported by a bronze bushing. The bushings are mounted in the I.D. of a Load Box structure which is a stress-relieved, steel fabrication designed to transfer all structural loading, shaped to suit the tug, and pre-fabricated and outfitted at Intercon with full lighting, access, wiring, piping, etc. for insertion into the tug as a module.

To extend or retract the head, the rams are moved along the horizontal axis on the inside of the ram. The threaded shaft is operated by electric motors through gearing mounted to the housing. Two drive motors are provided — one for low-torque, high-speed operation, the second for high-torque, low-speed operation. The high-speed motor is direct-coupled to the gearing. The low-speed motor is connected to the gearbox via an air clutch, to protect it from overspeed in high-speed operation. Emergency drives are also connected to the gearboxes, for use in the event of an electrical power failure.

Control of the system is accomplished locally at the units, and remotely from the pilothouse. Under normal operation, the system is 100 percent pilothouse controlled, and local control at the units is for maintenance or emergency operation. All parts of the unit are accessible for maintenance, and other than the structural fabrications, an effort has been made to provide for mechanical parts which can be purchased off-the-shelf.

Side to side motion of the tug in the notch is completely eliminated, with no need for added fendering or expandable bladders between the tug and the barge notch wall to restrain sliding of the tug. The system also offers the ability to connect at any draft of either tug or barge, reducing costly port delays incurred while trying to ballast two vessels to match each other. This is of major importance in the product trades.

It allows for two-porting, eliminates ballasting of either vessel, and means the crew has no concern with regard to the relative locations of the tug and barge connection points. Engagement can also be accomplished with the tug and barge heeled up to three degrees relative to each other, with full system operability.

Connection to the barge requires virtually no crew intervention outside the wheelhouse. The same is true for disconnection. The tug's shape is not altered to fit the system, so the tug can handle ordinary, non-system barges as well. There are no ungainly projections from the hull, either structural or system-related, which can damage the vessels during connection/withdrawal, or cause the tug to be unsuitable for other work.

Seaclear Industries Adapts Technology For Workboats

Seaclear Industries, Inc., Bothell, Wash., reports that it is in the midst of several new tug projects, one of which includes outfitting the recently delivered Alaska Marine Charters tug *Gyrfalcon* with several window heaters. For installation on the *Gyrfalcon*, three front windows and one rear were laminated with the heaters. The front three were specialty-cut to fit the window dimensions symmetrically, and cover almost the entire glass area.

Jason Patterson, Seaclear sales and marketing manager, says that the product has made a dramatic transition into the workboat industry. The company has reportedly attracted several contracts for both new construction and retrofit applications for large tugs and vessels in the Great Lakes and

Alaskan waters.

Seaclear window heaters help to ensure visibility in freezing or snow conditions, and prevent the formation of condensation. The laminates come in stock sizes, and can be altered to better fit specific window dimensions, as in the case of *Gyrfalcon*.

For more information on Seaclear Industries, Inc. Circle 20 on Reader Service Card

Penn Yan Secures California Patrol Boat Award

Penn Yan Marine Manufacturing Corporation's Pendragon Commercial Division, Penn Yan, N.Y., has been awarded a contract to provide a 25-ft. (7.6-m) long, 9.3-ft. (2.8-m) wide, fiberglass patrol boat to the California Department of Parks and Recreation. The vessel will be used for search and rescue

operations by the American River District in Folsom, Calif. According to plans, the vessel will be manned by emergency medical personnel, and the vessel has therefore been designed to act as a water ambulance, with the capability for providing emergency care while en route to the hospital.

Penn Yan will use its 257 Aggressor powered by a Mercruiser 7.4 L Bravo Three gas engine. Specific vessel modifications include installation of a first aid station, special water lines, a custom-made wheelhouse, heater, special storage compartments, and electric power for medical equipment.

The company is also busy constructing a fireboat under contract with the City of Redondo Beach, Calif., and has recently completed a contract to supply surf rescue boats to New York state beaches.

For more information on Penn Yan Circle 21 on Reader Service Card

Kelvin Hughes Radar Operational In Workboat Applications

Kelvin Hughes, exclusively represented by Radio Holland USA b.v., offers some of the newest, technologically advanced radars for the workboat market, the NUCLEUS 5000 Series. The series is available in relative motion, true motion, or automatic plotting (5000 AP) versions, and uses a 500-mm color display which gives a 250-mm IMO-compliant radar picture.

Radio Holland sells, installs, and services the 5000 Series, as well as the NUCLEUS 6000 Series, the NINAS Integrated Navigation Display, and the Kelvin Hughes Integrated Bridge Display for oceangoing vessels.

The 6000 Series was introduced a few years ago in the U.S., and late-

WORKBOATS

ly the product line has experienced an increase in workboat, as well as deep sea and luxury market sales, which Kelvin Hughes attributes to the system's easy operation and features, which include:

- Limited number of controls (mouse-like trackball with three push buttons)
- Simplistic menu-driven operation
- High-definition color display
- Compact table top, or floor mounting capabilities
- Choice of 5-kW, 10-kW, or 30-kW transmitters
- Low power consumption
- Optional special high RPM antenna drive for high-speed vessels

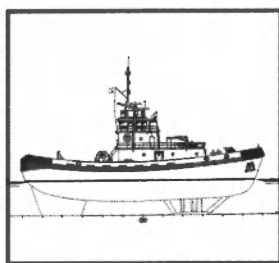
The automatic plotting system versions offer as standard: a built-in simulator; trial maneuver capabilities; on-screen mapping facilities; smart card storage of self-drawn maps; auto acquisition and tracking of up to 20 targets; and latitude and longitude display for vessel and target position when interfaced with proper positioning equipment.

For more information on Kelvin Hughes
Circle 22 on Reader Service Card

Elliott Bay Develops New Tug Design For Crowley

Elliott Bay Design Group (EBDG), a Seattle-based naval architecture and marine engineering firm, has developed a new ship escort and assist tug design for Crowley Marine Services, Inc., of Oakland, Calif. Crowley plans to build two of the new-generation tugs, stationing one in Long Beach, Calif., and the other in Puget Sound; with delivery anticipated in the fall of 1996.

The new boats will feature ABS-classed hulls and machinery, ABS Class 1 firefighting capability, and Voith-Schneider 36GII/200 propulsion units. The design features special acoustic insulation for crew protection and comfort, and the main decks inside the deckhouse are to be fitted with floating floors, with floating bulkheads and over-



heads in the deckhouse staterooms. The 120-ft. (36.8-m) steel tugs will operate at 14 knots, each propelled by a pair of Caterpillar 306 diesels, rated at

2,750 bhp, driving the Voith-Schneider units.

"These will be truly state-of-the-art ship handling and escort tugs," said Crowley Vice President of Engineering **Maynard Williams**; "based on research and experience, we've very carefully thought out their size and power to match their mission."

For more information EBDG
Circle 130 on Reader Service Card

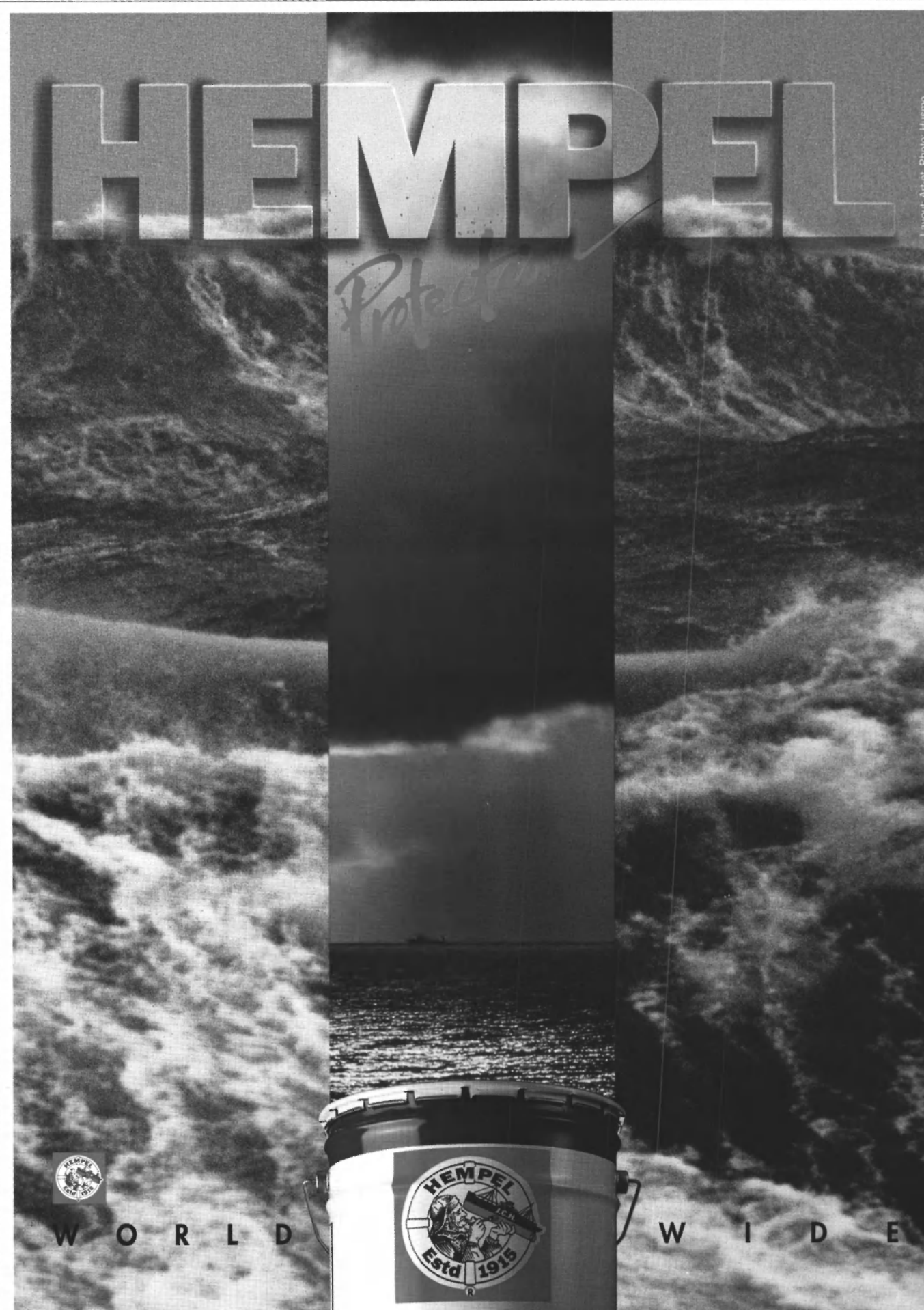
Tug Design Specifications

Length o.a. 120 ft. (36.5 m)
Width o.a. 41.5 ft. (12.6 m)
Capacities 90,600 gal. fuel oil;
1,990 gal. lube oil;

Tug Equipment

Main engines (2) Caterpillar 3606
diesels (2,750 bhp at 1,000 rpm)

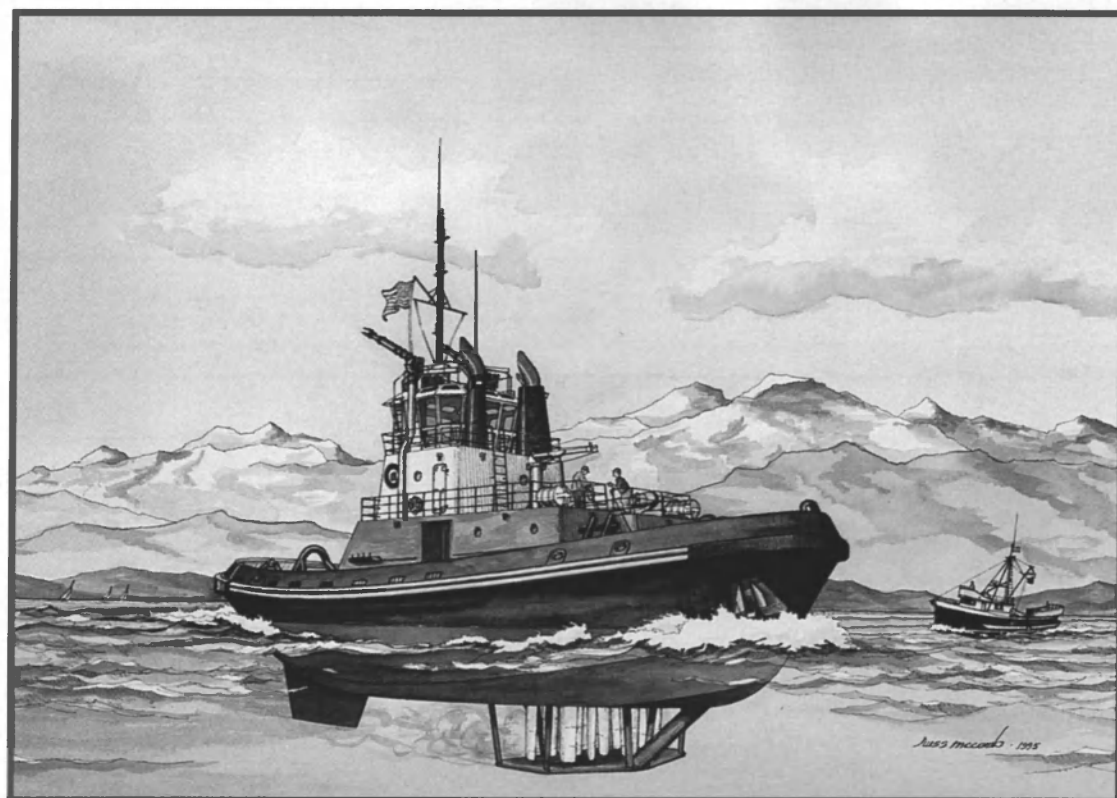
Propulsion units Voith-Schneider
36GII/200
Auxiliary power (2) Caterpillar
gensets driven by
CAT 3304 DITA engines
Hydraulic pump engine Caterpillar



Circle 256 on Reader Service Card

WORKBOATS

Workboat Sector Mirrors Industry Trends



An artist's conception of the Elliott Bay tug design recently contracted by Crowley Marine for the construction of two new-generation vessels.

by Bridget A. Murphy, assistant editor

The workboat market is a dynamic one, with much attention paid to technological improvements in the areas of propulsion and electronics. Vessels in this category are not only constructed for a specific function — with the newbuild market driven by task-specific design — but contain the latest in technical equipment and high-power, high-efficiency propulsion systems, minimizing the requirements for maximum operation and maneuverability. Possibly the hardest working vessel afloat, the workboat has always been the beneficiary of technological advances aimed at making it ever better at its job — providing higher power coupled with better fuel economy, increased seaworthiness, longer maintenance intervals, and compliance with higher environmental standards.

Added to these factors is the effect legislation and regulations, including OPA 90 and MARPOL, have on workboats — a category including tug escort and ship assist vessels, patrol boats, and oil spill response vessels. These changing laws — combined with significant technological improvements, have catapulted workboat designs forward. A segment of the industry sometimes overlooked, workboats are as vital to the balance of trade and commerce as containerships, as evidenced by their adaptability, functionality, and comparatively low-cost production figures.

One trend in the workboat sector is the movement towards higher power propulsion. A reason for this increase in power, as seen in tugboat applications, is the growth in the size of towable vessels. Bigger ships are

Moen Slip Delivers Voith Tractor Tug To Røda Bolaget



Gothenburg-based Røda Bolaget AB has just taken delivery of a new water tractor tug. This vessel, the 496-gt *Boss*, is the company's first Voith Schneider-propelled water tractor and is primarily intended for ship handling and escort duties on Sweden's west coast. It will also be used for a range of support duties, including firefighting and oil recovery at Sweden's largest oil terminals.

The *Boss* was constructed at Moen Slip AS, Kalvøerid, Norway, and is a sister to the *Bess*, of Buker og Bjergning, the Norwegian towing partner of Røda Bolaget within the Neptune (Platou) Marine Group.

Classed by Det Norske Veritas and with a length of 119 ft. (36.3 m), a maximum beam of 40.4 ft. (12.3 m) and a maximum draft of 17 ft. (5.2 m), the multipurpose capability of the *Boss* makes it a valuable addition to the Røda Bolaget fleet.

The two Voith Schneider units — model 32G II/200 — are powered by a pair of Ulstein Bergen KRMB9 diesel engines, each rated at 2,730 bhp, giving the *Boss* a bollard pull of 57 tons and a free running speed of about 15 knots. Use of the Voith Schneider design of cycloidal propeller reportedly gives superb handling and thrust, which can be immediately directed at any angle throughout the full 360 degrees.

A comprehensive array of deck equipment has been fitted for the vessel, including a forward-mounted 100-ton Karmoy towing winch and 65-ton towing hook, 8-ton winches forward and aft of the superstructure, a 22-ton-meter crane, and a 65-hp Viking man-overboard boat.

The navigation and communications outfit is also extensive. An Atlas 9600 ARPA and JFS 364 radar are fitted together with a JRC V-720 echosounder, Decca Mk5 AP navigator, Adveto data navigation system — which includes a 12-channel differential GPS receiver, a Robertson AP 9 Mk 11 autopilot and RGC 11 gyro, and a JRC JLN 203 speed log.

Communications systems include a Sailor RT 2047 Duplex and RT 2048 VHF sets, a Skanti TRP 3000 VHF set, a TRP 7201 watch receiver, a WR 6000 watchkeeping receiver, and 7200 HF/MF set, and DSC 3000 VHF and 9000 HF/MF sets.

For more information on Voith Schneider
Circle 127 on Reader Service Card

Winninghoff 29-Ft. Workboat Built To Weather 12-Ft. Waves

After an intensive, five-year effort, Milford Fire Department, Milford, Conn., has taken delivery of a Response FR-8.9 fire/rescue boat. Designed by Response Marine, Inc., and constructed of welded aluminum by Winninghoff Boats, Inc., the 29-ft. (8.8-m) vessel is a custom design. Twin 225-hp outboards propel the



10,000-lb., shallow draft vessel to a top speed of 42 mph. Outfitting includes extensive electronics, dive rescue equipment, and EMS facilities, as well as a Hale 60 FB bronze fire pump. Having weathered a training mission in 12-ft. (3.65-m) seas, the vessel is expected to efficiently provide fire/rescue capability to the city of Milford and the neighboring waters of the Long Island Sound.

For more information on Winninghoff Boats, Inc.
Circle 23 on Reader Service Card

Response FR-8.9	
Length	29 ft. (8.8 m)
Width	10 ft. (3.04 m)
Displacement	10,000 lbs., normal operation
Top speed	37 knots

Equipment

Main engine	2 Mercury 225-hp outboards
Props	15.5-in. X 17-in., stainless
Steering	Teleflex, twin cylinder hydraulic
Controls	Mercury/Morse
Radar	Raytheon
GPS	Raytheon
Loran	Raytheon
Side scan sonar	Marine Sonic Technology
Radios	Motorola
Siren	Federal Signal
Strobe	Federal Signal

Compass	Ritchie
Deck lights	ITT/Jabsco
Spot/search lights	Vetus
Deck hatches	Freeman Marine
Rescue equipment	Switlik
PFDs, survival suits	Stearns

Firefighting

Capacity	1,250 gpm at 150 psi
Pump	Hale 60 FB, bronze
Engine	Ford 351 CID
Outlets	4-in. Storz with
	3-way 2.5-in. manifold
Monitor	Elkhart Stingray, bronze
Foam system	Feecon, around-the-pump
Dewatering	Zico jet line pump & portable pump

WORKBOATS

effecting positive advancements in tug capability. "We are focusing on Z-drive tugs, rather than standard screw-prop tugs," said **Jim Cole**, director of business development and design at Elliott Bay Design Group, Seattle, Wash. "The primary thrust is that boats have gotten more powerful due to engines with higher output." The use of high capability synthetic line is another technological advancement in the tug design area. "Now it is possible to get up to 400,000 pounds breaking strength in a line handled by crew people," he added.

A relatively new trend in workboat propulsion is the incorporation of waterjets. Pilot boats seem destined to play the testbed role for applications of this technology in the workboat sector, due to their need for increased speed and efficiency in transit. According to Captain **Ward Pearce**, chief port pilot for Worldport LA, the three most important characteristics of a pilot boat are speed, efficiency, and seaworthiness. Ultimately, a pilot boat "has to be designed to operate in all weather for the port intended. The boat has to be designed to be seaworthy in the worst predictable conditions," said Capt. **Pearce**. Logically, the speed increase offered by waterjet technology will add to ease of service, extending the overall performance by effecting a positive change in the level of seaworthiness.

Expressing support for another trend in the workboat sector, **Jack Hochadel**, vice chairman of Willard Marine, predicted that construction of workboats will revert back to use of composite materials for hulls. "I think that's more accepted, and a bigger factor than it used to be because of better maintenance, as well as better thermal and acoustical properties." Mr. **Cole** also pointed out that improved fendering systems are being introduced to further reduce maintenance costs by preventing damage to customers' ships.

In terms of predicting market trends in the workboat sector, the technology being made available could significantly alter newbuild production. Undoubtedly, the inclusion of recent innovations in workboat newbuilds — namely, advanced electronic charting, cleaner burning engines with fail-safe mechanisms, and higher wattage lighting for patrol crafts — will contribute to the increased demand for workboats being demonstrated in the current market.

Overall, owners have to decide between contracting newbuildings, and benefiting from technological enhancements, or being content with older, yet less expensive vessels. According to Mr. **Cole**, some owners prefer the latter strategy: "Some will not take big risks, but will accept equipment that is less than what is best (for a desired function)." However, if owners

have specific ideas about what they need, said Mr. **Hochadel**, "or want some of the new technology, they'll have to have a new vessel built." As succinctly put by Capt. **Ward**, "When it gets to the point where costs of maintenance get too

expensive ... you buy a new boat." Another potential boost to workboat production is the increased concerns experienced by owners over compliance with environmental regulations. "Obviously, it will have the effect of creating new

aspects to the workboat market," said Mr. **Hochadel**. Workboats not only perform oil spill response duties, but due to their high maneuverability, provide key ship

(Continued on page 69)

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Z-Drive-Equipped Gyrfalcon Spins Out: As reported in MR/EN's October edition, Marco Seattle's latest workboat newbuild, Gyrfalcon, is equipped with features that conform to a recent workboat propulsion trend — Z-drives — driven by twin diesels, Caterpillar 3516 B Series diesels, each rated at 2,000 bhp.

WORKBOATS

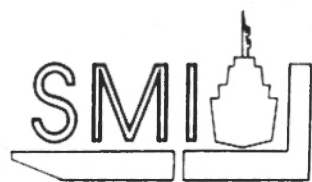
International Workboat Show Convenes In New Orleans

The 17th annual International Workboat Show is scheduled to take place on November 30 through December 2 at the Ernest N. Morial Convention Center in New Orleans, La. According to conference organizers, more than 500 exhibitors will be in attendance, packing more than 950 booths with workboat-related products. Additionally, three seminars will be presented during the event, titled: EPA Proposed Emission Control Standards; The Changing Face of Vessel Inspections; and Innovative Construction Techniques. The show promises to offer marine executive the opportunity to network with other professionals and equipment suppliers within the commercial marine industry. For more information on the show, send correspondence to: The International Workboat Show, P.O. Box 7437, Portland, Maine 04112-7437, tel: (207) 842-5508; fax: (207) 842-5509.

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WORKBOATS

(Continued from page 67)

assist and escort services to tankers and bulk carriers. With stricter regulations and correspondingly high fines associated with the illegal discharge of pollutants into the water, owners will undoubtedly place more emphasis on obtaining workboat contracts. "Workboats will be more heavily relied upon. You are going to need much better equipment to handle tankers and bulk carriers," stated Mr. Cole, who added that in the U.S., concern about spill prevention "brought tractor tugs into prominence."

He continued, saying: "Oil companies and tanker owners like them (workboats) in case of anything going wrong with the tankers." This statement sums up the indispensability of workboat applications, made apparent by their capacity for performing a variety of functions, as well as by the relatively low cost associated with building new vessels equipped with the latest technological offerings. Workboats not only absorb innovations readily, but provide the rest of the fleets with services that contribute to the overall smoothness of shipping operations.

Art Anderson Completes Patrol Boat Design Package

Washington-based naval architect **Greg Hughes** at Art Anderson Associates has completed a 40-ft. (12.1 m) patrol boat contract design package for a private client. The vessel is designed of rugged aluminum, and is equipped with one firefighting engine as well as twin Caterpillar 3176B engines rated at 600 hp each, providing a top speed of 33 knots. The propulsion engines and firefighting engine are identical and interchangeable. The design is unique in that it is designed for both patrol and rescue operations, as well as heavy duty firefighting.

The vessel is designed with a flush cockpit hatch over the entire machinery space to facilitate maintainability of the engines. The aft deck is suitable for rescue operations with the deck only 12 inches above the water, and a 6-ft. wide transom door. The vessel is designed for heavy duty pulling and pushing with push knees at the bow, rub rails all around, and a 10,000 lb. safe working load tow bitt, and a 1,000 lb. removable A-frame davit over the transom.

Art Anderson Associates, Bremerton, Wash., provides naval architecture services, as well as marine design, waterborne transit, engineering, and construction management services.

For more information on
Art Anderson Associates
Circle 132 on Reader Service Card

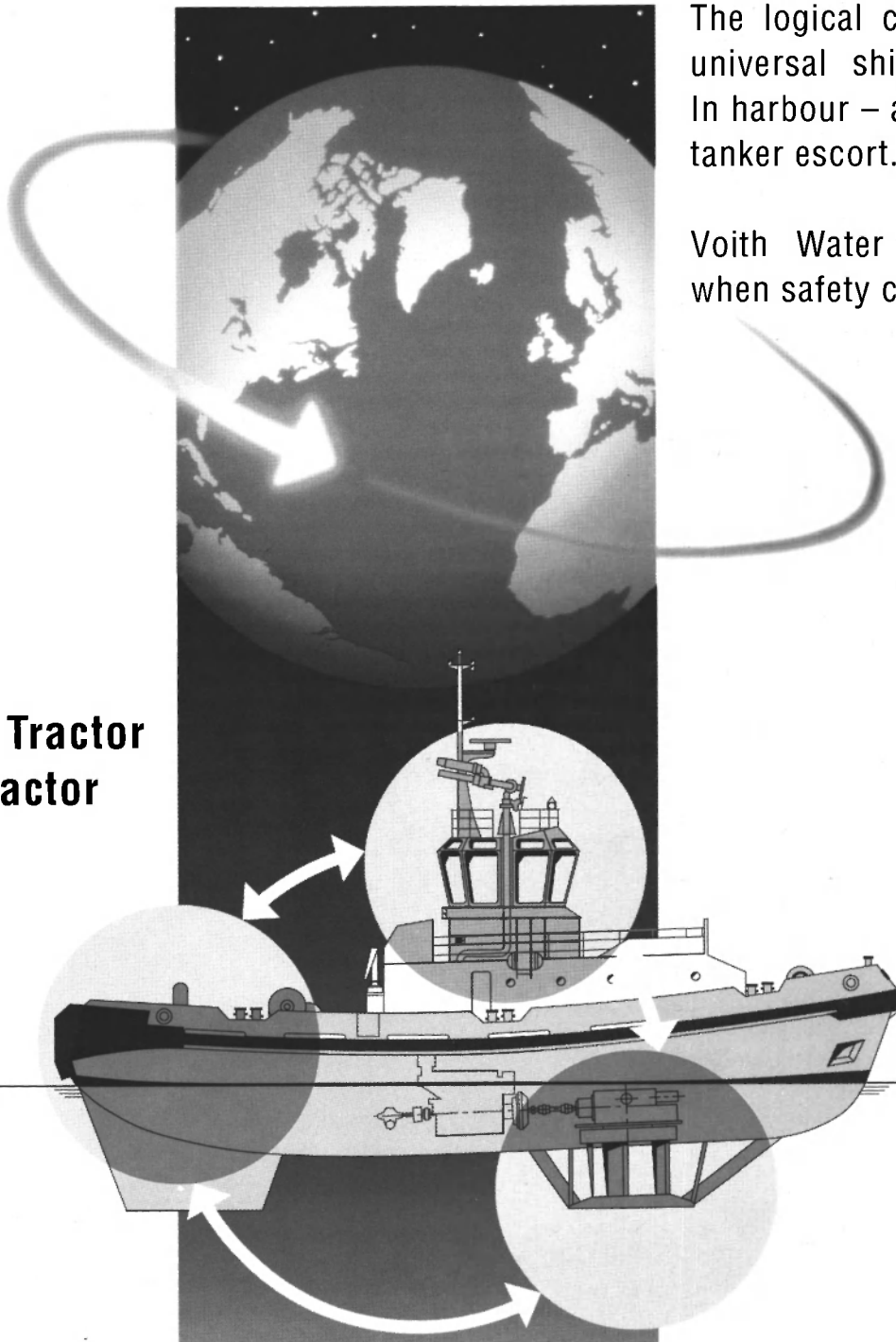
ABS Approves Nylatron Sheaves For Marine Use

ABS Americas, a division of the American Bureau of Shipping, approved Nylatron GSM cast nylon

sheaves made by Polymer Corp. The ABS Type Approval covers Nylatron GSM wire rope cable sheaves for use in marine mobile and fixed cranes, as well as derrick booms and elevators. Polymer makes Nylatron GSM sheaves

with diameters ranging from 3 to 100 in. Nylatron GSM sheaves are available from American Industrial Plastics, Polymer's authorized representative. For more information on Polymer Corp. Circle 144 on Reader Service Card

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WORKBOATS

Gladding-Hearn Initiates Vessel Refit Program

Gladding-Hearn Shipbuilding, Somerset, Mass., introduced a cost-effective way for vessel owners prolong the lives of existing vessels

— its Midlife Extension Program. The yard developed this program as a result of experience over the years in upgrading its older vessels. The latest vessel to be refitted is the Virginia Pilot Association's 52-ft. (15.8-m) launch *Richmond*. Constructed by the

yard in 1987, the all-aluminum pilot boat will be equipped with new engines, steering controls, and cosmetic improvements.

According to **Peter Duclos**, head of the yard's engineering department, the eight-cylinder, 364-bhp engines will be replaced with twin

Detroit Diesel DDEC 6V-92TA turbocharged engines, each rated at 425 bhp, making the vessel faster, quieter, and more fuel-efficient. The deep-V, hard chined hull will enable speeds up to 23 knots. "If a boat is less than 10 years old, we can go through it and make necessary repairs or replace parts, which predictably would begin to wear causing damage to the vessel later on. The program is a viable alternative to new construction," said Mr. Duclos.

For more information

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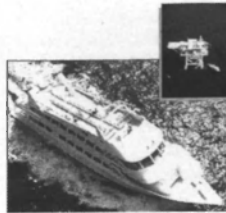
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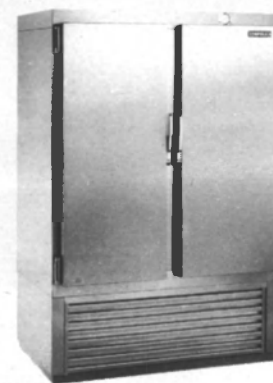
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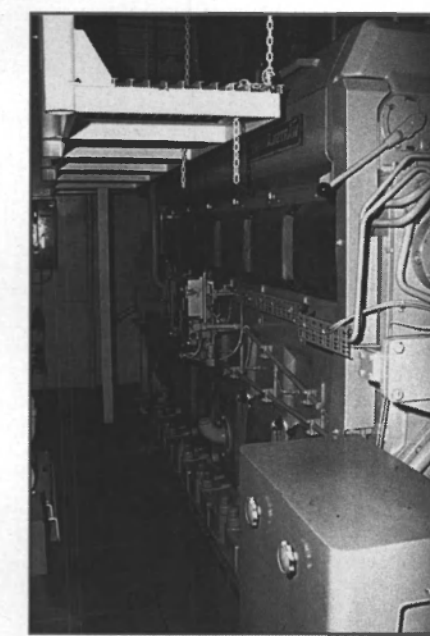
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One of the two Wartsila 6L32E engines in the Kinsman Hawk engine room.

and built to comply with new U.S. Coast Guard requirements for tanker escort service in such environmentally-sensitive areas as Prince William Sound. Federal regulations requiring that vessels carrying hazardous cargo be escorted necessitated developing a more effective escort tug design.

Bay Transportation's tractor-escort tugs were designed in response to increased concerns about oil spills. The tugs' twin independent propulsion systems provide maneuverability as well as redundancy — critically important factors when tanker emergencies require split-second timing and precise directional control.

For more information on Wartsila Diesel

Circle 131 on Reader Service Card

Scientific-Atlanta Makes Appointments In Satellite, Broadcast Units

Scientific-Atlanta, Inc. announced **Charles R. Smith** has been selected as vice president and general manager of its Mobile Satellite Systems and Audio and Data Broadcast Systems business units. The company's mobile products unit is based in Norcross, Ga., and the audio/data broadcast activities are centered in Melbourne, Fla.

Mr. Smith, with 13 years of satellite communications experience at the company, will assume worldwide responsibility for Scientific-Atlanta's line of Inmarsat satellite communications products for marine and land-based markets. He will also direct the company's efforts for one-way satellite distribution of audio for radio networks, and data for newswire services and financial organizations.

The company also appointed **Jack W. Bright** as director of sales and marketing for Mobile Satellite Systems. He has been with Scientific-Atlanta for three years and served as a director of international sales at both Comsat Mobile Communications and British Telecom. **Jack Fenster**, director of Audio and Data Broadcast Systems in Melbourne, and Mr. Bright, will both report to Mr. Smith.

Scientific-Atlanta Mobile Satellite Systems is a leading manufacturer of user terminals and land earth stations for the global Inmarsat network. The business unit recently introduced its latest Inmarsat M land portable terminal. Audio and Data Broadcast Systems develops, manufactures and markets Scientific-Atlanta satellite digital audio products, used in North America by ABC Radio Network, CBS Radio Network, and the Westwood One Radio Networks. Scientific-Atlanta provides design, engineering, manufacturing, installation, system integration, and maintenance of voice, data, and video satellite systems, and has provided over 45,000 earth stations in more than 135 countries.

For more information on Scientific Atlanta
Circle 37 on Reader Service Card

MCN Buys 20 Million Minutes From AMSC

American Mobile Satellite Corporation (AMSC) signed an agreement with Maritime Cellular Networks, Inc. (MCN) for the latter to purchase 20 million minutes of satellite capacity.

MCN signed a contract in September 1993 to become a Value-Added Service Provider (VASP) with the purchase of 10 million minutes of satellite capaci-

ty on the AMSC-1 satellite. This most recent contract doubles MCN's capacity to 20 million minutes of enhanced voice and circuit switched data communications services in support of its MarineSat service.

The company provides services to more than 500 commercial shipping vessels, fishing vessels, oil rigs, tankers, and remote land operations in the U.S. through its

14 distribution agencies nationwide.

"Based upon the enthusiastic client response to our low cost MarineSat Service offering, we feel certain that this project with AMSC will revolutionize the marine communications industry. Within the next 18 months we expect to install more than 1,000 MarineSat terminals aboard ships, yachts, drilling vessels and rigs

within the extensive AMSC footprint," said **William Thompson**, president of MCN.

"We are privileged and excited to have MCN as a VASP for our Maritime Satellite Telephone Service offerings," said **Chris McCleary**, vice president and general manager, Satellite Telephone Services at AMSC. MCN, based in West Palm Beach, Fla., provides cellular voice and data communi-

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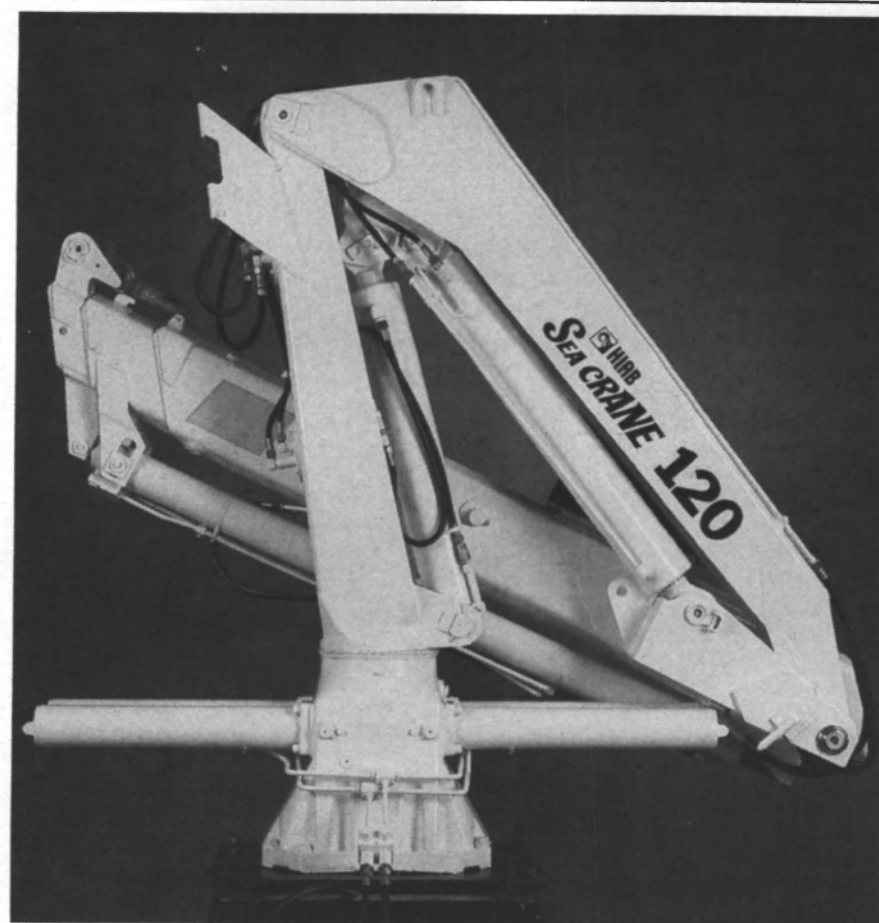
tions services and specialized maritime equipment through its 24 distribution agencies worldwide.

AMSC is the recipient of an FCC license granting authority to provide a full range of satellite-delivered, mobile telephone, fax and data services to land mobile, maritime, aeronautical and fixed site markets. In 1995, AMSC will implement a full service mobile satellite system for the U.S.,

including Alaska, Hawaii, Puerto Rico, the Virgin Islands, and 200 miles of coastal waters. The company currently offers fleet management mobile data and position reporting services to the maritime, trucking and rail industries throughout the U.S. via leased satellite capacity and its AMSC-1 satellite. AMSC's shareholders include Hughes Communications Inc., a unit of Hughes Electronics

Corporation and reportedly the world's largest owner and operator of commercial communications satellites; Singapore Telecom, a world leader in providing telecommunications services; AT&T Wireless Services, Inc., reportedly the world's largest cellular communications provider; and Mtel, a pioneer in wireless messaging.

For more information on AMSC
Circle 34 on Reader Service Card



HIAB SEA CRANE

The HIAB Sea Crane has become something of a concept in marine lifting and cargo handling connections, since its unique versatility makes it much superior to conventional derricks and stiff-boom cranes. Thanks to its hydraulic operation and its telescopic and knuckle-boom function, HIAB Sea Crane is vastly superior to other cranes when lifting and handling makes big demands on manoeuvrability, speed and safety. HIAB Sea Crane is available in several models and capacity classes, from 2.3 to 80 tonne-metres with a reach of up to 25 metres. Despite these impressive lifting capabilities, only a minimum of deck space is required for installation and stowage. The HIAB Sea Crane is therefore the obvious crane to choose as a service or small-cargo handling crane for:

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DMC Offers New Satellite TV Antenna

DMC Satellite Systems has introduced a Direct Broadcast Satellite (DBS) television version of its popular KU-band European models. DMC antenna systems are installed and operated on fishing vessels, ferries, government vessels and yachts.



DMC offers two models of SatTV antennas. The SatTV 63D features a 24-in. diameter antenna in a 28-in. diameter fiberglass dome, which weighs 41 lbs. The SatTV 100D provides what the company terms "the ultimate reception range" via a 38.5-in. diameter antenna in a 44-in. dome.

For more information on DMC
Circle 42 on Reader Service Card

Seattle Hydraulic Services Co. Receives WMBE Certification



Company President **Billie Adams** (left) and Vice President **Sinh Dau** are co-owners of Tippet Marine Hydraulic Services.

Tippet Marine Hydraulic Services of Seattle, Wash., recently received certification as a Woman and Minority-Owned Business (WMBE) from the state of Washington. This status qualifies the firm to meet set-aside objectives as a sub-contractor on government projects. The company is already recognized as a Disadvantaged Business Enterprise (DBE) by the U.S. government for work on federal contracts. Commenting on the official recognition, company President and co-owner **Billie Adams** said she was "encouraged by the prospects available to Tippet and its highly skilled work force as a result of this certification."

Tippet Marine provides a full range of industrial and marine hydraulic systems designs, fabrications, repairs, and emergency ser-

vices. The 15-year-old company operates from its Lake Union facility, servicing the Puget Sound region, eastern Washington, Alaska and Russia.

For more information on Tippet Marine Hydraulic Services
Circle 3 on Reader Service Card

Floyd Appointed TMA Department Director

Technology, Management and Analysis Corporation (TMA) announced the promotion of **Dave Floyd** to department director of the Surface Ship Life Cycle Management Department. In his new position, Mr. Floyd will be responsible for leading the company's technical and logistics efforts in support of the Naval Sea Systems Command's Surface Ship Program Office. TMA is headquartered in Arlington, Va., and provides engineering, project management, and computer services to government and commercial customers.

For more information on TMA
Circle 4 on Reader Service Card

New VP At Volvo Penta



Winston Moss

Len nart Hammarström, president and CEO of Volvo Penta of the Americas, Inc. (VPA), announced that **Winston Moss** has joined VPA as vice president of sales and marketing. Mr. Moss will head up the company's North American marketing and sales efforts. Previously, he was employed by a marine electronics equipment manufacturer, Techsonic Industries, Inc., where he served as regional sales director. Volvo Penta, a subsidiary of AB Volvo Penta, is a supplier of marine propulsion systems for various applications, as well as heavy duty diesel engines for industrial applications.

For more information on Volvo Penta
Circle 5 on Reader Service Card

Klamath Boat Co. Names New Rep Firm

Market Masters of Lynwood, Wash., was named a rep firm for Klamath Boat Co. of Napa, Calif., which produces a line of semi-V hull aluminum boats in the 12-20-ft. (3.6-6 m) range. Market Masters is an 18-year-old firm headed by owner **Al Franklin**, who served as a journeyman shipwright, marine retailer, and sales manager for two national boat builders before founding the company. The company will represent

Klamath in Washington, Oregon, Idaho, Montana, and Alaska.

For more information on Klamath Boat
Circle 6 on Reader Service Card

Company Acquires Majority Control Of Aqua Signal

The Glamox Group, a Scandinavian supplier of lighting

and electric heating products, concluded negotiations to acquire majority control of German marine manufacturer Aqua Signal Aktiengesellschaft.

Aqua Signal, based in Bremen, has been a supplier of lighting equipment to the marine and offshore markets worldwide since its founding more than a century ago. With the acquisition of the

Bremen-based business, Glamox will reportedly become the world's largest lighting supplier to the marine market.

According to officials at Glamox, the market for marine and offshore lighting equipment is marked by demands for quality, reliability and safety.

For more information on Glamox
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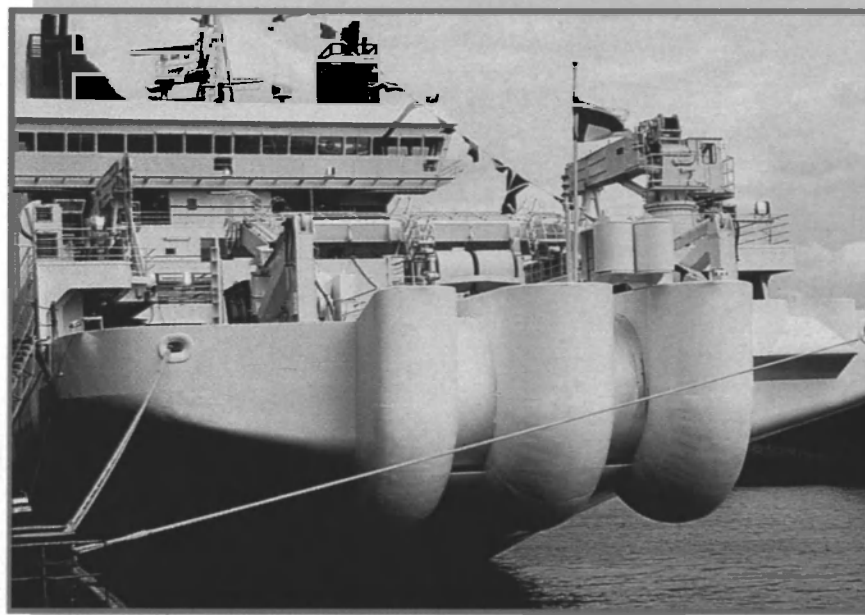
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KVAERNER DELIVERS WORLD'S LARGEST PURPOSE-BUILT CABLE SHIP

The naming ceremony and delivery of what is reportedly the world's largest purpose-built cable ship took place at Kvaerner Masa-Yards' Turku New Shipyard recently. The ship, ordered by Cable & Wireless (Marine) Limited of Chelmsford, U.K., was named *CS Cable Innovator*.

Cable & Wireless (Marine) Ltd. is a leading operator of cable ships around the world. The company currently operates a fleet of 10 specialized laying, maintenance and survey vessels based in different locations.



The new generation of cable-laying ship was developed especially for the growing fiber-optic submarine cable market. It is intended for worldwide transoceanic cable-laying. Its home port will be London.

The *CS Cable Innovator* has a gross tonnage of 14,000 tons and a deadweight of 9,400 tons. It has an overall length of 477 ft. (145.4 m), a breadth of 78.7 ft. (24 m) and a draft of 27.9 ft.

(8.5 m). The vessel features a fully stern-working concept, designed to enhance operational performance. The diesel-electric ship is fitted with a fully dynamic positioning system.

Kvaerner Masa-Yards has specialized in the construction of cable ships since the early 1960s. *CS Cable Innovator* is the 16th cable ship delivered from the company's yards. The approximately \$3.4 billion orderbook of Kvaerner Masa-Yards includes one other cable ship, for a Singaporean interest.

For more information on Kvaerner Masa-Yards
Circle 157 on Reader Service Card

Japan Ship Exporters Assoc. Calculates New Export Ship Orders

Japan received 17 export orders of 450,000 gt in September FY '95. Among the vessel types ordered were: four handysize bulk carriers; three handymax bulk carriers; four panamax bulk carriers; two chip carriers; three wood carriers; and one product tanker. The result of a quarterly survey of principal countries placing orders shows that 83.3 percent of the orders were placed by developed countries: 3.1 percent by European and U.S. shipping companies, 13.5 percent by Hong Kong, and 66.7 percent by others.

World Shipbuilding Associations Address Commercial Fleet Safety

On October 2, in Kyongju, Korea, several international shipbuilding associations met to reaffirm joint support for international measures aimed at improving the safety and reliability of the world's fleet of commercial vessels. Organized as the Committee for the Elimination of Substandard Ships (CESS), representatives from the American Shipbuilding Association (ASA) and Shipbuilders Council of America (SCA), as well as from the Association of European Shipbuilders and Shiprepairers (AWES) and the Korea Shipbuilders Association (KSA), expressed concern for the aging world fleet.

Main concerns, as noted by **Rafael Gutierrez**, CESS chairman, included the fact that the average ship age has increased from 14 to 17 years. A recent study demonstrated that older ships suffer significantly more casualties, and in some cases, older ships are being allowed to operate indefinitely without being brought up to modern safety and environmental standards.

CESS was pleased at the increasing number of inspections and detentions, and urged port state control authorities to be more thorough to ensure that detained vessels are prevented from sailing until required repairs are completed. CESS also requested that increased attention be given to machinery and structural problems, which are the major cause of casualty, loss, and pollution.



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RECENT SHIP SALES

Following is a report tracking sale prices of secondhand bulk carriers and tankers, as compiled by Shipping Intelligence, a New York-based maritime consulting firm; tel: (212) 997-0966.

Date Reported	Vessel Name	Vessel Type	Dwt	Year Built	Sale Price (\$ Millions)	Date Reported	Vessel Name	Vessel Type	Dwt	Year Built	Sale Price (\$ Millions)
10/3	Magda P	Bulker	11,598	76	2.3	9/18	Chloe	Bulker	64,059	82	15.25
10/3	Grand Ocean I	Bulker	11,669	78	2.8	10/9	Regal Trader	Bulker	64,173	75	6.8
9/25	Asimur	Bulker	12,048	75	2.25	10/2	Ergina B	Bulker	64,616	71	3.8
9/25	St. Nicolas	Bulker	17,769	77	2.25	10/2	Seajoy II	Bulker	65,000	70	3.6
10/9	Doyuzan Brave	Bulker	19,000	74	3.0	10/3	Virginia	Bulker	65,337	81	13.2
10/2	Rondo	Bulker	23,050	80	6.0	9/18	Joint Bethel	Bulker	65,343	74	5.2
10/2	Yaoming	Bulker	23,745	72	2.55	10/2	Warrior	Bulker	68,000	73	5.1
9/18	Sincere Splendor	Bulker	23,969	82	8.6	10/9	Kyrenia	Bulker	74,024	74	6.3
10/2	Trade Light	Bulker	24,089	75	4.125	10/3	River Plate	Bulker	131,260	74	6.0
10/9	Maraton I	Bulker	25,037	81	7.0	9/18	New Harvest	Bulker	208,739	82	19.0
9/25	Chichima	Bulker	25,402	83	10.0	10/9	Argentum	Tanker	10,501	82	14.0
9/25	Blue Cosmo	Bulker	25,426	82	8.95	9/18	Golconda I	Tanker	11,696	78	4.2
10/9	Sanko Peace	Bulker	27,562	84	12.4	10/3	United Tiger	Tanker	12,798	75	6.5
10/2	Federal Oslo	Bulker	29,462	85	12.0	10/2	Psagua	Tanker	18,277	81	5.5
9/25	Viktor	Bulker	30,184	70	2.4	10/2	Agia Olga	Tanker	25,228	72	2.0
9/18	New Condasa	Bulker	33,333	85	13.8	10/2	Maria T	Tanker	28,587	76	3.875
10/9	Guns And Roses	Bulker	34,500	72	3.5	9/25	Viking Venture	Tanker	29,656	81	11.0
9/18	Alexander	Bulker	35,244	75	5.8	10/9	Quiriquire	Tanker	32,135	78	4.3
9/18	Pantansasa	Bulker	37,910	80	10.8	10/9	Santa Rita	Tanker	32,136	78	3.8
9/25	Paros	Bulker	38,203	71	2.4	9/18	Team Heino	Tanker	40,395	91	24.0
10/9	Andreas Spirit	Bulker	39,782	78	8.3	9/18	Osco Stripes	Tanker	40,541	90	22.5
9/18	Kalvin Endeavour	Bulker	42,183	87	19.0	10/9	Hellephant Serenity	Tanker	83,466	76	5.5
9/18	Calima	Bulker	46,650	85	16.5	9/18	Ispester	Tanker	135,517	76	6.2
9/18	Luciano Della Gatta	Bulker	54,019	75	3.95	10/9	Halul	Tanker	137,676	76	6.0
10/2	Donald	Bulker	61,355	74	5.6						

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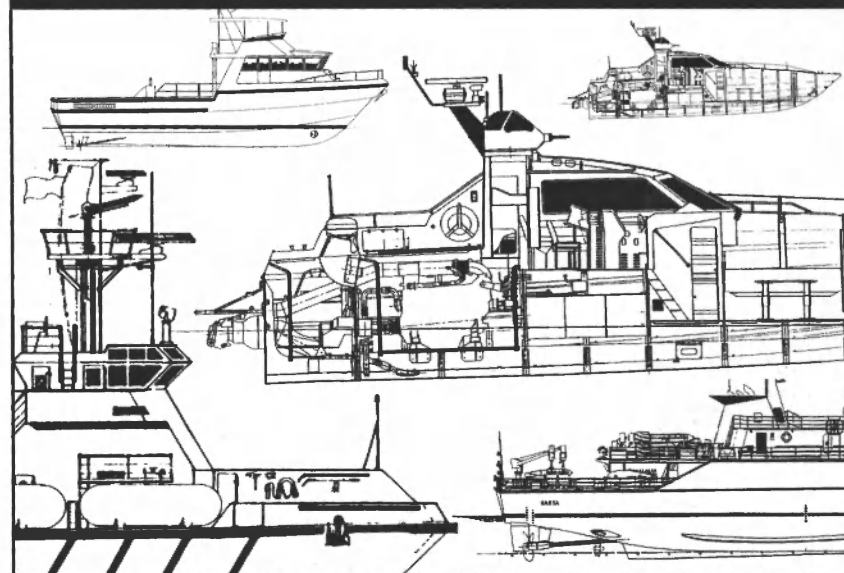
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HydroComp Debuts PropCad

PropCad is a new software tool from HydroComp and Design Systems Europe for the automatic preparation of propeller design and construction drawings. Manufacturers, researchers and designers of marine propellers are the principal users of PropCad.

Drawings of virtually any type of marine propeller can be prepared, as the user can control PropCad to define most any geometry. PropCad's builder feature constitutes a library of popular marine propeller types, to further aid design.

The complete propeller geometry is stored within background data in each drawing file. This geometry data is exposed by PropCad so that it may be completely edited to represent a user's arbitrary geometry. The drawing may be viewed, edited and printed. For more information from HydroComp Circle 65 on Reader Service Card

Suard Barge Order 10 Barges For More Than \$2M

Suard Barge Service placed an order with R&S Fabrication of Lockport, La., to fabricate 10 barges with an option for 10 more barges. The value of the contract is more than \$2 million; more than \$4 million with options. The barges will be certified by the U.S. Coast Guard to carry oil field drill cuttings. The barges will be capable of transporting 2,000 barrels of product.

Product Designed To Lower Fuel Costs

The ED-CCP (Environment Diesel, Clean Combustion Promoter) is a chemical compound designed to improve the efficiency of diesel fuel. The product, which received a U.S. patent this year, is said to save up to five cents a gallon of diesel, and is available in 55 gallon drums. The mixture ratio is

1 gallon of ED-CCP per 750 gallons of diesel. The manufacturer claims that the ED-CCP diesel fuel activator showed that it increases fuel economy by an average of 10 percent when added to diesel fuel. It also is said to increase the lubricity characteristics of diesel, while reducing particulate matter, smoke and NOx emissions.

For more information on ED-CCP Circle 67 on Reader Service Card

Uniservice Expands

Darren DeLeonardis joined Uniservice Americas Inc., effective October 1, as a full time sales and service technician in south Florida. Mr. DeLeonardis has more than 10 years of experience in the marine industry, most of which was in technical sales, marketing and operations management. He will be responsible for shipboard technical service in the Ports of Miami, Port Everglades, Port Canaveral and Tampa. He will also make efforts to expand

Uniservice business in the gambling cruise and inland waterway sectors.

For more information from Uniservice Circle 66 on Reader Service Card

Castrol's New Lubricants

Castrol Marine has developed a range of lubricants said to offer the benefits of extended oil drain intervals and protection against the conditions which can lead to bore polishing in high speed marine diesel engines. Castrol Marine HLX is available in SAE 30 and SAE 40 versions, with 13.5 BN alkalinity level. It is approved by MTU as a Type 2 Monograde Oil and meets the performance levels required for the following specifications: MAN 270; and Mercedes Benz 228.2 including OM 364A. The Base Number of 13.5 mg. KOH/g makes Castrol Marine HLX suitable for applications employing fuels with a sulfur content in excess of .5 percent.

For more information on Castrol Circle 139 on Reader Service Card

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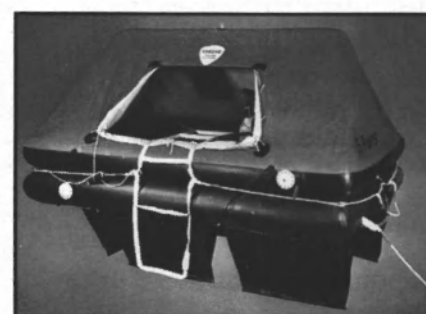
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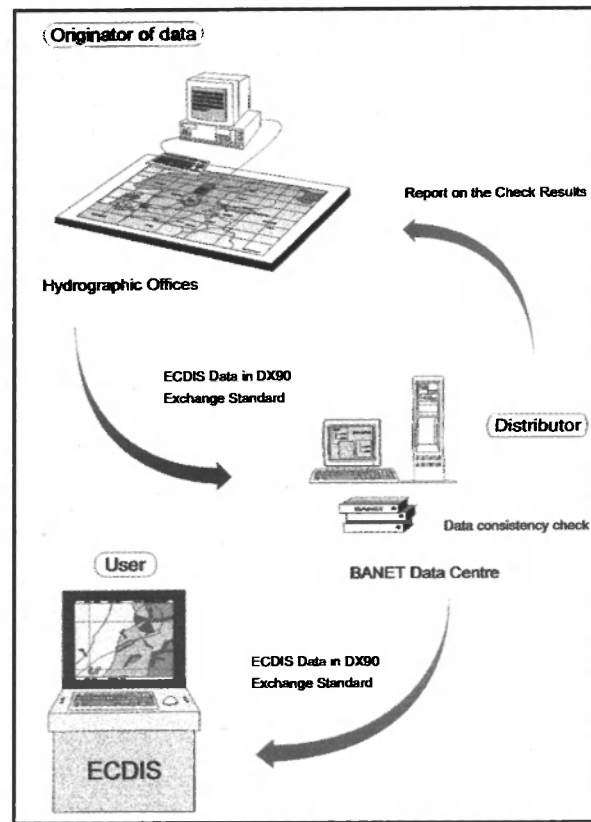
"And the winners are..."

At its annual convention in Portland, Ore., on September 19-23, 1995, The National Marine Electronic Association (NMEA) presented the following Product Awards:

Fixed VHF Radiotelephone	SEA 156
Portable VHF Radiotelephone	ICOM M15
SSB Radiotelephone	SEA 222
Satellite Communications (A, B, C, or M)	Trimble Galaxy (C)
Loran-C	Northstar 800X
Fixed GPS Navigator	Northstar 941X
Portable GPS Navigator	Magellan Nav5000DLX
Digital Depth Sounder	Datamarine International Offshore 3000
Video Echo Sounder	Furuno FCV-582
Sonar	Furuno CH-34
Instrumentation (Depth/Speed/Wind/Etc.)	Datamarine Corinthian Series
Navigation Plotter (W or W/O Electronic Charting)	Laser Plot ChartNav 20/20
Autopilot for boats < 80°	Simrad Robertson AP300 Series
Autopilot for boats > 80°	Simrad Robertson AP9MK2 Series
Radar (< 11 in. display)	Furuno 1800/1900 Series
Radar (> 11 in. display)	Furuno FR-2110
Weatherfax	Furuno Fax-207
Navtex Receiver	Furuno NX-500
Electronic Compass	KVH Azimuth 1000
Gyrocompass	Raytheon Anschutz Standard 20
Marine Antenna	Shakespeare
Electronic Cartography	C-MAP
Power Supply/Inverter/Charger	Newmar Heavy Duty Series
EPRIIB	Alden Sattfind 406-S
Best of Show (New Product)	Northstar 951X
Technician of the Year	Morten Andersen, Simrad Inc.

ELECTRONICS UPDATE

BANET Project Develops Electronic Chart Data For Navigation Purposes



BANET project activities.

BANET, or the "Baltic and North Sea ECDIS Testbed" project, funded by the German Ministry of Science and Technology, is a collaborative effort on the part of the marine equipment industry and British, German, and Finnish hydrographic offices to speed up ECDIS (Electronic Chart Display Information System) development by carrying out tests under realistic operating conditions.

ECDIS integrates data from navigation sensors, such as the GPS, log, and gyro compass in order to inform the vessel navigator of ship's position and motion, and prevent groundings and other incidents.

BANET is attempting to integrate ECDIS to form a self-contained system which includes capabilities for the acquisition of data and digitization of charts, chart distribution and quality control, as well as system implementation and onboard trials. Two sea trials were completed for the project, the first aboard the passenger ferry GTS *Finnjet* (which traverses a Travemunde — Helsinki route), on which a NACOS 45-2 complete integrated navigation system with MULTIPLOT was installed by STN Atlas Elektronik. The second sea trial took place aboard Scandinavian Seaways' MS *Hamburg* (which sails between Hamburg and Harwich). The purpose of the second vessel trial was to prove in practice the updating of digital ECDIS data, which was accomplished by the installation of an STN Atlas Elektronik PCS-ECDIS.

The ECDIS update information was processed from the data producer via the data distributor to the user on the bridge. A digital mobile phone connection allowed direct dialing to a data server ashore which provided update information on demand. The German Office of Maritime Shipping and Hydrography (MSH) converted IMO and International Hydrographic Organization standards into computer processes in order to develop the preliminary data for the Electronic Chart that was used for the ECDIS testing on the *Hamburg* ferry.

For more information on BANET
Circle 32 on Reader Service Card

OPA Conference Set

The Fourth Annual OPA '90 Conference & Trade Show is scheduled for January 9-10, 1995, at the Downtown Athletic Club in New York. Sponsored by the Maritime Association of the Port of N.Y./N.J., the conference consists of panels of industry and government experts discussing current rules, regulations and tech-

nologies as they apply to oil spill response and prevention. For more information, contact the Maritime Association at tel: (212) 425-5704.

Ingalls Wins \$55.9 Million Navy Contract

The U.S. Navy has awarded Ingalls Shipbuilding a \$55.9 million contract to con-

tinue technical and engineering services in support of the Navy's fleet of Ticonderoga class Aegis cruisers and Spruance and Kidd class destroyers. Ingalls built all 35 of the Spruance and Kidd class destroyers, and as lead shipbuilder for the Aegis guided missile cruiser program delivered 19 of the 27 ships in the Ticonderoga class between 1982 and 1994.

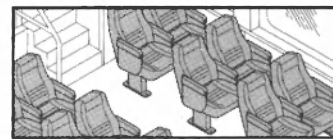
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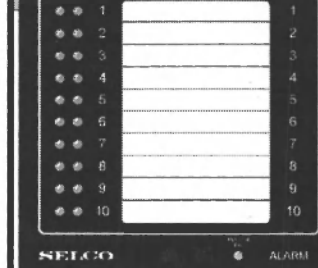
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Kirkland Receives Award From USMMA

Long-time AFL-CIO national President **Lane Kirkland** recently received a commemorative plaque for outstanding career accomplishments from his alma mater, the U.S. Merchant Marine Academy. The plaque will hang in the Hall of Distinguished Graduates at the Academy. **Donald Yearwood**, president of the Academy's Alumni Association, presented the award to Mr. Kirkland at an awards ceremony in September, following the latter's summer retirement.



Lane Kirkland (left) is shown accepting the award for being a distinguished graduate of the U.S. Merchant Marine Academy (USMMA), which was presented by **Donald Yearwood** (right), president of the Academy's Alumni Association.

Barkstrom To Serve As Marine Terminals Manager At Port Of Grays Harbor

The Port of Grays Harbor, Aberdeen, Wash., announced that **Mike Barkstrom**, formerly manager of pricing and traffic at the Port, has been named the new marine terminals manager. Mr. Barkstrom has been employed by the Port since 1985 when he was hired as the marine cargo sales representative. Since then, he has held numerous positions in cargo marketing and operations. With 10 years' experience in the port industry and a background in forest products and cargo marketing, Mr. Barkstrom will now oversee all marine terminal activities at the Port.

McCall And NRC Announce Alliance

On October 6, National Response Corp. (NRC), a wholly-owned subsidiary of SEACOR Holdings, Inc., and McCall Crew Boat Rentals, of Cameron, La., announced an agreement to integrate the McCall vessel fleet and personnel into the NRC network for responding to oil spills.

McCall operates a fleet of 42 vessels in the Gulf of Mexico and employs approximately 300 people, many of whom are HAZMAT-certified personnel. As part of the arrangement between the two companies, many of the McCall personnel will receive Hazardous Waste Operations and Emergency Response (HAZWOPER) training. The McCall fleet includes some of the largest crew boats in the area, which will be available during spills, subject to making suitable arrangements to insure coverage for regular McCall customers.

Mark Miller, president of NRC, noted the benefit the alliance has in widening the company's resources and personnel. He explained, "NRC believes that the key to rapid response to oil spills is access to people and critical resources. . . . By having working arrangements for a large pool of equipment and manpower, NRC has the depth and diversity of resources to move quickly and sustain a large response. We are very pleased to be working with McCall."

For more information on NRC
Circle 13 on Reader Service Card

Fanning Joins Int'l Marine Consultants As Marine Tech Rep.

International Marine Consultants, Inc. (IMC), a marine technical and engineering consulting firm in Mineola, N.Y., recently announced the appointment of **Thomas P. Fanning** as a marine technical representative. Mr. Fanning will be responsible

Maritime Reporter/Engineering News

for a broad range of areas, including: oil spill prevention and safety audits; petroleum loss control; marine surveys; engineering; and technical support. Prior to joining IMC, he mastered oceangoing vessels, most recently the 27,214 gt tanker *USNS Sealift Mediterranean*, a post he held for four and a half years.

For more information on International Marine Consultants
Circle 14 on Reader Service Card

Assoc. Of Diesel Specialists Honors Bailey

Steve Bailey, president of Diesel Injection Service Co., Inc., Louisville, Ky., has received the 1995 Henry B. Sirotek Memorial Award from the Association of Diesel Specialists (ADS). The award is presented to an ADS service member whose efforts have produced significant advances either within the association or the industry. It is named in memory of Henry B. Sirotek of Illinois Auto Electric Co., Elmhurst, Ill., who served as the association's second president.

Mr. Bailey was instrumental in developing the association's Nationwide Warranty Program, and during his two-year term as president, he helped lay the groundwork for the association's "TechCert" program of voluntary certification for diesel technicians.

The Association of Diesel Specialists is an international trade association dedicated to the highest caliber of service for diesel fuel injection, governor, and turbocharger systems.

For more information on ADS
Circle 15 on Reader Service Card

AAPA Names Nagle President And CEO

The American Association of Port Authorities AAPA has named its former senior vice president, Kurt J. Nagle, as its new president and CEO. Mr. Nagle succeeds Erik Stromberg, who recently resigned to head the North Carolina State Ports Authority.

Mr. Nagle joined AAPA in 1985 as director of membership services, and in 1989, became senior vice president, where his responsibilities encompassed directing the AAPA's administrative functions, planning and conducting the two annual meetings plus a series of education and training programs, and overseeing general membership services and publication of the annual directory.

The AAPA was founded in 1912 and represents 132 public port authorities in the U.S., Canada, the Caribbean, and Latin America. The association supports environmentally responsible port development and operations, provides industry research and analysis, and expands public awareness of

the ports' roles in trade, transportation and national security.

Bird-Johnson Gains Rights To Swedish Waterjet Controls Software

Bird-Johnson Company of Wapole, Mass., signed an agreement in October with Swedish

company SKT for the North American rights to waterjet controls software. SKT's patented technology simplifies ship maneuvering by allowing the operator to control the movement of the vessel directly, instead of controlling individual propulsion units. Last year, Bird-Johnson concluded an exclusive waterjet representation and license manufacturing agreement with Marine Jet Power (MJP) of

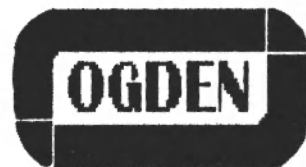
Sweden, and recently delivered its first set of MJP waterjets to Gladding-Hearn for a catamaran which is scheduled to begin operations in November between points on Cape Cod. The company will also supply Derecktor Shipyard of New York with waterjets and waterjet control systems for two fast ferries.

For more information on Bird-Johnson
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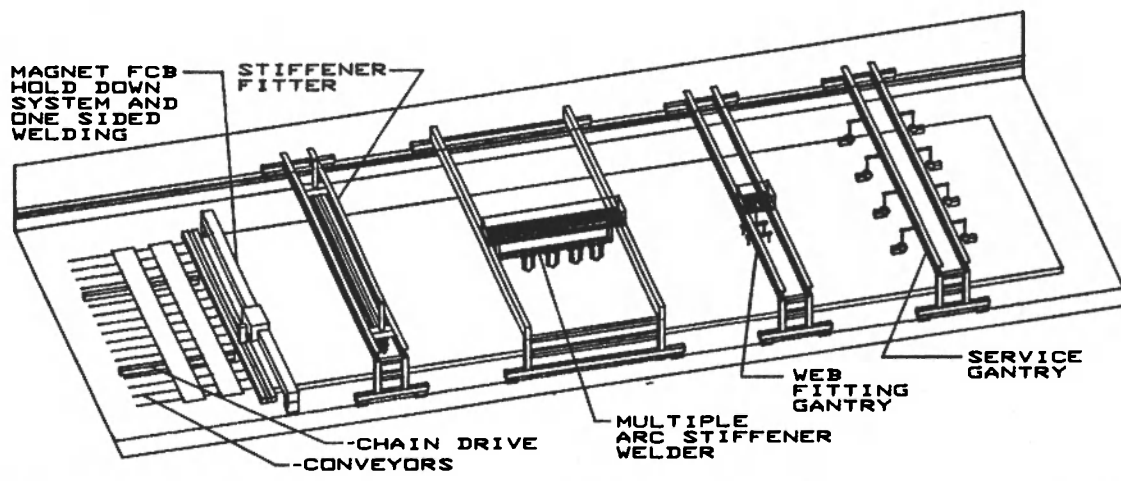
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Southwest Marine Inc. Expands Into New Market

Southwest Marine Inc. (SWM), a West Coast network of ship repair yards, announced the award of an \$11.5 million contract for work to be performed in Ingleside, Texas. The award of this five-year, phased maintenance contract on four MCM class ships, opens a new market for SWM in a new location on the Gulf of Mexico. SWM is leasing the repair facility from Braswell Services Group Shipyard based in Charleston, S.C.

The four ships involved are USS *Avenger* (MCM-1), USS *Champion* (MCM-4), USS *Patriot* (MCM-7), and USS *Defender* (MCM-2). The mission of these minesweepers is to sweep deep moored, magnetic, and acoustic mines. The ships are about 200 ft. (60.9 m) long and 35 ft. (10.6 m) wide. The general work package includes hull, mechanical, and electrical repairs and ship alterations. Program management and several administrative functions such as purchasing, engineering and planning are being handled by SWM.

For more information on SWM
Circle 174 on Reader Service Card

London Club Calls For More Discussion On Catastrophe Limits

The London P&I Club has re-emphasized its call for a realistic limit on catastrophe cover, and instructed its managers to take an active and positive lead in discussions to reach a solution satisfacto-

ry to all clubs. "We sincerely hope that it is possible to move swiftly to a resolution which is acceptable to all clubs for the sake of the shipowning community and our industry," said Graham Edmiston, chairman of A Bilbrough & Co., managers of the London Club. The Club opposes a proposed limit of around \$20 billion on catastrophe calls, and has consistently supported a realistic and collectable limit of between \$2 and 3 billion.

Hitachi Zosen Wins Order For Two Panamax Bulkers

Through Marubeni Corp., Hitachi Zosen Corp. received an order for two panamax bulk carriers from Ta-Ho Maritime Corp. of Taiwan. The order is the first Ta-Ho has awarded to a Japanese yard. The vessels are of the largest Panamax Optima type, and are the 87th and 88th vessels of this type developed by Hitachi Zosen for passage through the Panama Canal. The vessels are capable of transporting a variety of cargoes, including grain, ore, and coal. The main engines of the vessels will be Hitachi Zosen B&W6S60MC type diesel engines.

For more information on Hitachi Zosen
Circle 172 on Reader Service Card

Newbuild Particulars	
Length	705 ft. (215 m)
Width	105.6 ft. (32.2 m)
Depth	61 ft. (18.6 m)
Gross tonnage	37,800 tons
DWT	71,400 metric tons
Main engine	Hitachi Zosen MAN B&W6S60MC
Delivery	1997

Hughes Demonstrates Silent VTS At AAPA Convention

At the American Association of Port Authorities' (AAPA) convention in New Orleans, La., Hughes Aircraft Company demonstrated its Silent Vessel Traffic System (VTS), a unit which uses advanced technology to broadcast waterway traffic information to vessels on the Mississippi River without relying on voice radio channels.

This technology is especially helpful to those piloting the heavily-trafficked Mississippi, where visibility is often limited by bends and turns in the river, and communications are impacted by heavy voice radio traffic.

For more information on
Hughes Aircraft Company
Circle 173 on Reader Service Card

McDermott Shipyard Begins Facility Expansion

McDermott Shipbuilding, Inc. has begun expanding its shipyard in Amelia, La., which will double the yard's production capacity for fabricated steel used in the construction of barges and ships. The first phase of the expansion includes pouring over 80,000 sq. ft. of concrete slabs, as well as footings and piles to support a new panel line building. The second phase will include pouring a new 50,000-sq.-ft. concrete erection slab, building new launch ways, and erecting the panel line building.

By the end of the second phase, the facility's covered production areas will be increased by 150,000

sq. ft., concrete erection areas will be extended by 3,000 linear ft., and limestone storage area will be increased by over 30,000 sq. ft. New fabrication and welding equipment will also be installed in the yard.

The expansion, scheduled to be complete by February 1996, will represent a total capital investment of over \$2 million by McDermott, and will create a substantial increase in the number of jobs the yard can support. It currently employs approximately 340 people.

Fincantieri Finds Subsidiary

Isotta Fraschini Motori SpA has been founded as a subsidiary company of Fincantieri-Cantieri Navali Italiana SpA, and will deal in the manufacturing, marketing, and servicing of Isotta Fraschini diesel engines. The newly established company has capital stock of approximately \$12.5 million, and has its headquarters in Bari, chaired by Gianpiero Riganti. Isotta Fraschini manufactures two state-of-the-art diesel engine families ranging from 300 to 3,500 hp, for both marine and industrial applications, and has supplied non-magnetic engines and gensets for Navy minehunters. The foundation of the subsidiary is a further step towards a strategy focused on furthering the Isotta Fraschini trademark, as implemented by Fincantieri in the beginning of 1994.

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**NYSOC Honors
Congresswoman Molinari**

Congresswoman **Susan Molinari** will be honored at the New York Shipping Cooperative Committee's (NYSOC) first annual gala dinner aboard the World Yacht's cruise vessel *Princess*. The event, scheduled to take place on October 28, includes a salute to the Destroyer Escort *Aetos/Slater* as the *Princess* sails past the Intrepid Sea-Air-Space Museum, in a celebration of OXI day. Rep. **Molinari** is a member of the Transportation and Infrastructure Committee and the Subcommittee on Coast Guard and Maritime Transportation.

**IDI To Provide Interior
Design For Trump Princess**

Donald Trump has retained Interior Designs International, Inc. (IDI) of Seattle, Wash., to design the interior of his new casino vessel, *Trump Princess*, for Gary, Ind. According to IDI President **Shirley LaFollette**, the three-deck, 2,000 passenger vessel will have a modern yacht style design. Atlantic Marine Inc., Jacksonville, Fla., is the shipbuilder, and Rodney Lay Associates has been retained for naval architecture.

IDI has also been hired to design the landside interiors, along with architectural firm Sykes O'Connor Salerno Hazaveh of Atlantic City, N.J. Both projects are due for completion in the spring of 1996.

For more information on IDI
Circle 18 on Reader Service Card

**Mazzarone Named As Drew
Ameroid Business Manager**



Louis J. Mazzarone

Ashland Chemical's Drew Ameroid Marine Division, Boonton, N.J., has announced the appointment of **Louis J. Mazzarone** as business manager for its worldwide Refrigeration Products Group. He will be responsible for the marketing and operations for Drew Ameroid, and will oversee the company's participation in key alliances with outside partners. Mr. **Mazzarone** will bring 20 years of marine sales and marketing experience in the pump and compressor industry to Drew Ameroid, having previously held positions with Ingersoll Dresser Pump, Dresser Pump, and Worthington. Drew Ameroid provides retrofits, repairs, and long-term maintenance of refrigeration systems at major ports.

For more information on Drew Ameroid
Circle 19 on Reader Service Card

**Texaco Makes Deal With
Ethyl Corp.**

Texaco announced it has signed an agreement with Ethyl Corp., a fuel and lubricant additives manufacturer, for the sale of Texaco's worldwide lubricant additives business. The business is a supplier of lubricating oil additives, which are blended into automotive

crankcase oil, transmission and hydraulic fluids, gear oils, industrial engine oils, and general industrial and metal working oils.

Texaco Chairman and CEO **Alfred C. DeCrane, Jr.** stated, "This agreement, which divests a business that had been part of our non-core chemical operations from Texaco's portfolio of oil and gas activities, is another component of our plan for growth. Proceeds from

this sale will be applied to oil and gas opportunities where Texaco can achieve superior investment returns and enhance shareholder value." The sale to Ethyl, which is subject to approval by appropriate regulatory agencies and antitrust review under the Hart-Scott-Rodino Act, is expected to be completed by the end of this year.

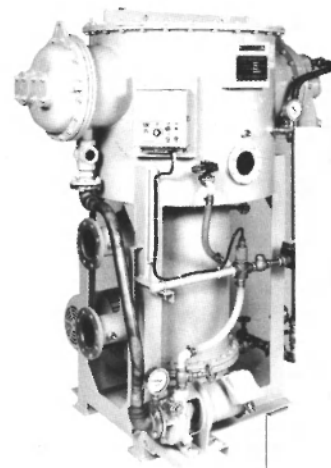
For more information on Texaco
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Leaders of Desalination Technology

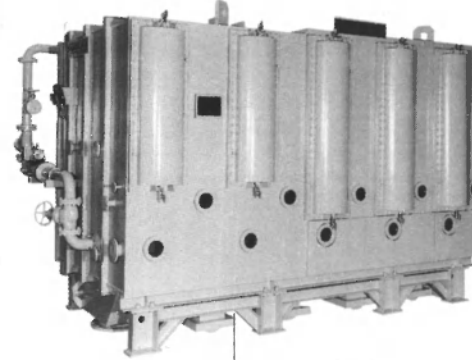
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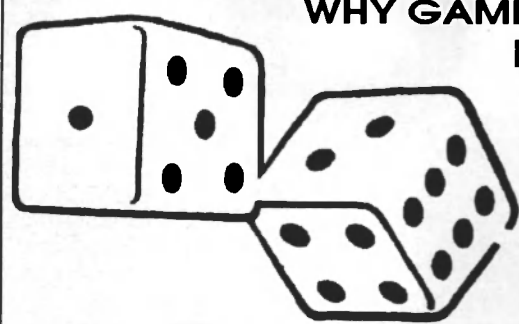

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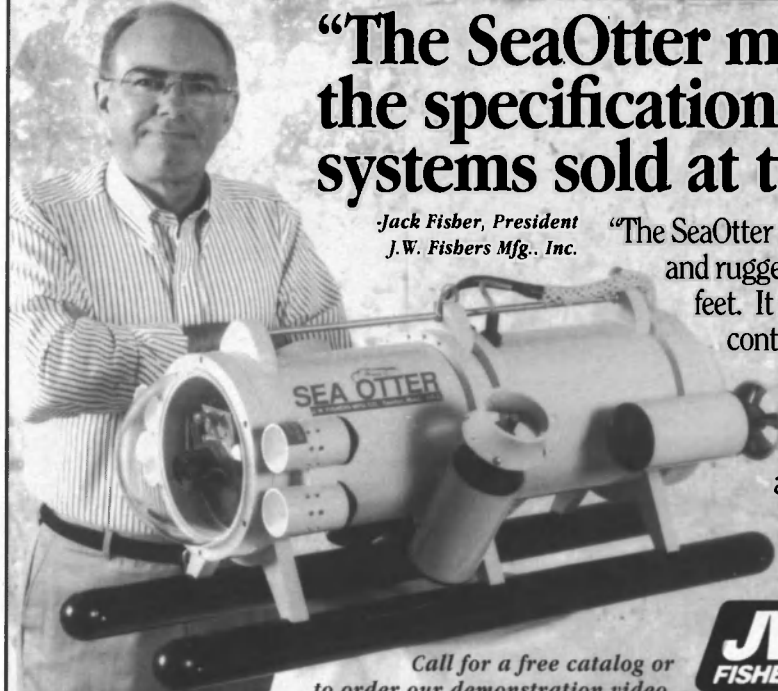
Jack Fisher, President
J.W. Fishers Mfg., Inc.

"The SeaOtter is powerful enough to handle currents, and rugged enough to reach depths of up to 500 feet. It features four variable-speed remote controlled motors, a CCD color camera, four 100w lamps, and a 13" topside color monitor. A more powerful ROV called the SeaLion is also available, and any SeaOtter may be upgraded to a SeaLion."

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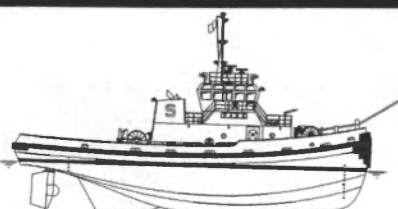
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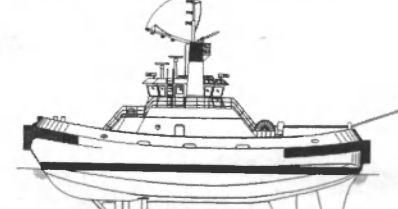
Proton 3 \$7,895	DHC-1 \$3,195	SSS-100K \$26,995	Pulse 8x \$1,145	DV-1 Dropped Video \$2,795
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Hanjin And Norfolk Southern Join Forces

Hanjin Shipping Co., Seoul, Korea, and Norfolk Southern Corp., Norfolk, Va., have recently commenced joint operation of a container handling terminal at Norfolk Southern's Landers facility in Chicago, Ill. Norfolk Southern will provide and operate the Landers facility, servicing Hanjin's international container business in Norfolk Southern territory east of the Mississippi River. In this key service area for Hanjin, business has reportedly increased 57 percent over the past year. "This new partnership assures Hanjin of growth capacity, a heightened profile, and the ability to provide quality intermodal transportation service to North America's most populated areas," said Hanjin Shipping Executive Vice President **H.T. Hwang**.

Transfer Of Ownership Of Florida Yard Results In Expanded Services

New ownership and new management are bringing years of shipbuilding, repair and fabrication experience to Runyan Industries, Inc., formerly known as Runyan Shipyard, Inc. Runyan, in the shiprepair, machine shop, and steel fabrication business, offers a complete range of services to the marine and industrial communities. Under new ownership, Runyan has expanded its capabilities to include new vessel and barge construction, and a marine industrial park for various specialized repair businesses. Runyan Industries is located on Boyou Chico, off Pensacola Bay in Pensacola, Fla., on the Gulf of Mexico.

For more information on Runyan
Circle 53 on Reader Service Card

Salvage Assoc. Announces Personnel Movement

The following changes have taken place in Salvage Association offices: **Derek Tuck**, staff surveyor, has transferred from Vancouver to Halifax following the retirement of **George Jardine**; **Robert Hoppel**, staff surveyor, has transferred from New Orleans to Rush Johnson Associates, Houston, after the transfer of **Ted Miller**; and in New York, **Steve Ralling** and **Liz Arnold** have been appointed manager, case administration, and assistant manager, respectively. In addition, **Walter Jamieson**, **Lottie McConnell**, **John King**, and **Igaksan** have retired.

New Address For MEMCO

Marine Equipment Management Corp. (MEMCO) moved to a new location: 930 Roosevelt Parkway, Suite 210, Chesterfield, Mo. 63017, tel: (314) 519-0500; fax: (314) 519-0127. Payment remittance should continue to be sent to: Box 956289, St. Louis, Mo. 63177-6289.

Maritime Reporter/Engineering News

Tricom Shipping Renamed NOL (USA) Inc.

The shareholders and directors of Tricom Shipping Agencies, Inc. announced that the company's name has been changed to NOL (USA) Inc. The name change was brought about by the management's desire to closely identify with its principal, Neptune Orient Lines, Ltd. (NOL) of Singapore, and to further unite the companies that market NOL's services throughout the world.

NOL (USA) Inc., with 23 offices in the U.S., acts as a general agent for Neptune Orient Lines, Ltd. who provides a weekly service to and from the Far East and Europe to the U.S.

Palatine To Serve As VP Of Vapor Thermal Products

David M. Kerr, president of Vapor Division, Mark IV Transportation Products Corp., announced the appointment of John Palatine as vice president of the Thermal Products Group. Mr. Palatine will be based out of the company's Niles, Ill., corporate office and will report directly to the president. Mr. Palatine has been an employee of Vapor since 1955. Vapor's manufacturing facilities are located in Niles, Ill., and Ville St.-Laurent, Quebec. The Vapor Thermal Products Group is a manufacturer of industrial, commercial, and marine steam generators and thermal fluid heaters. Additionally, Vapor supplies oil, gas and electric fired steam generators for worldwide applications.

For more information on Vapor
Circle 54 on Reader Service Card

Setchell Named TT Club Director

Capt. Richard Setchell has been appointed as a director of the Through Transport Mutual Insurance Association (The TT Club), Bermuda, and its subsidiary, Through Transport Mutual Insurance Association of Europe Ltd., London. He is executive director of P&O Australia Ltd., and as such, is involved in the management and activities of various P&O companies and joint ventures throughout Australia and south-east Asia.

Welcoming Capt. Setchell to the board, Chairman Sir David Thomson explained that Capt. Setchell would bring valuable experience to the Club at a time when it was expanding both its Asian presence and its involvement in port privatization. The TT Club's directors are drawn from the senior management of the Club's members. The Club provides liability and equipment insurance to ship operators, stevedores, terminal operators, port authorities, freight forwarders,

and other transport operators in more than 80 countries.

For more information on TT Club
Circle 55 on Reader Service Card

GATX Logistics Makes Executive Appointments

GATX Logistics, Inc., Jacksonville, Fla., named Ronald E. Peterca vice president of

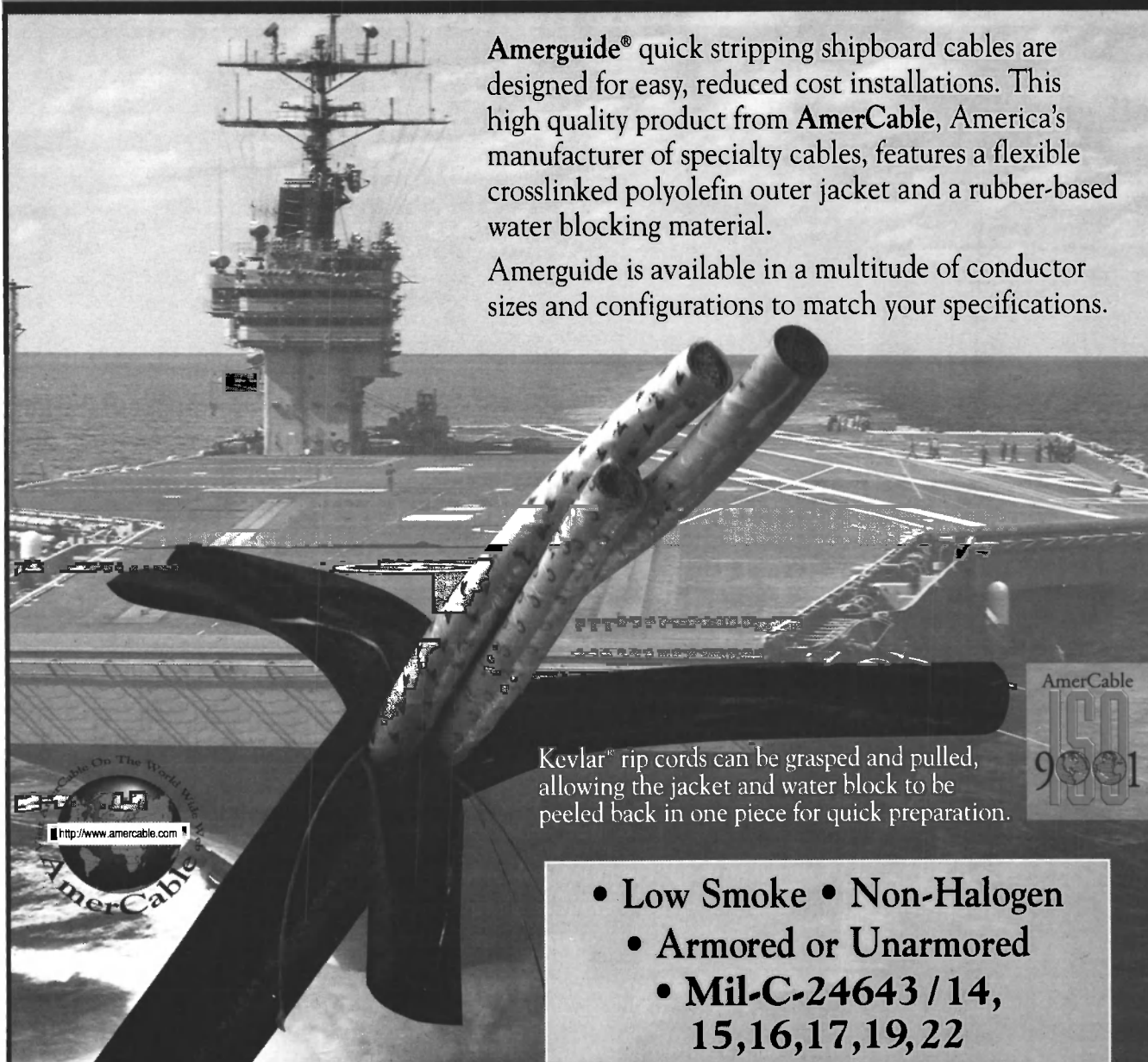
Human Resources, and John R. Butler vice president of Transportation.

In his new position, Mr. Peterca is responsible for various areas of human resources in the company's local offices, as well as is involved in regional operations regarding compensation and benefits, labor relations, and organizational development. As vice president of Transportation, Mr. Butler imple-

ments transportation strategy and direction, business developments, segment profitability, and coordination with regional operations management. GATX Logistics, Inc., a subsidiary of Chicago-based GATX Corporation, is a provider of contract logistics services, helping its customer base effectively store, process, and deliver products through a wide range of integrated services.

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Staying in the BLACK



The declining dollar has had as big of an impact as any other variable in determining where marine business was won, and lost, in 1995.

Matters of marine finance — from subsidies to international currency fluctuations to insurance costs — always breeds topics for lively debate. While the shock waves from the Lykes Bros. Chapter 11 bombshell continue to reverberate through the industry, increasingly attention is focused on the real cost of building and operating vessels in today's competitive, restrictive and litigious marketplace.

The ensuing collection of articles and reports — presented as Maritime Reporter's first-ever "Marine Financial Yearbook" — is designed to raise questions, help formulate answers and provide new insights to the vast, ever-changing world of marine money matters.

Protection and Indemnity Insurance in the mid-1990s:

Is History About To Repeat Itself?

by
Joseph E.M. Hughes, chairman & CEO,
Shipowners Claims Bureau Inc.
(Manager: The American P & I Club)

Several years ago Helmut Kohl, the German Chancellor, made a joke: "I always find it dangerous to make predictions, especially in so far as they concern the future." Gales of laughter ensued.

Not long afterwards, U.S. Vice President Dan Quayle spoke the same words with the intention of replicating the good Chancellor's *bons mots*. He even winked when he said it. A collective groan ensued.

Is it dangerous to make predictions about the future of the P & I world? Yes and no.

Yes, in the sense that certain issues current within the P & I market have the capacity, an unpredictable capacity indeed, to change the direction of the industry to an unprecedented degree.

No — at another level and in a different sense — to the extent that some of the commercial

trends evident in the current market are reminiscent of the P & I scene in the mid-1980s — unless carefully monitored and controlled — could lead to the trauma which most P & I clubs experienced in the late 1980s and early 1990s.

Consider the big picture first. That there have been changes within the club world over the past decade is beyond doubt. These changes have been both qualitative and quantitative, some of which are readily measurable by reference to annual reports and management reviews. But, at the same time, there have been other more subtle changes, the cumulative effect of which has been the modification of the whole posture of the club world vis-a-vis the shipping industry at large.

The single defining event which has shaped the P & I world over the past 10 years, collec-

tively speaking, would be the trials and tribulations which the industry encountered between 1987 and 1991. The eruption in P & I claims which occurred at that time — with 1990 generally being considered a particularly bad year — created unprecedented stress within the P & I sphere, which led to successively large hikes in premium between 1989 and 1992, coupled with unpredictably high supplementary call requirements for those years.

These traumatizing experiences had a cultural significance, so to speak, for the club world. Specifically, they led to the strengthening of balance sheets and an emphasis on loss prevention and quality control, the depth and breadth of which have far exceeded anything implemented in the past. This is a good thing, although whether some of the intrusive

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Furuno's state-of-the-art Felcom 80 Satcom-B system lets you maintain uninterrupted satellite links for disruption-free voice, fax, telex and data communications at sea — even during course changes.

This important advantage is made possible by the Felcom 80's innovative antenna design that provides continuous 360° operation and eliminates "antenna rewind" — the need for an antenna to rotate in the opposite direction to re-acquire the satellite once the antenna reaches the limit of its tracking rotation.



Blind Spot

Other Satcom-B systems need to rewind the antenna when it reaches the limit of its rotation; then re-acquire the satellite, resulting in a "blind spot" in phone, fax, telex and data communications that may last several minutes.

Common to most other Satcom-B systems, "antenna rewind" interrupts the critical communication satellite link, creating a "blind spot" in your vessel's voice, fax, telex or data traffic that may last up to several minutes.



Continuous Coverage

Furuno's Felcom 80 Satcom-B system offers continuous 360° operation, eliminating "antenna rewind" and "blind spots," for an uninterrupted satellite link and disruption-free phone, fax, telex and data communications at sea.

Not only does the Felcom 80 eliminate blind spots, it also utilizes the new digital Satcom-B system being implemented worldwide. This will enable you to reduce operating charges by up to 50%, as compared to Satcom-A.

Developed by Furuno for commercial and larger private vessels, the advanced Felcom 80 meets

the stringent Class I requirements of GMDSS as well as the Class II requirements for minimum phone and fax services at sea.

If you're considering a new Satcom-B, turn to the system that eliminates "antenna rewind." Turn to Furuno's Felcom 80.



Furuno's Felcom 80 Satcom-B Vessel Communications System



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Protection and Indemnity Insurance in the mid-1990s

procedures in the latter context have reached a point beyond that which the clubs should properly be expected to go is a moot point.

That, of course, is another story. In terms of its own internal self-confidence (an important psychological factor in the behavioral characteristics of any market) the International Group is — at least in commercial terms — as at ease with itself as it has ever been in the past.

Given the parameters of this big picture, what predictions can safely be made? Before answering, consider certain assumptions.

Assume that world trade, particularly that driven by the growing economies of the Pacific Basin, can be expected to increase over the next five years. As a matter of empirical analysis, a growth in world trade connotes higher P & I claims. This inflationary pressure has been commented upon by a number of clubs already. Thankfully, however — *absit omen!* — this has not been the case with The American Club.

But consider at the same time, that the loss prevention schemes, to which most clubs remain committed, will have an ameliorating effect of loss exposure, balancing out the inevitable trend for claims to increase as world maritime activity experiences an upswing.

So what predictions can be made at this level? The prediction first and foremost is that history may well be about to repeat itself, and that — although there would appear to be in certain quarters an almost naive softening of rates — all P & I insurers would be well advised to keep a

firm hand on the tiller, and avoid short-term advantage in terms of tonnage gain at the expense of giving a hostage to fortune should the claims climate suddenly change for the worse.

There are perhaps two issues within the P & I world that are presently imponderable. The first is the continuing debate in regard to limitation of P & I club liability. This issue has assumed a political importance within the International Group, arguably out of proportion to its potential for impacting the real world. The dimensions of the debate threaten to split the International Group. The cynical and the bewildered might see it as the equivalent of the United Nations tearing itself apart over the interpretation of a dictum by Wittgenstein!

The second imponderable — or unpredictable — issue is that of the COFR and, in a larger sense, the relationship between the International Group and the U.S. Coast Guard in general. This relationship has had its moments of tension, particularly during 1993 and 1994 as the new OPA 90 regulations were in the course of implementation.

Now that there exist commercial schemes (First Line and Shoreline) for the provision of the relevant paper — and that in any event a significant number of owners have been able to comply by way of self-insurance, bonding and so on — it is unlikely that the International Group will be particularly proactive in this area going forward. The issue of principle, that is to say the clubs' refusal to become guarantors of OPA

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Maritime Reporter/Engineering News

90 liabilities, remains. Additionally, the clubs are presently preoccupied with the limitation of liability debate and are unlikely to be distracted, in the short term at least, by OPA issues, notwith-

standing, of course, their considerable importance, especially the NRDA dimension.

There can be no doubt that the International Group of Clubs is experiencing a very interesting

period, and the interesting developments are far from over.

The next few months and years will be of immense importance to the Group and the P & I world in general. It is plain that those

clubs which will succeed will be those committed to a strategy emphasizing strong financial development, unsurpassed customer service, and clear business aims.

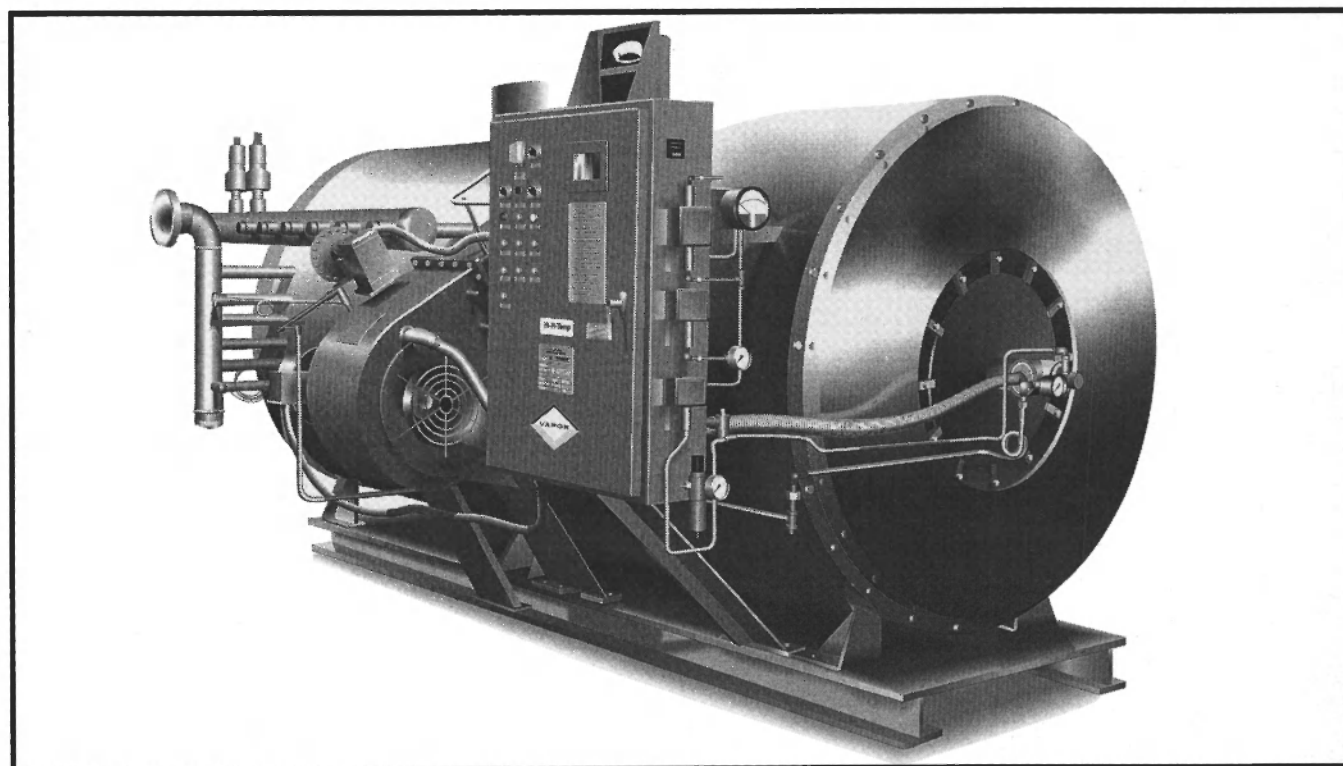
B+H Shareholders Favor Reorganization

B+H Ocean Carriers Ltd. reported that at the company's Annual Meeting of Shareholders on Oct. 11, shareholders voted by a 15 to 1 margin to approve both a reorganization of the company, converting it to a fully ongoing entity, and the removal of a limitation on indebtedness.

The company said that the approval of the reorganization proposal and the elimination of the debt restriction have the effect of converting the company into an entity which can participate to the fullest extent in the shipping industry. Opportunities for the enhancement of the shareholders' investment in the company would be increased because the reorganization would give the company the flexibility to attempt to increase revenues and diversify operating risks by entering into areas of the shipping industry which were previously closed to it.

For the six months ended June 30, 1995, the company reported a net loss of \$981,000 or \$0.24 per share. Revenues for the first six months of 1995 were \$7,151,000. Although the product tanker market weakened in May and June, the net loss approximates the expense and related off-hire associated with the performance of Special Surveys on the *M/T Alex* and *M/T Nike*. The *M/T Nike* completed its Special Survey in July 1995. As a "foreign private issuer," as defined in Rule 3b-4 under the U.S. Securities Exchange Act of 1934, the company did not report operating results for the first six months of 1994. The company's net loss for the year ended Dec. 31, 1994, net of a \$5,746,000 gain on sale of vessels, was \$4,360,000 or \$1.07 per share. The company intends to report operating results on a quarterly basis in the future. The company's fleet consists of six product tankers which trade in the Product Transport Corp. Ltd. pool.

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Citing Strong Financial Performance in 1995, Carnival Raises Dividend

Carnival Corporation's board of directors has voted a 20 percent increase in the regular quarterly dividend from 7.5 cents per share to 9 cents per share for the fourth quarter ending November 30,


1995. The increased dividend is payable December 14, 1995, to shareholders of record on November 30, 1995.

"We are pleased to be able to provide our shareholders with an

increased dividend," said Carnival Vice Chairman **Howard Frank**. "This action reflects our strong financial performance during fiscal 1995 coupled with management's optimism in the future of


the cruise industry, and Carnival's preeminent position within the industry," he added.

Carnival Corporation is comprised of Carnival Cruise Lines, Holland America Line, Windstar Cruises, and Seabourn Cruise Line (25 percent owned), which combined, operates 22 ships in the Caribbean, Alaska and other worldwide destinations. The corporation introduced two new ships last year and has seven more ships slated to begin service over the next four years. Carnival Cruise Lines introduced its 70,000-grt *Imagination* in early July. It has three more 70,000-ton vessels under construction. The first of those, *Inspiration*, is scheduled to begin service in the spring of 1996. Two more as-yet-unnamed vessels are slated for delivery in February and November of 1998. It also has under construction *Carnival Destiny*, which will be the largest passenger ship ever built when it is introduced in late 1996. A sister to *Carnival Destiny* will enter service in 1999. Holland America's new 1,266-passenger *Ryndam* began service in October 1994. The company has contracted for an additional 1,266-passenger Holland America ship, *Veendam*, scheduled for delivery in the spring of 1996. Another, at 62,000-grt, will begin a new vessel class for Holland America Line. Delivery of this vessel is expected in the fall of 1997.



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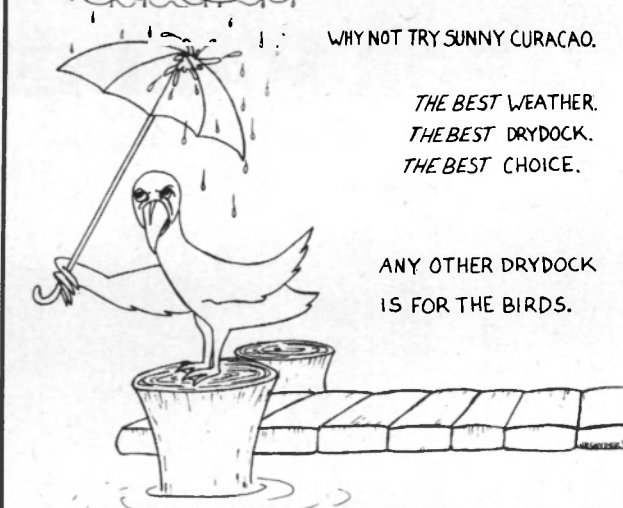
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Stolt Third Quarter Reflects Profit Surge

Stolt Partner S.A. reported net income of \$5.3 million, or \$1.1 per common share for the third quarter ended August 31, 1995.

Net income for the nine month period ended August 31, 1995 was \$10.2 million, or \$2.1 per common share, compared with net income of \$1.8 million or \$1.2 per common share, for the same nine month period ended at this time last year.

Christer Olsson, chairman of Stolt Partner S.A., said, "As expected, the impact of the improved contract rates that we negotiated earlier in the year came through in this reporting period ... Driving this market is continuing growth in global industrial production, resulting in brisk demand for the transportation of chemicals. Growth in demand and downgrading to other trades of existing tonnage are currently outpacing delivery of new capacity."

Multi-Purpose Cargo Ships And Their Future Markets

The multi-purpose fleet of single and 'tweendeck general cargo ships is surprisingly large — numbering nearly 17,000 vessels totaling about 80 million dwt — and is estimated to carry more than 400 million tons of cargo each year. In comparison, the cellular containership fleet equals 1,800 vessels and 42 million dwt, and probably moves about 300 million tons of cargo annually. But while such figures reveal that classic ship designs such as the SD-14 and the Freedom still perform a major role in world shipping markets, they cannot disguise the fact that the multi-deck fleet has been reduced by 16 million dwt (26 percent) in the last 10 years, while the annual cargo volume carried by the total MPP fleet has contracted by 50 - 75 million tons.

As a consequence, the MPP fleet has a unique market profile and a unique future. While most sectors of the world fleet are faced with the common problem of over-tonnaging despite an expanding global cargo base, MPP operators live with the paradoxical possibility of an under-tonnaged market, even though demand for such ships is clearly in long-term decline.

A new report from Drewry entitled "Multi-Purpose Cargo Ships and Their Future Markets" examines this complex sector of the dry cargo market, and looks in detail at the demand and supply side prospects of what has become a prematurely neglected sector of the world fleet.

Displaying a versatility entirely in keeping with their name, multi-purpose ships participate right across the dry cargo spectrum, from containerized liner traffic through project, heavy-lift and breakbulk general cargo, to the major and minor bulks, where commodities such as steel, agribulks and fertilizers move in 5 - 10,000-ton parcels, or even in larger, full ship-load quantities.

This flexibility has fallen out of favor, with a shift towards specialist vessels. As a consequence, the MPP's liner and tramping roles became the province of larger, more sophisticated, and more productive

cellular containerships and handy bulk carriers, respectively. With new-building activity having been largely restricted to small volumes of container-friendly single-deckers for many years, and regular scrapping of elderly general cargo ships, there has been little or no supply side pressure on the MPP fleet.

Instead, operators have been confronted with shrinking demand.

The global general cargo market itself has expanded quite strongly since the worldwide economic recovery post-1986, but the new volumes have been almost entirely composed of unitized traffic, which is moving in ever-increasing volumes on cellular containerships.

Furthermore, the traditional breakbulk cargo carried by MPPs has continued its modal transfer into containers, eroding the cargo volumes being carried on general cargo vessels. In the first half of the 1990s, the rate of shift to containers in the developing regions of South America, south/southeast Asia and parts of Africa has accelerated, and this is now hastening the reduction of the MPP fleet's liner cargo pool.

Nevertheless, with a significant core market of bulk, breakbulk, semi-liner, and even some container cargoes which continue to demand low cost, basic shipping services, and trip and period rates on MPP tonnage have generally held up well.

For instance, China, somewhat exceptionally, has seen a sustained

The Containerization of General Cargo Trade

(1980 to 2000)
(Million tons)

	1980	1985	1990	1995	2000
Global General Cargo	527	552	673	740	780
Containerized Cargo	120	172	269	408	543
Percent Containerized (%)	23	31	40	55	70



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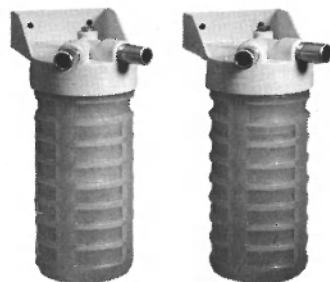
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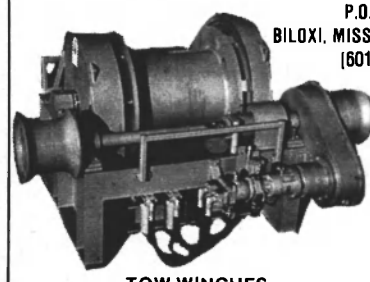
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Multi-Purpose Cargo Ships And Their Future Markets

increase in demand for MPP vessels to serve the country's rapidly expanding international trade. Such developments have offered those owners prepared to persevere in this declining sector opportunities for positive, albeit modest, returns on low capital/low risk investments in aging secondhand ships.

However, the age profile of the fleet means that suitable S&P candidates will inevitably become increasingly rare, and in a market which functions on low operating and capital costs, as well as low rates, the economics associated with newbuilding options (other than in top of the range semi-containerships) appear unsustainable.

As a market sector, the MPP fleet does not enjoy a particularly good reputation for its R&M quality, and the high average age of the fleet means that it is probably too late for any attempt to recover lost ground in this respect.

Many cargo interests, especially in the bulk and neo-bulk commodity sectors, are alive to the prospect of finding themselves short on suitable MPP tonnage, but with the fleet continuing to shrink, they will be forced to turn to the higher alternative cost of handy bulk carriers or containers in order to retain long term

access to their markets. However, not all cargoes are particularly suitable for either mode of shipment, and not all commodities will be able to absorb the higher freight costs which will accompany the change. There will thus be a residual traffic volume which will continue to depend on MPP vessels.

The future development of the market indicates that the best hedge against such a scenario will be found in those MPP vessels with good unitized capability. These ships should form the basis of a long term strategy against possible redundancy in a modally changing market, but also constitute a much higher capital and operational investment. In contrast, the traditional 'tweendecker' will continue to offer low cost, but strictly short term, tactical opportunities in the secondhand market, in which financial success will be heavily influenced by the ability of owners to extract a few extra trading years from the aging fleet.

The preceding was excerpted from the new report from Drewry Shipping Consultants, entitled "Multi-Purpose Cargo Ships and Their Future Markets: Will the MPP be squeezed into extinction?"

APC Announces Third Quarter Results

American President Companies, Ltd. (APC) announced net income for the third quarter ended September 22, 1995, of \$30.9 million, or \$0.97 per share, fully diluted, compared with net income for last year's third quarter of \$22.5 million, or \$0.70 per share, fully diluted. Pretax income for the third quarter of 1995 was \$49.8 million, compared with \$34.0 million in the third quarter of 1994. This year's third quarter pretax income included a gain of \$3.6 million from the sale of a vessel and vessel construction contracts. It also included \$3.5 million in liquidated damages resulting from the delayed delivery of two of the company's new C11-class containerships. Revenues for the third quarter of 1995 were \$711 million, compared with \$672 million for last year's third quarter. Net income for the first three quarters of 1995 was \$46.2 million, or \$1.42 per share, fully diluted, compared with \$51.7 million, or \$1.60 per share, fully diluted, for the first three quarters of 1994. Excluding one-time items, pretax income for the first three quarters of 1995 improved 13 percent to \$67.4 million, compared with \$59.6 million in the first three quarters of 1994. One-time items for the first three quarters of 1995 were the \$3.6 million gain on the vessel transactions and \$3.5 million in liquidated damages, which were included in total pretax income for the 1995 periods of \$74.5 million. One-time items for the first three quarters of 1994 were \$9.5 million of Desert Storm detention collections and \$9 million from real estate sales, which were included in total pretax income for the 1994 periods of \$78.1 million. Revenues for the first three quarters of 1995

increased five percent to \$2.1 billion, compared to \$2 billion for the first three quarters of 1994.

APC Chairman Resigns

The board of directors of APC accepted the resignation of **John M. Lillie** as chairman of the board, CEO, and a director of the company. **Timothy J. Rhein**, president, was elected to the additional position of CEO. **George Hayashi**, who has been serving as president of the company's shipping line, American President Lines, Ltd. (APL), was elected chairman of the board.

F. Warren Hellman, a director, said that Mr. Lillie's resignation resulted from differences with the board of directors regarding management issues. He said: "The board and John came to the conclusion that the company needed new direction at this time. We appreciate John's contributions to the company during his five years as CEO. His strategic thinking and commitment to quality, as well as his work on reducing costs, have helped position the company for the future. We are very pleased to have **Tim Rhein**, with his many years of operating and industry experience, as the new CEO. We are also pleased that **George Hayashi**, who has been involved in managing the company's operations for many years and is particularly knowledgeable about our Asia operations, will serve as chairman of the board."

Mr. Rhein was president of APL from 1987 to 1990. Mr. Hayashi has been president and CEO of APL since 1990.

Finance Execs Forecast Market Movement

by Bridget A. Murphy, assistant editor

To some with a pulse on the overbanked lending industry, the availability of financing in the contemporary shipbuilding market gives the indication of "easy money," although industry experts balk at the notion that somewhat freely distributed loans will enhance the market. This topic has been subject to discussion at recent industry conferences, and in late September, **Kevin Kennedy**, General Electric Capital Corp. Marine Financing vice president, presented his views to members of the Connecticut Maritime Association (CMA), in a witty profile of the risks and rewards of ship lending, based on the popular, if not accepted, theory that soft financing leads to an oversupply of tonnage and a subsequent market correction.

In a talk that volleyed between a discussion of the immutable laws of supply and demand, applied to the current state of the market as compared with that of the 1980s, and an explanation of how banks perceive shipping transactions, Mr. **Kennedy's** overall message was made clear. "Ultimately," stated the marine financial executive, "the health of the market is the responsibility of the shipowners. They are the ones responsible for repaying the money, and are also the ones that reap the profits of a successful operation."

"If you have to choose between having lots of equity, but no cash, or less equity, but cash on hand, remember that cash is king."

— *Anne Oian, Den norske Bank*

Pointing to the trend towards major consolidation in the banking industry, as well as improved overall economic conditions in the 1990s, Mr. **Kennedy** forecasts a warning to the shipbuilding industry, which is currently privy to the banking industry's lending hunger. He encouraged shippers to be wary of boom and bust expansion, principally by remaining wary of the number of banks which are offering to put up a greater percentage of vessel price at lower interest rates.

He drew several parallels between the state of the current market and the pre-crash market conditions of the 1980s. Both decades are characterized by steady freight market rates, a growing supply of vessels, an availability of money for shipping transactions, relatively cheap newbuildings, and the ready absorption of tonnage delivery. "The big difference this time is the relative absence of really easy money," said Mr. **Kennedy**. "Banks are lending up to 70-75 percent of the cost of the vessels. This is certainly higher than the 60 percent maximums found only a couple of years

ago, but nowhere near the levels offered in the early eighties. In addition, with a few notable exceptions, tax incentives and shipbuilding promotional schemes are pretty scarce these days. This means that each deal has to stand on its own merits, particularly since long-term charters are all but unavailable today."

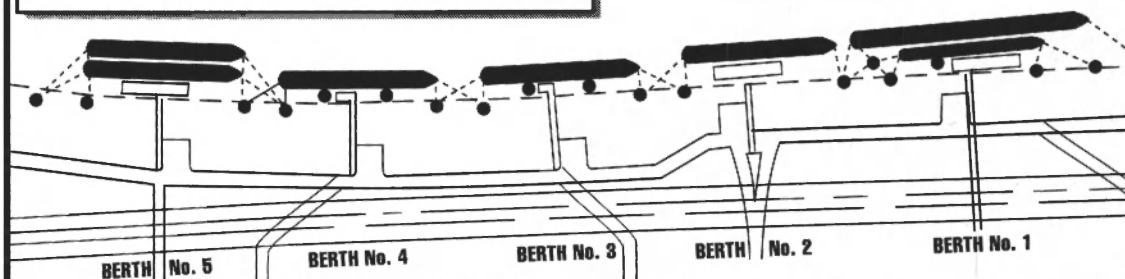
The marine financing expert predicted that market corrections will occur after a 12-18

month period of continued health, reasoning that after supply outstrips demand, rates will fall. He added that lower rates will make vessel life extensions uneconomical, forcing older vessels to the scrapyard, and effectively reducing supply. "The biggest danger to the market is if most markets continue to grow beyond this period without a correction," concluded Mr. **Kennedy**.

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Finance Execs Forecast Market Movement

Commenting on the possible demise of Title XI financing, he stated that the elimination of the amount of money available from the program would not be enough to upset the market. And in the matter of eliminating federal shipbuilding subsidies altogether, Mr. Kennedy took a position that seemed to echo leanings of the current U.S. Administration, stating, "I believe we should let the market forces do their work. I think we should probably play ball with the OECD."

At another recent industry conference, "Women In Shipping," Den norske Bank Senior Vice President **Anne Oian** offered her views concerning challenges in ship finance, structuring her presentation around the idea that examination of a cyclical industry requires long-term vision, as evidenced by her statement: "Business moves in cycles. None more so than shipping."

Ms. **Oian** emphasized that while the speed of change continues to accelerate, it is vital to watch out for the availability of excess capital; advice contrasting sharply with the advice she reported offering clients one or two years ago, which was to renew fleets without concern for lack of capital. "If you have to choose between having lots of equity, but no cash, or less equity, but cash on hand, remember that cash is king," said the Den norske senior vice president.

According to Ms. **Oian's** figures, the total worldwide shipping loan market, as estimated by London Business School, is a \$76 billion market, with debt capital needed for newbuildings in the coming years estimated in the \$10-15 billion range. In her estimation, 120 banks are participating in the current market — a dramatic increase from the 20 or 30 banks that participated in lending in 1992. "Accordingly,

we see that shipping once again is over-banked at least for the time being, the result being reduced margins ... relaxing of credit requirements and covenants, and this at a time when they should be tightened due to where we are in the market cycle," said Ms. **Oian**.

The speaker also addressed banks' lending criteria, with notable mention of environmental issues and their effects on the lenders, particularly in the U.S., with regards to the requirements of OPA 90, the need for Certificates Of Financial Responsibility (COFRs), and possible unknown environmental liabilities, especially as related to the repossession of assets.

"In general I think it is worthwhile thinking twice before doing business that is exposed to U.S. legislation, and undoubtedly, to keep a much lower risk profile if it is. U.S. law is adding a risk for the lender that is substantial. Lender's liability issues seem to be more and more addressed in several countries."

Ms. **Oian** also encouraged professional shipowners and managers to be proactive — to maintain freedom of action by anticipating situations, in order to prepare for the unexpected. "Remember that the best defense is a good offense. Keep the initiative away from the banks." She continued by adding that "trust between borrower and lender must be built up over time. It is too late to start building up trust when market conditions deteriorate." And as for the influx of "easy money," Ms. **Oian** seemed to put forth reasonable logic when she stated, "Don't believe it is that easy. Consider your financial and banking strategy carefully. Think long-term. Remember, in the long run you have to pay premium price for premium service."

Maritime Association To Sponsor Second Dredging Conference & Trade Show

The Maritime Association of the Port of New York/New Jersey will sponsor a conference and trade show focusing on dredging and the future of port maintenance in the U.S. The Association held a similar event in October 1993 attracting over 150 companies from throughout the world to a two-day forum. The 1995 event will include industry and government experts participating in panels covering all issues and concerns surrounding port maintenance and dredging technology. The two-day event will be held in Downtown, New York on November 29 & 30, 1995. For additional information and a complete agenda please contact the Maritime Association at (212) 425-5704.

MC Pearl Anchored Safely

MC Shipping Inc. said its vessel, *MC Pearl*, was safely anchored in international waters off the coast of India after sustaining a list on September 26. Preliminary investigation showed that the list was caused by a shift in the vessel's cargo, said **Guy Morel**, MC Shipping president. *MC Pearl* had no serious damage as a result. He said that the bareboat charterer is fully responsible for the continuing payment of the bareboat charter throughout this period, and for any repair costs. MC Shipping owns, operates and charters oceangoing dry cargo vessels and is the only U.S. exchange-listed feeder containership specialist.

Its fleet includes three feeder containerships, six multipurpose carriers and one bulk carrier.

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The Green Rules

Money & the environment go hand-in-hand in the maritime industry

Governments concerned about the threat of major spills and with vulnerable coastlines to protect are likely to turn increasingly to salvage retainers for added securi-

ty, a leading marine lawyer recently forecast.

In a recent address to delegates at a shipping conference, Senior Partner **Archie Bishop** of **H o l m a n , Fenwick & Willan** said the fear of another spill catastrophe had already prompted more EU member states to retain salvage cover. He predicted that additional retainer contracts would be negotiated over the coming year.

In a reference to the Greenpeace action which led to abandonment of plans to dump the Brent Spar at sea, Mr. **Bishop** said: "This highly effective mobilization of consumer power has led to much soul-searching in the boardrooms of the multinationals. These are lessons that cannot be ignored."

"There can be no doubt that public attitudes, stimulated by those pressure groups seeking to police corporate behavior, will have a much greater influence in all sectors of the business world in the coming decade," he added.

He then warned, "Shipping industry executives would be unwise to believe that they have already passed through this phase," referring to the *Valdez* incident.

"Yet another catastrophic spill in a highly sensitive area could have consequences just as significant as that of OPA 90, perhaps more so if governments take unilateral action."

This would mean a proliferation of rules with highly complex and differing requirements." Citing the public's hardening attitudes, Mr. **Bishop** said, "shipowners, insurers, and P&I Clubs certainly fear another catastrophic spill in sensitive waters."

Mr. **Bishop** pointed to governmental programs now operating in partnership with salvors in South Africa, France, Spain and Italy. Noting that the new plans now guarantee salvage response to major casualties and spill threats in British and Dutch waters, he added, "there is every reason to believe that other EU countries will follow suit."

"Standby agreements, even in significantly increased numbers, are unlikely to demand the commitment of more than a small proportion of total salvage capacity. Most salvage vessels will remain free of tie and available to respond to casualties anywhere in the world. This is of importance to those nations unable to afford retained protection."



Archie Bishop

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Principal World Shipbuilding Contracts Recorded — September

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OWNER/OPERATOR	COUNTRY	SHIPYARD	COUNTRY	TYPE	SUBTYPE	No.	DELIVERY	PRICE M \$
K. E. OLDENDORF	GERMANY	HALLA	KOREA	RH/RK/RP/RK	CAPE SIZE	2	97	
TA HO MARITIME	TAIWAN	HITACHI	JAPAN	BULK CARRIER	PANAMAX	2	1/97	
UNKNOWN	JAPAN	HITACHI	JAPAN	BULK CARRIER	PANAMAX	1	97	30
SEA JUSTICE	GREECE	HYUNDAI	KOREA	BULK CARRIER	PANAMAX	1	97	28.7
SEAHORSE SHIP MANAGEMENT	UK	NAMURA	JAPAN	BULK CARRIER	PANAMAX	1	7/96	
MITSUBI & CO.	SINGAPORE	TSUNESHII	JAPAN	BULK CARRIER	PANAMAX	1	3/97	
MITSUBI BUSAN	JAPAN	TSUNESHII	JAPAN	BULK CARRIER	PANAMAX	1	97	30
GEARBUK	NORWAY	DALIAN	CHINA	BULK CARRIER	PANAMAX	2	97	70
UNKNOWN	GERMANY	GUANGZHOU	CHINA	BULK CARRIER		2	97	46
PRIME/MAGNUS SHIPPING	PANAMA	HALLA	KOREA	BULK CARRIER		2	97	24.5
EPFLORA SHIPPING	GREECE	HITACHI	JAPAN	BULK CARRIER		1	2/97	30.4
DAIICHI CHUO KISEN	JAPAN	IHI	JAPAN	BULK CARRIER		1	2/97	43.1
UNKNOWN	JAPAN	KANASAKI	JAPAN	BULK CARRIER		2	96	40
YU-MING MARINE	TAIWAN	NEK	JAPAN	BULK CARRIER		1	3/97	44
NYK LINE	JAPAN	OSHIMA	JAPAN	BULK CARRIER		1	7/96	
F. LAESZ	GERMANY	PT PAL	INDONESIA	BULK CARRIER		2	97	
UNKNOWN	JAPAN	SANJIS	JAPAN	BULK CARRIER		2	97	
NAV. MAR. BULGARE	BULGARIA	VARNA	BULGARIA	BULK CARRIER		4	97	54
EVERGREEN	TAIWAN	MITSUBISHI	JAPAN	CONTAINER	PANAMAX	10	97/98	625
NSB NIEDERELBE	GERMANY	BREMER WILKAN	GERMANY	CONTAINER		1	97	
CONTI REEDEREI	GERMANY	TAFWOOD	KOREA	CONTAINER		2	97	
COLUMBIA SHIPMANAGEMENT	CYPRUS	GDANSK	POLAND	CONTAINER		2	97	50
PROJEX SCHIFFARTS/GESS.	GERMANY	GDANSK	POLAND	CONTAINER		2	97	
SCHOELLER	GERMANY	GDANSK	POLAND	CONTAINER		2	97	
F. DEYEN	GERMANY	HALLA	KOREA	CONTAINER		2	97	60
FIEDRICH A. DEYEN	GERMANY	HALLA	KOREA	CONTAINER		2	96	79
UNKNOWN	HONG KONG	MAWEI	CHINA	CONTAINER		2	96	34.2
FETTING LEAF SHIPPING LTD.	HONG KONG	QUXING	CHINA	CONTAINER		1	3/97	
HANSA	GERMANY	SAMSUNG	KOREA	CONTAINER		1	8/97	43
KASIF KALKIVAN	TURKEY	SEDEF GENI END	TURKEY	CONTAINER		1	2/96	
KROHN GESSELLSCHAFT	GERMANY	SEVERMAN	RUSSIA	CONTAINER		2	97	17
WAN HAI SS	TAIWAN	SHIN KOCHI	JAPAN	CONTAINER		2	96	50
COSCO	CHINA	SHIN KUBUSHIMA	JAPAN	CONTAINER		4	96	
HARREN & PARTNER	FRANCE	VIANA DO CASTELO	PORTUGAL	CONTAINER		1	12/96	
SERVICES ET TRANSPORT	FRANCE	CHANTIERS DE L'ATLANTIQUE	FRANCE	CRUISE		1	97	153
GRIMALDI	ITALY	NC APUNIA	ITALY	CRUISE FERRY		1	98	118
BLUE LAGOON CRUISES LTD.	FIJI	ASENAV	CHILE	CRUISE		1	5/96	
HOLTMAN'S	AUSTRALIA	INTERNAT. CATAMARANS	AUSTRALIA	FERRY	CATAMARAN	1	2/96	
SWEFERRY	SWEDEN	AESA	SPAIN	FERRY		1	10/96	
SHANNON FERRY CO.	IRELAND	APPLEDORE	UK	FERRY		1	96	
TI-LINE	GERMANY	FERRIES AUSTRALIA	AUSTRALIA	FERRY		2	95/96	4.3
PACIFIC BOAT SERVICES	SINGAPORE	SINGAMARINE	SINGAPORE	FERRY		2	98/99	113
WASHINGTON STATE FERRIES	US	TODD PACIFIC	US	FERRY		1	96	8.3
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IRISH CONTINENTAL GROUP	IRELAND	VAN DER GIESSEN	NETHERLANDS	FERRY		1	97	
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DOCKENDALE SHIPPING	BAHAMAS	DALIAN	CHINA	GENERAL CARGO		4	96	
UNKNOWN	GERMANY	GALATZ	ROMANIA	GENERAL CARGO		1	96	
FARENCO	HONG KONG	GUANGZHOU	CHINA	GENERAL CARGO		2	96	
BRIESE SCHIFFAHRIT GMBH.	GERMANY	KOMARNO	SLOVAKIA	GENERAL CARGO		1	4/96	
KREY SCHIFFAHRIT	GERMANY	KOMARNO	SLOVAKIA	GENERAL CARGO		1	96	
REDEKER ROHDEN	GERMANY	KOMARNO	SLOVAKIA	GENERAL CARGO		1	9/96	
WESSEL IMPORT/EXPORT GMBH	GERMANY	KOMARNO	SLOVAKIA	GENERAL CARGO		2	96	
KREY SCHIFFAHRIT	GERMANY	MARMARA SHIPYARD	TURKEY	GENERAL CARGO		1	12/96	
GREIL	GERMANY	SELWIK WAK SANARYI	TURKEY	GENERAL CARGO		1	96	
REDEKRIE KNUD	DENMARK	ALANDIA	DENMARK	LPG		1	96	
NORSK HYDRO	NORWAY	HITACHI	JAPAN	LPG		2	97	
LATVIAN SHIPPING CO	UK	HYUNDAI	KOREA	LPG		2	97	96
KNUD I LARSEN	NORWAY	OSLOV	DENMARK	LPG		1	10/96	100
KG JENSEN/SKG OBO Ltd.	NORWAY	HYUNDAI	KOREA	OBO		2	97	6
BLACK SEA SHIPPING CO.	UKRAINE	KVAFNER FJELLSTRAND	NORWAY	PASSENGER	CATAMARAN	1	95	
EVERGREEN	TAIWAN	HATASHIKANE	JAPAN	PASSENGER	YACHT	1		
STELIOS KATOUNIS	GREECE	MARIU I I	ITALY	PASSENGER		1		
GOVERNMENT OF PARAGUAY	PARAGUAY	RODMAN POLYSHIPS	SPAIN	PATROL VESSEL		7		8
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UNKNOWN	US	TRINITY-HALTER MARINE	US	RESEARCH		1	2/98	
SEA LAUNCH LTD PARTNERS	UK	KVAENER GOVAN	UK	ROBO		1	1/98	93
ALPHA MARINE SERVICES INC.	GREECE	NORTH AMERICAN SB	US	SUPPLY		1	9/96	
ALPHA MARINE SERVICES INC.	GREECE	NORTH AMERICAN SB	US	SUPPLY		4	95/96	
SUMTOMO CORP.	JAPAN	CHENGDU	KOREA	TANKER	PRODUCTS	1	1/96	9
FRAM SHIPPING	BERMUDA	KHERSON	UKRAINE	TANKER	PRODUCTS	3	97/98	78
E.E. EVERAD & SONS	UK	SINGAMARINE	SINGAPORE	TANKER	PRODUCTS	2	96/97	24.3
SHELL	AUSTRALIA	SZCZECIN	POLAND	TANKER	PRODUCTS	1	3/97	36
NORDIC AMERICAN TANKER SH.	NORWAY	SAMSUNG	KOREA	TANKER	SUEZMAX	3	97	
SCI	INDIA	COCHIN	INDIA	TANKER		1	9/98	54.5
FONDA PETROLEUM	SINGAPORE	GUANGZHOU	CHINA	TANKER		1	3/96	
NOL	SINGAPORE	IMABARI	JAPAN	TANKER		2	97/98	124
CERES HELLENIC	GREECE	SAMSUNG	KOREA	TANKER		1	97	
ONASSIS	MONACO	SUMITOMO	JAPAN	TANKER		1	97	
ISRAEL ELECTRIC CORP.	ISRAEL	ISRAEL SHIPYARDS	ISRAEL	TUG		2	96/97	
UNKNOWN	SINGAPORE	PRESIDENT MARINE	SINGAPORE	TUG		3	1/96	

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South African Fleet Could Double

According to **Mike Meehan**, managing director of Durban-based Griffin Shipping, South Africa could double its merchant fleet if owners take advantage of existing opportunities. Mr. Meehan told a recent conference on South African maritime issues that there is potential for South African owners to own and employ 51 ships — in addition to the 53 already owned — in South African trades.

Mr. Meehan said that \$1 billion would be needed to fund the fleet expansion, which could be larger if South Africa decides to adopt posi-

tive policies to become a maritime nation. Half the capital would come from international banks, and much of the fleet development will come from organic growth of South Africa's existing owners. Safmarine and Unicorn have already expanded their fleets in moves backed by long term charters from South African exporters.

Griffin is a South African ship-owning company with a mixed fleet of dry cargo vessels. It owns and manages multi-purpose vessels, mid-size containerships, and handysize bulk carriers from offices in Hong Kong. All of the ships are employed on medium or long term time charters to first class charterers in South Africa, Asia and Europe.

Libra Group Achieves ISM Code Classification

Libra Group of Brazil, parent company of Companhia Maritima Nacional (Nacional Line), has reportedly become the first ocean transportation company in Latin America to receive the International Safety Management Code Certification (ISM) by Bureau Veritas (BV).

The ISM certificate recognizes both Libra's concern for environmental issues, and its compliance with safety codes in vessel management.

The ISM Code award is recognized worldwide and acknowledges that the Libra Group has achieved

maximum accident prevention and a significant reduction of cargo damage. The integrity of vessel schedules is also a component of evaluation.

Libra Group, headquartered in Rio de Janeiro, is comprised of six international transportation services operating in oceangoing, coastal and river trades. The company operates an intermodal transport network through its large fleet of container equipment and container terminals throughout Brazil, Europe, and the Americas. The Libra Group participates in the global maritime transportation of dry bulk cargo, general cargo, vehicles, and barge and tug operations in the Amazon Basin.

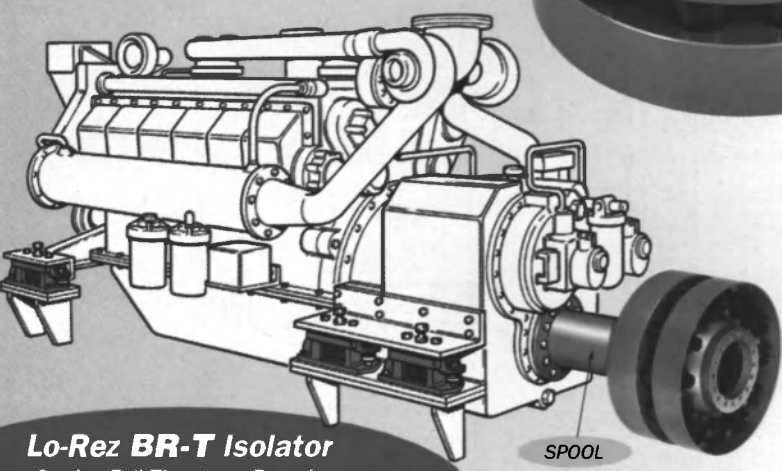
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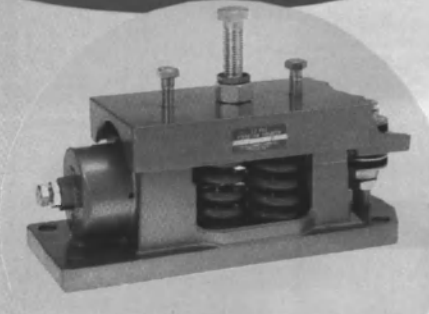
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Trinity Wins \$80M Contract To Build RoRo For Alaska

The state of Alaska has awarded Halter Marine, Inc. of the Trinity Marine Group, a contract to design and build the first oceangoing passenger ship to be built in the U.S. since 1952. The cost of the vessel including all options will be more than \$80 million. The 380-ft. (115.8 m) ship, with a beam of 85-ft. (25.9 m), will carry 750 day cruise passengers on southeast Alaska routes, and to Bellingham and Prince Rupert, and 500 overnight cruise passengers on open ocean routes such as the Gulf of Alaska crossing. The new ferry will feature a RoRo design capable of carrying more than 120 vehicles. It will be equipped with a vehicle elevator, side doors, and stern ramp, and is designed to operate at existing state facilities. The ferry is being jointly funded by the Alaska Marine Highway System (AMHS) and the Federal Highway Administration.

Halter Marine and Equitable Shipyards recently teamed in the construction of a 101-ft. (30.7 m) lightweight steel and aluminum security boat, *Frait Al-Frait*, for the Arabian Gulf Mechanical Services & Contracting Co., Ltd., of Kuwait. The vessel will provide security services for offshore rigs and platforms of the Arabian Oil Co., of Kuwait, Saudi Arabia. *Frait Al-Frait* is powered by two Detroit Diesel 16V92TA DDEC engines capable of 1100 hp each, but governed to 900 hp for longer life. Electrical power is provided by two Kato 40 kW generators driven by two Detroit Diesel 4.362 diesels.

For more information on Trinity Marine
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ELECTRONICS UPDATE

Trimble Business Brisk With GPS Contract Awards

Trimble Navigation, a supplier of a family of GPS products to the maritime and other industries, has been the recipient of many contracts of late.

In April, Trimble signed a \$1.3 million contract with the U.S. Coast Guard (USCG) to provide GPS Integrity Monitoring Stations for use in the USCG's Differential Global Positioning System (DGPS). The USCG's DGPS system is designed to provide navigation information for coastal areas, harbors and waterways of the U.S., Puerto Rico, and most of Alaska and Hawaii free of charge. Trimble's 4000IM MSK Integrity Monitors will verify that the system is broadcasting correct and accurate navigation messages to recreational boaters, commercial shipping and fishing fleets, workboats, and cruise ships. In addition, surveyors and mappers, environmental consultants, police, and emergency response vehicles with ready GPS equipment will be capable of receiving the USCG's broadcast signal.

More recently, Trimble was awarded a contract with the USCG to provide 326 NT200CG GPS receivers for use in the USCG's Aids to Navigation (ATON) vessels. Differential GPS positioning information from Trimble's NT200CG will be used to place and maintain more than 50,000 buoys, day markers and lights throughout the U.S. coastal waters. Trimble's NT200CG — a custom unit based on Trimble's NT200D — allows USCG vessels to quickly and precisely position these navigational aids.

Other Business

Aside from its contracts with the USCG, Trimble has negotiated several other cooperative agreements within the past year.

In March, the company announced its \$24 million deal with American Mobile Satellite Corp. (AMSC), a contract which called for Trimble to supply its Galaxy/GPS land mobile satellite communications terminals for use in AMSC's Mobile Messaging Service Network. Delivery of the contract started in May, and will continue into 1996.

At the end of 1994 Trimble signed on with the Finnish Board of Navigation (FBoN) to provide reference station and integrity monitors for the radio beacon-based DGPS marine navigation systems of Finland and Estonia. The FBoN planned to install

Trimble's 4000MSK DGPS Reference Station and 4000 IM MSK Integrity Monitors along the coasts of Finland and Estonia. At the time, this announcement brought to 14 the number of countries that had chosen Trimble's DGPS Reference Stations and Integrity Monitors for accurate positioning and coastal navigation.

For more information on Trimble
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Ultra Offers Wide Range Of Waterjets

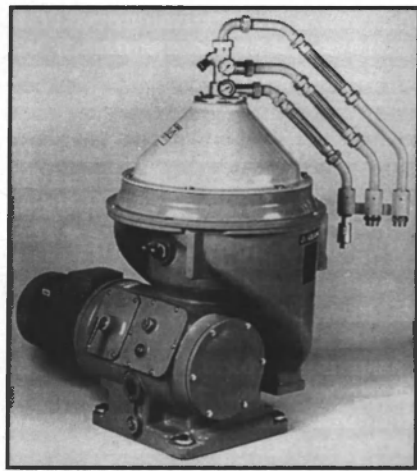
Ultra's range of waterjets represents 40 years of R&D and product advancement. Extensive use of computer technology in the design, application and performance assessment has led to a product and system line which is a strong contender for business in the fast ferry, workboat and patrol boat markets.

Ultrajets are based on high efficiency axial flow pumps incorporating the latest computer generated impeller technology.

The range of models and impeller rating combinations mean these waterjets can be directly driven by all petrol and marine diesel engines up to 1,000 kW (1,340 hp) in high speed craft, according to the manufacturer.

For more information on the Ultrajet line
Circle 58 on Reader Service Card

Alfa Laval Launches New Alcap For Fuel Oil



Alfa Laval introduced the Alcap FOPX 611, the latest addition to its range of Alcap Separation Systems for fuel oil cleaning. The FOPX 611 has a throughput capacity ranging from 3,700 l/h, for 700 cSt at 50 degrees C, to 14,500 l/h for gas oil, thus allowing customers to install the FOPX 611 instead of the larger FOPX 613.

While based on the Alcap concept which consists of an FOPX separator, a WT 200 water transducer, and ancillary equipment — the FOPX 611 has been slightly modified. The bowl has been redesigned to improve sludge discharge, the vertical power transmission has been improved to reduce bearing temperatures, and a new operating device ensures a clean operating system.

For more information on Alfa Laval
Circle 137 on Reader Service Card

Desalinators Produce Up To 4,000 Gallons Per Day

HRO Systems Inc. (Horizon

Reverse Osmosis) watermakers produce from 200 to 4,000 gallons of fresh water per day, or eight to 166 gallons per hour. Six models of HRO System 9 and four of HRO System 10 desalinators are designed and engineered to be installed separately in small connected spaces, and are available for pleasure and commercial yachts, as well as workboats.

For more information from HRO
Circle 57 on Reader Service Card

MESYS System Chosen For New Dive Support Vessel

Marine Electric Systems (MESYS) supplied its new shipboard public address system, model M7716, to Frank L. Beier Radio for installation onboard the Aker Gulf Marine-built Swath dive support vessel, owned by Global Industries, Inc.

For more information from MESYS
Circle 61 on Reader Service Card

New Products For Handling Hazardous Cargo

Gossler has made many contributions to the field of fueling hoses, hose fittings, breakaway and dry break couplings. The company, which has maintained an active role in the work of the standards organizations for fueling and loading hoses and hoses for the chemical industry, has introduced several new lines.

Its new lightweight vapor recovery hose is flexible, coilable, and can be used within circuits in the field of process control and measuring, or in monitoring. For the vapor recovery on larger units, such as tankers, tank wagons and tank lighters, Gossler has developed an automatic vapor recovery

coupling (DN 100/80) with an integrated flame trap. Especially for transfer stations, Gossler developed a scrapable safety lock hose coupling, which is suitable for the pressure range PN 16 and available in three and four-in. sizes.

For more information from Gossler
Circle 59 on Reader Service Card

MGI Provides Safety Solutions

MGI International Marine Safety Solutions Inc. manufactures marine safety equipment and provides professional services, including installation supervision and crew training.

The company provides services to the Pacific Northwest and Central Great Lakes Regions from its head office located in North Vancouver, B.C. and its Seattle, Wash., office.

A branch office in Bridgewater, Nova Scotia services the Atlantic and Gulf Coast areas, while the Ottawa, Ontario office tracks regulatory issues in Canada and the U.S. MGI is represented in world markets by independent sales and service companies.

MGI manufactures the Life Raft Rack System and Fuel Rack System, two patented designs. The company also offers the Evacuation Bridge, a lightweight, low maintenance retractable walkway for ship transfer of passengers and crew.

For more information from MGI
Circle 60 on Reader Service Card

First Interactive TV System Installed On Cruise Ship

Norwegian Cruise Lines and SeaVision announced the installation of reportedly the world's first

interactive television system for cruise ships. The system, which has been operational since early August, is installed on the *M/S Dreamward* and provides passengers with a wide variety of services, including shore excursion preview and purchasing, room service, wine ordering, gaming, in-cabin movies and a "virtual" shopping center, to name a few. SeaVision Inc. designed the all-digital system expressly for passenger ships.

For more information from SeaVision
Circle 62 on Reader Service Card

Integrated Ship Production System Released

Nau-Ship is a ship production system developed as an application for the 3-D CAD software Microstation by Bentley Brothers Corp. Five years in development, Nau-Ship is a modular program, organized in three principal applications.

N-Manager is the transparent database manager which maintains the 3-D model and the CAD environment settings. It also generates all input and out dialogues and data.

N-Model includes interface facilities with complimentary software, customizes the CAD interface and functionality to ship-production requirements, and automated creation of rectilinear profiles on surface.

N-Product produces 3-D drawings of block assemblies, the information being automatically extracted from the database initially generated by N-Model. It also includes semi-automatic nesting of plates (which also accepts parts generated outside Nau-Ship), including bridge placement.

For more detailed information
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USCG 47MB - 13 Stidd Seats aboard.
Photo by Don Hervey



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Lykes Fights To Stay Alive

Bankruptcy filing by Lykes raises many questions about the company's future

The bankruptcy of Lykes Bros. Steamship Co. is like the death of an aged but distant relative. While perhaps unexpected, nobody is very surprised that it finally happened. The bankruptcy court filing by Lykes, however, lacks the finality of death. The filing came under Chapter XI of the U.S. Bankruptcy Code, which could allow Lykes to reorganize and continue normal business operations. But a company spokesman also indicated the company had been forced into bankruptcy, and Lykes' many problems are well documented.

Additionally, there is no precedent for a U.S. shipping line emerging intact from Chapter XI. Only the bankruptcy reorganization of Waterman Steamship in the mid-1980s was successfully completed, but the circumstances were completely different and Waterman's independence was almost immediately lost when it was swallowed by a larger shipping line.

In any event, the bankruptcy action represents a sad milestone in the history of what had been one of the largest liner shipping companies in the nation. Prominent among U.S. steamship companies throughout the 20th Century, Lykes is now a shell of its former self. However, reports at press time indicate good news for the carrier, as major creditors appear prepared to back the shipper's reorganization plan.

The official word from Lykes is that it needs court protection while it completes a reorganization that began two years ago. According to the company, the reorganization has been proceeding well, but two factors have combined to prevent a fully successful effort.

First, the company is hampered by onerous debt-service payments arising from its 1984 decision to build six new containerships in Japanese shipyards. Under that deal, Lykes agreed to pay the construction costs in Japanese yen rather than in U.S. dollars. Due to the appreciation of the yen against the dollar in the intervening years, the direct cost to Lykes has zoomed upward.

In retrospect, it appears that the Japanese deal was a mistake. The original plan was to use the six ships in a trans-Pacific container service, but that idea was abandoned even before construction was complete. Instead, Lykes canceled construction of two of the ships — at substantial penalties — and chartered out the completed vessels to American President Lines. The second factor forcing bankruptcy reorganization, according to Lykes, has been the continued failure of the U.S. government to reform the ship subsidy system.

Lykes has been a major beneficiary of the Operating Differential Subsidy (ODS) system ever since its creation in 1936, but government inaction on renewal of the ODS system during the last five years has left Lykes with sharply restricted options for fleet renewal or realignment of its liner operations. Equally as important as the government's ODS system is the government's willingness to employ U.S.-flag vessels to carry Uncle Sam's own cargo. Such shipments have long been an important part of Lykes' cargo base, but the decline in East-West military tensions has produced a dramatic reduction in the amount of military cargo available to U.S.-flag carriers. Cuts in selected foreign food-aid programs have also reduced the amount of cargo set aside for U.S.-flag carriers.

These governmental issues have prompted Lykes in recent years to reduce the size of its U.S.-flag fleet. In 1990, the company operated more than 20 U.S.-flag ships. Now that number is down to seven (not including two barges converted from oceangoing ships), and Lykes does not even own all of them. Two, for example, are owned by the First American Bulk Carrier Corp., and chartered to Lykes.

While reducing the size of its U.S.-flag fleet, Lykes has been increasing the number of foreign-flag ships that it operates. Currently, Lykes operates four foreign-flag vessels and is scheduled to add two more in the near future. At the same time, Lykes has been making ship-sharing deals with foreign ship operators. Currently, Lykes has such deals with Evergreen Marine (Taiwan), Mediterranean Shipping Co. (Switzerland), and Safbank Line (South Africa).

Further emphasizing the historic shift of Lykes from its status as a U.S.-flag company to an international operator was the disclosure in the bankruptcy filing that Lykes is contemplating a partnership with Forum Maritime SA of Piraeus, Greece. A spokesman for Lykes said a \$10 million loan from Forum Maritime is expected to ease the reorganization of the company and pave the way for a partnership between Forum and Lykes, but all transactions leading to such a partnership will have to be approved by the bankruptcy court. Also likely to be involved is the U.S. Maritime Administration, the government agency that oversees ownership of the U.S.-flag fleet.

Lykes spokeswoman Lucille Lane added that the first meeting of unsecured creditors took place October 26, and the creditors were "very supportive" of the company's plan to continue containership operations between the U.S. and Northern Europe, and the Mediterranean and Africa. Among the biggest unsecured are stevedoring companies, port authorities, and ship repair yards.

The largest unsecured creditor is Ryan-Walsh Inc., a stevedoring company that is owed at least \$1.5 million. A sister company, Ryan-Walsh Gulf, is owed \$544,000. Another stevedoring company, New Orleans Marine Contractors, is reportedly owed \$524,000.

Among port authorities, Virginia International Terminals is owed more than \$1.1 million, the South Carolina State Ports is owed \$537,000, and the Port of Houston is owed \$509,000. Among ship repairers, Gulf Copper Manufacturing of Port Arthur, Texas, is owed \$1.3 million.

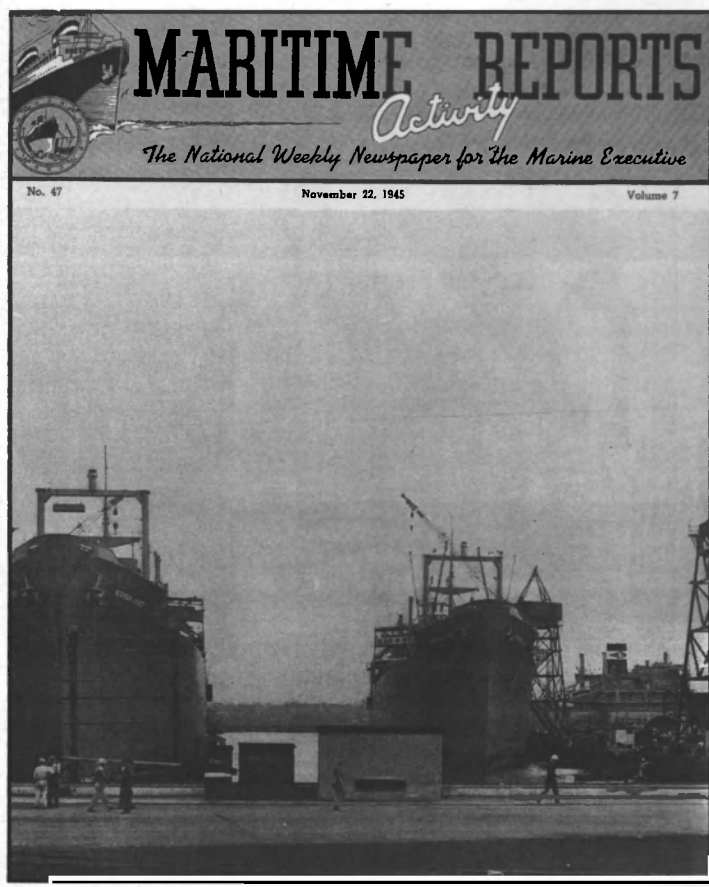
All told, there were more than 1,000 unsecured creditors at the time the Chapter XI filing was made. The total estimated debts were \$229.7 million, while the company claimed assets of about \$201 million. These figures were all estimates provided by Lykes, and it is normal in bankruptcy cases that such estimates include a margin for error.

Federal Launches Newest Lykes Brothers Cargo Ship



Newest addition to the Lykes Brothers cargo fleet, the 12,800-ton *Doctor Lykes*, a Maritime Commission C-3 type, was recently launched at U.S. Steel's Federal shipyard at Kearny, New Jersey. The vessel was sponsored by Mrs. Tillie Lykes Gillett, sister of Joseph T. Lykes, president of the Lykes Brothers Steamship Company, Inc. She christened the ship in honor of Dr. Howell T. Lykes, father of Mrs. Gillett and the Lykes brothers. The ship will replace an earlier one of the same name, also Federal-built, which went into naval service, taking another name. Her home port will be Tampa. The *Doctor Lykes* is the last of five of the type being added to the Lykes Brothers growing passenger fleet by the Kearny yard. When the last war ended the line operated a few ships over limited trade routes. When World War II broke, there were 67 Lykes ships operating on a global basis. All went into war service. 32 were sunk. The vessels have a maximum loaded displacement of 18,000 tons. They are 492 feet long, 66 feet, 6 inches beam. Powered by the most modern high-pressure, high-temperature steam plant—rated at 8,500 ship horsepower—they have a sustained sea speed of sixteen and one-half knots, being much faster than the cargo ships of any competing foreign nation. Federal is building a second series of the C-3 type for the American-South African Line. Shown in the launching photo above, are (left to right) Joseph T. Lykes, Mrs. Gillett, and Charles W. Bryan, Jr., vice-president of the yard.

WHEN TIMES WERE GOOD: The 12,800-ton *Doctor Lykes* was launched at U.S. Steel's Federal shipyard in October, 1945. Mrs. Tillie Lykes Gillett, sister of Joseph T. Lykes, was the sponsor. She christened the vessel in honor of Dr. Howell T. Lykes.



Reconversion from war to peace is actually visualized in the cover photo taken at U.S. Steel's Federal shipyard at Kearny, N.J. Pictured in the north wet basin are the 12,800-ton *Norman Lykes* and the *Lizamb Lykes*. In the background is the *Almeria Lykes*. She is displaying the first post-war company insignia on the smoke stack, a white L in a blue diamond, against a white band. The ships were deployed carrying cargoes to the Far East to aid in reconstruction.



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Circle 335 on Reader Service Card

FRENCH YARD NEWS

Ateliers Et Chantiers Du Havre Delivers Graving Dock Gate

On September 16, the Chamber of Commerce and Industry of Martinique (FWI) took delivery of a new graving dock gate for the Fort-de-France Drydock, from Ateliers et Chantiers du Havre (ACH). The new graving dock gate is part of the drydock renewal plan by the Chamber of Commerce, that strives to reinforce the role of Martinique as a maritime maintenance and ship repairing platform in the Caribbean by combining security and high technology. The overall length of the gate is 89.2 ft. (27.2 m), with a width of 9.1 ft. (2.8 m), a height of 38 ft. (11.6 m), and weighs 320 tons. Equipment includes five water ballasts, 14 valves, and three pumps. The gate is constructed of high tensile steel, and watertightness is reportedly assured by a neoprene seal. An electrical remote control system operates all valves and pumps, and maneuvering time of the gate is approximately 30 minutes. The orderbook of ACH includes three 37,000-dwt chemical tankers for Stolt Parcel Tankers, Inc., to be delivered in 1997 and 1998, as well as four barges for Compagnie Fluviale De Transport.

For more information on
Ateliers Et Chantiers Du Havre
Circle 159 on Reader Service Card

Chantiers De l'Atlantique Chosen For Royal Norwegian Navy Study

GEC Alstom's shipbuilding subsidiary, Chantiers de l'Atlantique, is one of five shipyards that received orders from the Royal Norwegian Navy for feasibility studies for a new design of anti-submarine frigates. Six new frigates are needed to replace the 30-year-old Oslo series. During the last 10 years, Chantiers de l'Atlantique has constructed seven passenger cruise ships for Norwegian shipowners and three more vessels are currently building at the St. Nazaire yard. The yard's study for Norwegian frigates will be based on expertise acquired through designing

and building six Floreal type frigates for the French Navy between 1991 and 1994.

Chantiers Wins Cruise Ship Order

Chantiers de l'Atlantique has won an order to supply a 160-cabin cruise ship to French operator, Services et Transports. The ship, which will sail under the French flag, will be based in French Polynesia and will be used for short cruises of one or two weeks. Delivery is scheduled for October 1997.

For more information on
Chantiers de l'Atlantique
Circle 169 on Reader Service Card

Leroux Et Lotz-Built High-Speed Hydrojet Enters Service In France

As of September, the Corsaire 11000, a new high-speed hydrojet vessel, or N.G.V. (Navire a Grande Vitesse), began cruising the Mediterranean between Nice on the south coast of France and the French island of Corsica, a distance of 125 miles. The vessel, built by Leroux et Lotz in Saint-Melo, will operate under the French flag for owner Societe Nationale Corse Meaiterranee (SNCM).

The N.G.V. will speed at up to 40 knots, with its propulsion based on the principle of hydrojets, which consists of pumping in seawater, and pushing it out with force. Overnight ferry trips to Corsica from Nice will be minimized to between 2.5 and 3.5 hours. At 335 ft. (102 m) long, the vessel holds 500 passengers, 148 vehicles, and a crew of 12. Its four diesel engines with a combined power of 24,000 kW feed four hydrojets, two stationary, and two which can be directed to aid in the steering of the vessel. Constructed of aluminum to achieve light weight, the vessel is equipped with front and back loading doors to facilitate easy loading for vehicles, and side doors for passenger embarkment/disembarkment.

A second N.G.V. is slated for delivery in June 1996, enabling the owner to more effectively compete with shipping companies. The vessels reportedly meet all IMO standards previous to being launched.

For more information on Leroux Et Lotz
Circle 174 on Reader Service Card

New Proposals Welcomed By Intertanko

Intertanko's Council has supported legislative efforts to require more realistic Natural Resource Damage Assessment (NRDA) procedures. The Council members heard reports from Intertanko's U.S. representatives indicating that a broad alliance of domestic maritime and industrial concerns had succeeded in advancing legislative initiatives that would rationalize natural damage assessment methodologies.

The shipping and oil industries remain concerned that the amounts for such damages can become wildly excessive and far beyond available insurance. Intertanko has joined a coalition of mainly U.S. domestic industrial concerns which recently submitted comments to the proposed NRDA regulations. In its comments, the industry group suggested relevant modifications to the draft regulations and proposed that measures should be considered by Congress aiming at more rational ways of calculating NRDA. Intertanko will continue to pursue a program directed toward promoting rational damage assessment methodologies.

MHI Delivers Tanker Cargo Handling Simulator, Establishes Subsidiary

Mitsubishi Heavy Industries, Ltd. (MHI) has completed a simulator for just under \$1 million, developed for operators to master cargo handling work of a VLCC. It was delivered to Nippon Yusen Kabusiki Kaisha (NYK) on October 16. The crude oil cargo handling work simulation involves operation of the cargo valve control console and inert gas system (IGS) control panel which are a VLCC's cargo work control room.

The simulator, manufactured by MHI's Nagasaki Shipyard & Machinery Works, consists of six different pieces of equipment, namely; cargo valve control console; IGS control panel; local valve operation panel; viewing service system; pumping sound synthesizer system; and instructor console. The equipment is connected by a Local Area Network (LAN) using optical fiber, and the simulation system is operated on the same database linked together with all equipment.

MHI has also established a legal entity in Bangkok, Thailand called Mitsubishi Heavy Industries, (Thailand) Ltd. The new company, which began operation on October 1, is headed by Kimiaki Hirokawa, former general manager of MHI's Bangkok representative office. The company was established to further strengthen MHI's marketing activities in Thailand, in order to profit from the country's expanding industrial activities.

For more information on MHI
Circle 161 on Reader Service Card

Ulstein Supplies Revised Thrusters, K-Series Engines

Ulstein Maritime Ltd. in Canada has developed a new version of its successful series of deck-mounted Z-drive thrusters, and has added another fixed pitch retractable thruster to its range. The previous Z-drive thruster incorporated a kick-up arrangement to eliminate damage when grounding — a feature deemed unnecessary during in-service situations. In the newly revised model, the thruster can still be hydraulically lifted clear of the water for inspection, maintenance, and propeller access, if the drive shaft coupling is disconnected prior to inspection — which reportedly takes a few minutes. Current production of Z-drives has centered on a series of five units rated at 440 kW (600 hp), including installations on ferries operating in eastern Canada.

Ulstein's largest demountable TCNP thruster, originally developed for powering large offshore

service vessels, was recently supplied to an 8,000-gt seismic vessel, *Ramform Explorer*, and will also be featured on the vessel's sistership, currently under construction. Three TCNP units have also been supplied this year to the FPSO vessel building at Far East Livingston Shipbuilding in Singapore for Smedvig Offshore.

Ulstein Bergen has revised its 250-mm bore K series engines, offering reduced oil consumption, extended oil filter life, and improved valve train performance. The engines are leading auxiliary engines with the capability for burning heavy fuel oil. Improvements to the engine family include the addition of a carbon cutting ring and other improvements to the cylinder unit, as well as hot box enclosed fuel injection equipment, and improved timing gear for extended life and higher injection pressures.

For more information on Ulstein
Circle 162 on Reader Service Card

Reson Wins Detroit USACE Contract

The Detroit District of the U.S. Army Corps of Engineers (USACE) awarded a contract to Reson, Inc. for the integration, delivery, training, and support of an automated Strike Recovery and Removal System. The system, consisting of a Reson SeaBat 9001S, Coastal Oceanographics' HYPACK navigation software, Triton Technology's Isis Image Processing System, a Seatex MRU5 Motion Sensor, and a Robertson gyrocompass, is to be installed on the derrick boat *Nicolet*, a tug-maneuvered barge situated on the St. Mary's River in Sault St. Marie. The automated system is designed to locate and assist with the removal of "strikes," which are rocks that have been detected by acoustic survey operations that provide a potential hazard to ships using this busy waterway. The performance and capabilities of this system will reportedly provide the Detroit District with the ability to locate and remove strikes economically and efficiently.

For more information on Reson
Circle 180 on Reader Service Card

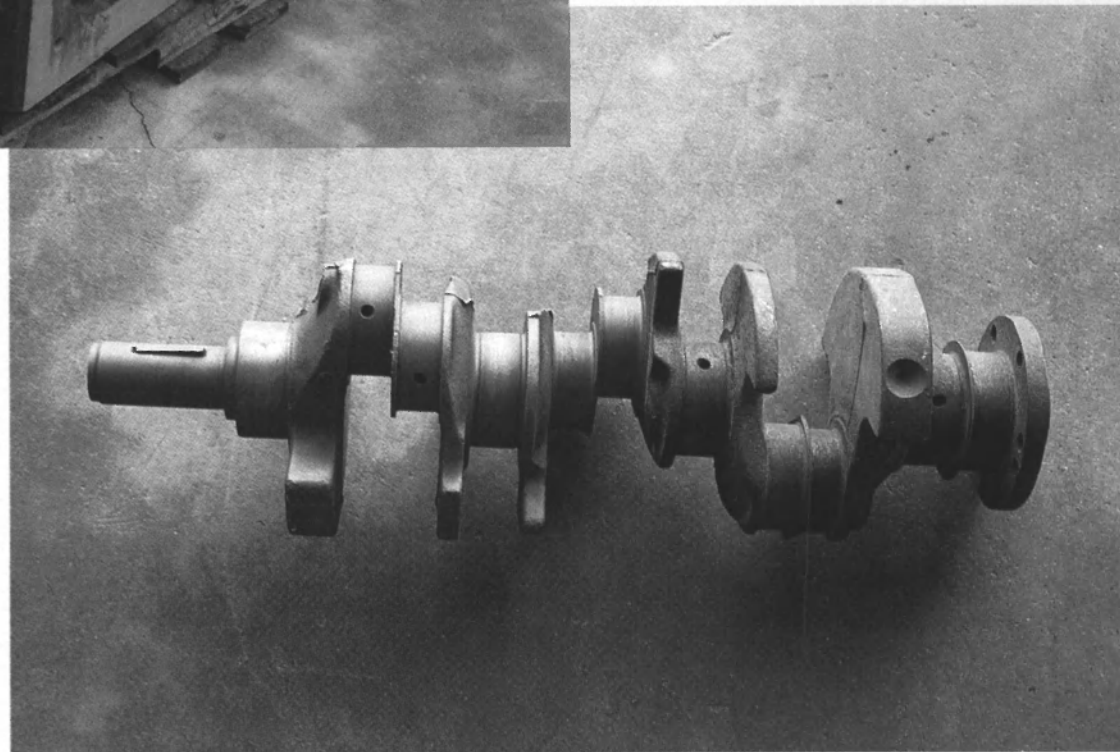
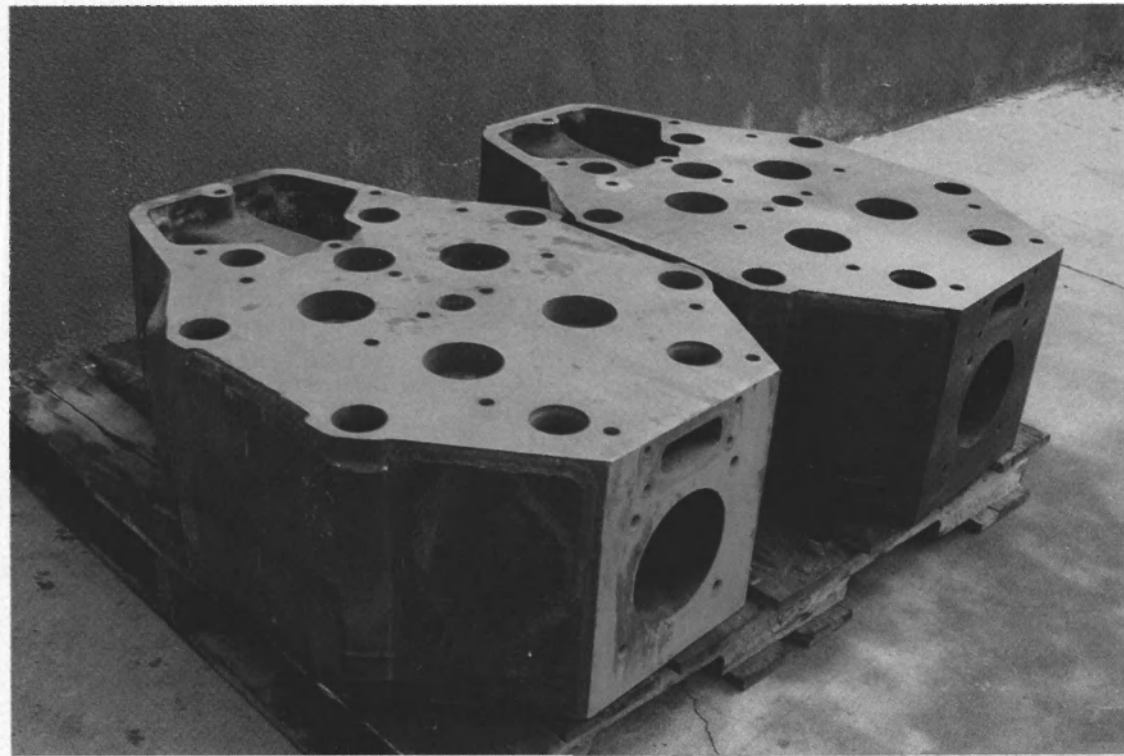
AWO Announces Two New Directors

The American Waterways Operators (AWO) announced the addition of two new members to its management team: **Jack Morgan**, as director of Public Affairs; and **Allen Walker**, as director of Shipyard Affairs to manage and direct the American Waterways Shipyard Conference (AWSC), a conference of the AWO representing the commercial second-tier shipyard industry.



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Navigation & Communication Equipment

The following section highlights recent news and company information from many prominent international Navigation & Communication equipment suppliers. For additional information on a particular company, circle the appropriate number on the Reader Service Card in this issue.

Alden Electronics

Alden Electronics has introduced the SATFIND-406 GPIRB. It combines the features of a 406 MHz EPIRB and a GPS (Global Position System) receiver. The SATFIND-406 GPIRB reportedly provides navigation capability by using the internal GPS receiver which can be connected via a standard NMEA output to a remote display unit or printer.

Circle 68 on Reader Service Card

Anschütz

Anschütz offers Nauto Control 2000, an Integrated Navigation and Control System (INS). The open system structure of the Nauto 2000 is said to guarantee the functional adaptation to further bridge systems such as ship's automation; ship's communication; and ship's safety. Each Nauto Control 2000 subsystem has modular software and hardware and is set up hierarchically.

Circle 69 on Reader Service Card

Ascom Tateco

Ascom Tateco is a Sweden-based developer and manufacturer specializing in on-site paging, personal alarms, and cordless telephone systems. All software and hardware for these systems are developed in Ascom Tateco's head office in Gothenburg. Ascom and Ericsson have agreed to form a joint venture company for their On-Site Paging (OSP) activities. The ownership is intended to be 70 percent Ascom and 30 percent Ericsson. The objective of this joint venture is to confront the realities of the new environment for on-premises wireless messaging applications and systems, in view of the powerful new technologies in communications. The new company will seek a position in delivering integrated messaging solutions worldwide. The present Ascom Tateco AB company in Gothenburg will become the new company, and will retain its subsidiary companies.

Circle 70 on Reader Service Card

Ashtech

The Ashtech SCA Sensor GPS Receiver is a powerful navigation system that offers Real-Time Differential capability and Super C/A tracking. It is reportedly ideal for high precision mapping applications. The receiver uses "All-in-View" dedicated 12 channel Super C/A tracking where the carrier phase is used for smoothing the low noise code ranges. This enables greater accuracies than other GPS receivers that have no carrier smoothing or low noise measuring techniques. The SCA Sensor continuously tracks up to 12 satellites simultaneously on 12 separate and parallel channels.

Circle 71 on Reader Service Card

CAE

CAE's Integrated Platform Management System (IPMS) uses computer-based technology to control and monitor operations systems in naval vessels. More than 35 systems have been delivered or are in production, including 12 systems for the Canadian Patrol Frigate program, and 12 systems for the U.S. Navy's MHC-51 Osprey class minehunters.

Circle 72 on Reader Service Card

Cetrek

Cetrek has introduced C-net instruments, autopilots and chart plotters. Reportedly, a single wire datalink connects individual C-net instruments, allowing each to gain information from the others. The instruments rely on sensors placed elsewhere on the vessel to supply their data.

Circle 73 on Reader Service Card

C-MAP

C-MAP has licensed Anritsu of Tokyo, Japan, to use C-MAP technology.

Anritsu's RN107A Radar/Chart Plotter, a new product developed in conjunction with Simrad, Inc., displays the C-MAP Chart Reader. The user can call up either radar or charts on screen as desired. Route planning data including Lat/Lon, distance, time schedule, and fuel consumption are automatically computed and displayed.

Circle 74 on Reader Service Card

C-Plath

C-Plath offers the NAVTWIN II, a compass monitor which reportedly simultaneously processes up to three separate heading references from one or two gyrocompasses and/or from one magnetic compass. The headings of the compasses monitored are shown permanently and simultaneously on the control and display unit.

Circle 75 on Reader Service Card

EEV Inc.

EEV is a manufacturer of microwave components for marine radar. EEV's range of long life Third Generation marine magnetrons covers powers of 1.5 kW in X-band and 5 kW to 60 kW in S-band, and are designed to fit all manufacturers' radars worldwide.

EEV introduced new low cost marine night vision equipment. The P2000 Nite-Watch is a miniature hand-held viewer, ideal for use by coast guards, yacht owners, and sports enthusiasts for providing the ability to see during night-time sailing.

Circle 108 on Reader Service Card

Electronic Marine Systems

Electronic Marine Systems, Inc. offers the NAVIGATOR, a DGPS system supplied with software for intercoastal, river and Great Lakes navigation. These navigation packages were designed to address the needs of these specific markets. Electronic Marine also provides Ground Guard, a passive ships' grounding prevention system which reportedly creates an extra watchstander to ensure proper water depth miles ahead of the vessel.

Circle 117 on Reader Service Card

Furuno

Furuno introduced the Voyager concept, an Integrated Bridge System which reportedly integrates functions and principles in one piece of equipment.

There are eight basic elements of Voyager: position calculation; ARPA radar; communications equipment; voyage management; route planning; electronic chart system; automatic steering; and engine and propulsion control.

Circle 76 on Reader Service Card

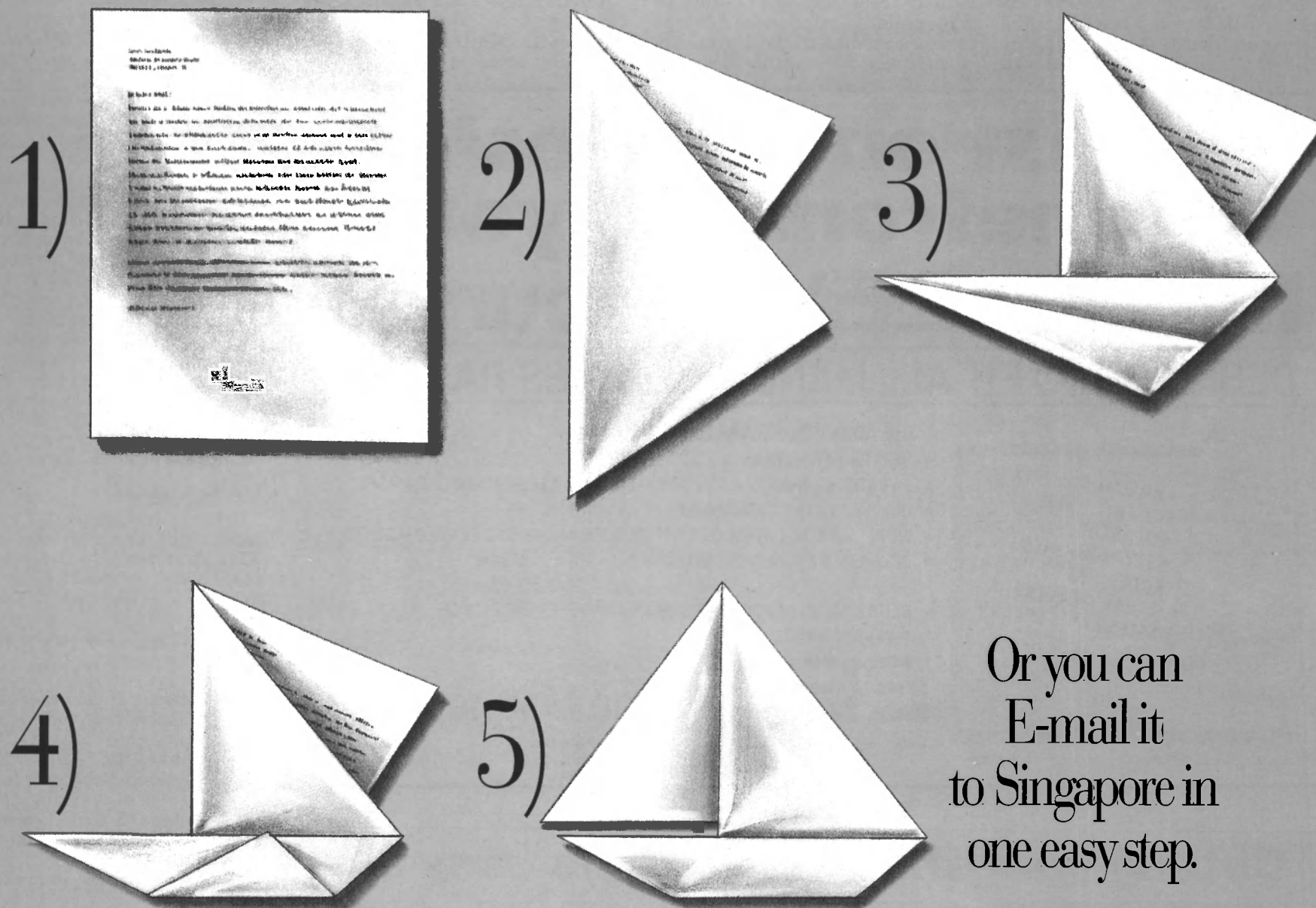
Globe Wireless

Globe Wireless introduced GlobeEmail, a maritime data communications service. GlobeEmail uses digital technology to deliver telex and text messages, as well as computer data files by using HF radio. GlobeEmail will reportedly transmit anything via radio that can be sent down a telephone line with a modem, such as facsimiles, word processing documents, spreadsheets, data files, and text files. The system's reliability is estimated at 99.98 percent, worldwide.

Circle 77 on Reader Service Card

IHI Marine

IHI built the ADMAX-SM ship administration system on the basis of the International Safety Management (ISM) Code, making use of the ship management know-how fostered through the develop-



Now COMSAT's C-LinkSM (Inmarsat-C) service is easier to use than ever before, thanks to improvements for PC computing. COMSAT engineers have streamlined the C-Link process to give you access to all COMSAT land earth stations in a single session, with no monthly fee. What's more, C-Link's data reporting and polling capabilities have been enhanced as well.

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 **COMSAT**
MARITIME SERVICES

Circle 225 on Reader Service Card

ment/sales of its original ship management system, the ADMAX.
Circle 114 on Reader Service Card

Infonav Corp.

Infonav Corp. has integrated a real-time radar graphics overlay with its Infonav electronic chart system. The electronic chart radar overlay system, known as Infonav/R3000, was tested on the Canadian Coast Guard ship *Sir Wilfred Grenfell*. The combined

Infonav/R3000 system operates on a single personal computer.
Circle 78 on Reader Service Card

Intl. Communications Group

International Communications Group, Inc. announced its new Communications Integrator, Mobile-Com 64. According to industry analysts, Mobile-Com 64 will emulate operation and proved services common to European-North American central office facilities.

Mobile-Com 64 is designed to provide automatic switching, accounting, communication management, and control in either manned or unmanned radio stations.
Circle 105 on Reader Service Card

Kelvin Hughes

Kelvin Hughes has expanded its Nucleus Integrated Navigation Systems (NINAS) with the introduction of Nucleus 2 bridge equip-

ment. This system consists of two Nucleus 2 6000 ARPA radar displays, a nucleus navigation display (NINAS), a combined NINAS/Electronic Chart Display, and a Qubit Electronic plotting table. Reportedly, the new Nucleus 2 radar display has an improved ARPA computer, and can be interfaced with the up mast combined S-B and transmitter/receiver, turning mechanism, and antenna.
Circle 79 on Reader Service Card

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Circle 302 on Reader Service Card

Kvaerner

Kvaerner Ships Equipment has been contracted to supply integrated ship systems to a series of tankers on order at shipyards in the U.K., Spain, and Korea. The contract for this two-ship series of 45,000-dwt product/chemical tankers marks the first time Kvaerner has secured a single source contract for a vessel under construction in Korea. Kvaerner is supplying both vessels with integrated bridges; liquid cargo handling systems, including computerized monitoring and control; inert gas systems; incinerators; and engine room pumps.
Circle 106 on Reader Service Card

KVH Industries

KVH Industries offers TracVision, a new source of entertainment at sea which reportedly allows users to watch more than 150 channels such as CNN and HBO.
Circle 80 on Reader Service Card

Leica

Leica Navigation and Positioning (NAP) Division received an order from the U.S. Coast Guard (USCG) to supply more than 200 MX 200 GPS Navigation Receivers for use on USCG vessels, bringing the total number of USCG MX 200 shipboard installations to more than 400.
Circle 113 on Reader Service Card

Mackay Communications

Mackay Communications has introduced the NERA Saturn Bp, an Inmarsat B terminal weighing approximately 20 kgs. The complete system, including the four section antenna, main control unit, and RF equipment, is packaged in a rain-resistant, molded polyethylene, compact and rugged suitcase with wheels for easy transportation.
Circle 81 on Reader Service Card

Magellan

Magellan's 1996 line of marine GPS receivers includes: the new Magellan NAV DLX-10, offering full graphics and a built-in plotter, in a hand-held, portable GPS receiver; the 10-oz. Magellan GPS 3000 and GPS 2000; and the all-new Meridian XL.
Circle 82 on Reader Service Card

Marine Technology Int'l.

Marine Technology Int'l. Ltd. introduced the Solas Lifeline, a GMDSS console which is designed specifically for bridge installation. This system is reportedly flexible enough to fit into any bridge situa-



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Navigation & Communication Equipment

tion with a range of mounting options, including bulkhead, desk, and ISO 8468 pedestal.
Circle 83 on Reader Service Card

Marinet Systems

U.K.-based Marinet Systems was chosen by Christian F. Ahrenkiel to provide a network linking a +35 fleet of chemical tankers, LPGs, bulk carriers, containerships, and RoRos to the company's interna-

tional offices in Hamburg, Rostock, Cyprus, Hong Kong, and the U.S. The major requirement for bringing the vessels into the network was for their software to remain a predominant feature.
Circle 84 on Reader Service Card

McMurdo

McMurdo introduced the MCM330 Personal Beacon. This unit, presently undergoing FCC

approval, will reportedly be available at the end of this year.
Circle 116 on Reader Service Card

Nautical Technologies Ltd.

Nautical Technologies Ltd. has developed The Cap'n, reportedly the first fully integrated navigation system for Windows and Windows 95. This system includes electronic charting, tides and currents for 300 years, route plan-

ning, voyage logs, a ship's inventory module, and a celestial system.
Circle 85 on Reader Service Card

Nautronix, Inc.

Nautronix Inc., specializing in dynamic positioning and acoustical tracking equipment, has had its ASK4000 series DP product evaluated and subsequently found in compliance with DNV Rules for Classification Of Dynamic Positioning Systems for Steel Ships and Mobile Offshore Units. Nautronix is also in the process of obtaining the ABS's Maltese Cross-type certification for its ASK4000 Dynamic Positioning Systems.
Circle 86 on Reader Service Card

Naval Electronics, Inc.

Naval Electronics introduced a new line of stabilized marine satellite dishes for TV reception while at sea. Several packages are available from the new Small Dish DBS system, to conventional Ky and C band equipment.
Circle 112 on Reader Service Card

Northstar

Northstar announced the addition of the 951X and 951XD to its family of Differential GPS systems. Features of the 951X series include: an internal tide-track; 1,000-waypoint capability; and a 3-D perspective screen.
Circle 87 on Reader Service Card

NovAtel

NovAtel Communication Ltd. introduced the GPSDredger and Hydrographic Surveyor, the company's latest GPS product releases targeted at the marine industry. These 12-channel GPS receivers reportedly achieve real-time accuracy to the 3.3 ft. (1 m) or better level.
Circle 88 on Reader Service Card

Panasonic

Panasonic has introduced its KX-G5700 handheld GPS receiver. This unit accepts pocket-size Navionics cards which contain digitized charts of worldwide coastal waterways.
Circle 89 on Reader Service Card

Racal-Decca Marine

Racal-Decca Marine is launching its new ChartMaster dual capability electronic chart. This system will show both vectorized and raster scan charts in the same unit. Users can create and display electronic chart portfolios using a combination of the two chart types, according to operational requirements and chart availability.
Circle 90 on Reader Service Card

Radio-Holland USA B.V.

Radio Holland USA is supplying the Kelvin Hughes NINAS 2 (Nuclear Integrated Navigation System) in the U.S. To date, there are more than 30 ships of various types that have been fitted.
Circle 111 on Reader Service Card

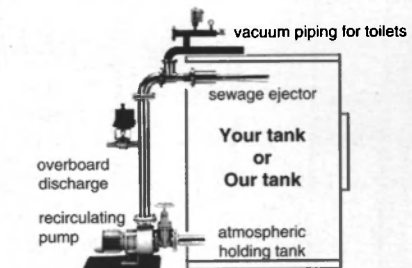
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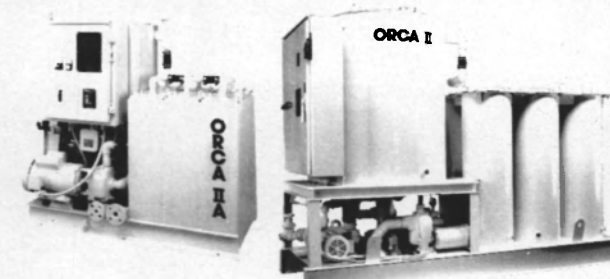
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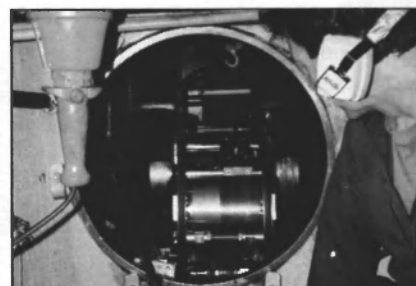
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Satcom-CTM – offers mobile and fixed text and data services in the IOR/POR.

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Circle 33 on Reader Service Card

Navigation & Communication Equipment

systems: the Pathfinder/ST C26 ECDIS and Pathfinder/ST C20 ECDIS. The C26 ECDIS (Electric Chart Display and Information System) features a 26-in. diagonal CRT display and matches Raytheon's Pathfinder/ST M34 ARPA radar. The smaller ECDIS, the 20-in. Pathfinder/ST C20, matches Raytheon's Pathfinder/ST M25 ARPA radar. The Pathfinder/ST C26 and C20

ECDIS systems are compatible with a variety of chart formats, including SP57/DX90 from government manufacturers, and formats from private manufacturers including C-MAP and CD-ROM electronic charts.

Circle 91 on Reader Service Card

Ritchie

Ritchie Navigation has developed a new MM-300 interface module

that allows owners of Raytheon and Autohelm electronics to interface with the Ritchie Magtronic Heading System which includes autopilots, radar, Loran, GPS, and plotters.

Circle 92 on Reader Service Card

Rydex

Rydex Industries Corp. has signed contracts to provide a state-of-the-art ship/shore communica-

tions networks for a trio of U.S. shipping companies — Sea-Land Service, Keystone Shipping Co., and Lasco Shipping Co.

Circle 93 on Reader Service Card

SAIT-RadioHolland

SAIT Marine, a member of the SAIT-RadioHolland Group, introduced the SEAGULL concept, a new version of the GMS console. SEAGULL, starting kit is a 906 mm console which incorporates: the main VHF (TRP3000) with DSC3000 and channel 70 receiver; an MF/HF DSC9000 with watch receiver; and a power control panel with alarm.

Circle 94 on Reader Service Card

Scientific-Atlanta

Scientific-Atlanta installed an Inmarsat MariStar Multi-M system on board *Century*, the newest Celebrity Cruises' luxury liner. The system is reportedly providing telecommunications service to passengers and crews on board *Legend of the Seas*, *Crystal Symphony*, *Sky Princess*, *Silver Wind*, *Ryndham*, and other ocean liners. In addition, Scientific Atlanta has been awarded a \$3.7 million contract by the Ministry of Posts and Telecommunications (MPT) of China to establish an emergency satellite communications network.

Circle 95 on Reader Service Card

SEA Inc.

SEA now offers a complete line of MF/HF GMDSS communications products. SEA has been supplying other GMDSS approved products including SEATOR/Telex, Inmarsat C, Navtex, EPIRBs and SARTs.

Circle 96 on Reader Service Card

SeaBeam

A SEA BEAM 2100 multi-beam survey system will be deployed, for oil exploitation, in Gulf of Mexico waters for the first time. This will occur under terms of a joint venture/lease arrangement between SeaBeam Instruments, Inc. and John E. Chance & Associates, Inc. A SEA BEAM 2136 (36 kHz) survey system has been installed aboard the John E. Chance survey vessel, the *Seis Surveyor*.

Circle 97 on Reader Service Card

Simrad, Inc.

Simrad, Inc. introduced its Shipmate RS8300 VHF Radiotelephone with automatic SOS signal.

Reportedly, by connecting the RS8300 to a GPS receiver, an emergency signal, including position, time, date and vessel call sign, can be transmitted by activating the SOS button on the handset keypad.

Circle 98 on Reader Service Card

Sperry Marine

To meet with requirements of ship owners and ship builders, Sperry Marine has designed the Vision 2100 line of bridge console configurations available in three levels of modularity, to meet any

1996 Ship Production Symposium

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- Acquire vital operations information, from predictive maintenance and marine coatings to personnel training and policy implementation.

For your brochure outlining the details of this exciting event to be held February 14 -16, 1996 in San Diego, California at the prestigious Hyatt Regency, La Jolla, please call Concepts Meeting & Trade Show Management, (619)535-0050.



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need.

Circle 107 on Reader Service Card

S.P. Radio

The Danish company S.P. Radio A/S, manufacturer of the SAILOR GMDSS Solution, introduced a GMDSS Simulator Program which is compatible with the SAILOR integrated GMDSS station.

Circle 99 on Reader Service Card

Standard Communications

Standard Communications will be introducing the following new Horizon marine electronics at the International Workboat Show in New Orleans: the HX250S five-watt radio; the Eclipse+ 25-watt fixed mount VHF; the MD50 Digital, Multi-Data Instrument, which displays depth, speed, temperature, log, voltage, and time functions on a single unit; the AS45 marine instrument; and the CH50 Close Hauled Instrument which complements the WS50 Wind Speed and Point Instrument.

Circle 100 on Reader Service Card

Starlink

Starlink offers DNAV-212, and MRB-2A DGPS and GPS Beacon Receivers with new MBA Series "H" Field Crossed Loop ferrite antennas. Starlink is a provider of DGPS products and services for professional GPS users and OEMs. Starlink is constantly working on improving products to offer navigation solutions.

Circle 115 on Reader Service Card

STN ATLAS

STN ATLAS Elektronik has developed a series of single-sourced Ship Control Centers which reportedly integrate all navigation, communications and main control operations for lower cost package design of ship bridges. The latest 300 NACOS system has been installed aboard P & O's Princess Cruises' new line, the Fincantieri-built, 77,000 grt *Sun Princess*.

Circle 101 on Reader Service Card

TITAN

TITAN offers its Radar Display system, which consists of a standard full size AT format personal computer expansion board, with associated mezzanine board which occupies a second expansion slot in the personal computer.

Circle 102 on Reader Service Card

Transas Marine

Transas Marine announced the opening of its U.S. office in Everett, Wash. Based in Southampton, U.K., the company is a manufacturer of a variety of marine electronic products, focused on Electronic Chart Display and Information Systems (ECDIS), and Electronic Chart Systems (ECS), supported by color vectorized electronic charts. Transas Marine is also known for its PC-based ship's simulators.

Circle 103 on Reader Service Card

Transdigital Communications Corp.

Transdigital Communications Corp. (TCC), based in Glendora, Calif., announced the signing of a letter of intent with Carnival Corp. to install TCC's Transtar interactive digital video system on two of Carnival Cruise Lines' largest ships. The terms of the agreement include options to install TCC's

system on 12 ships within the Carnival fleet.

TCC's digital Transtar system was designed to provide instantaneous stateroom access to a vast digital media library, containing both entertainment and information services including: preview and purchase of shore excursions; on-demand selection of digital video programs and movies; health and beauty service; duty free shop-

ping; daily activity guides; and room service and dinner wine ordering all from the stateroom TV set via the remote control unit. The first ship installation is scheduled in May 1996, and the second in September 1996.

Circle 109 on Reader Service Card

Yachting Electric, Inc.

Yachting Electric, Inc., a new manufacturer of electronic equip-

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Tel: +47 22 77 79 50. Telefax: +47 22 77 71 78. Telex: 56 72 666.

 **Telenor**

Circle 331 on Reader Service Card

Navigation & Communication Electronics

ment for the marine market, introduced the YachtGuard Monitor. The user of this product will reportedly be able to check and report the status of his boat, yacht, vessel, or other watercraft from anywhere in the world, 24 hours a day. A telephone call to the YachtGuard monitoring device will provide information on the condition of a boat's battery voltage, inside and outside temperatures, and the condition of the bilge.

Voice commands direct the user on the phone to the appropriate status report. Options include remote adjustment and call-back in an emergency. This system can be connected to a telephone land line or to a cellular phone.

Circle 104 on Reader Service Card

BOATRACS

BOATRACS, Inc. announced it has signed an agreement with

Intrex Data Communications Group, under which BOATRACS will be the exclusive distributor of Intrex's fuel and engine monitoring products used in the marine market. These products are currently being used by industry leaders such as Dixie Carriers, National Marine, and Tidewater Marine.

Commenting on the announcement, BOATRACS Chief Operating Officer, **Annette Friskopp** stated, "We are pleased to formal-

ize a working relationship with Intrex, as we have had mutual customers for many years. Our products and services are a natural fit, which will be of great value to our customers."

BOATRACS is the U.S. marine market distributor of the OmniTRACS System, a satellite-based communications and tracking system manufactured by QUALCOMM Inc. The system provides two way communications between vessels at sea and base stations on land, or with other vessels. It also allows for real time tracking and monitoring.

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Circle 314 on Reader Service Card

Teleste

Ring-Master A/S, the Norwegian fast access communications company, acquired all the shares in Teleste Marine Communication AB, Goteborg, Sweden. Teleste's intercom business is also transferred to Ring-Master.

Teleste Marine is a leading company within the field of digital telephone/intercom systems and integrated communications solutions for the marine market. The company's name will be changed to Ring Marine Communication AB. **Thomas Sandung** will remain on as managing director. Ring Master has a strong position on the European and American markets for intercom systems in land applications.

Circle 136 on Reader Service Card

OSI

Offshore Systems International (OSI) received orders for 22 of its ECPINS (Electronic Chart Precise Integrated Navigation System) systems since the end of August 1995. The purchase orders, from a variety of U.S. and Canadian-based customers, includes the largest sale in the company's history — 10 systems to New York-based American Steamship Co. Canada Steamship Lines of Montreal was reportedly the first company in the world to install ECDIS on its entire fleet.

Circle 176 on Reader Service Card

Philips Navigation A/S

Philips Navigation A/S, a manufacturer of satellite communications and navigation equipment, launched a new compact satellite communications terminal which complies fully with the new GMDSS requirements for vessels at sea. The Philips Safecom CMX was designed specifically to fit into a standard 19-in. industrial rack in the navigation area or wheelhouse of fishing and other commercial vessels. The unit operates using Inmarsat C satellites for transmission to telex, PSTN (telephone and fax modems), PSDN (X.25 network), and mobile-to-shore fax.

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RIVERBOAT CASINO REVIEW

Paradise II Begins Operation



The 116-ft. by 30-ft. (35.4-m by 9.1-m) *Paradise II* recently began service as an offshore casino vessel, operating out of the Key Largo, Fla. Holiday Inn. The three-deck, all-aluminum casino boat was designed by DeJong & Lebet, Inc., naval architects, of Jacksonville, Fla. The vessel was constructed by Marine Builders, Inc. of Utica, Ind., and interior design services were furnished by Directions In Design, Inc. of St. Louis, Mo.

Paradise II represents D&L's fifth vessel operating in the coastal Florida casino industry, and is the first vessel built specifically as a casino. The other vessels are converted dinner/cruise or charter vessels. D&L currently has three other conversion projects underway, and another new construction 240-ft. (73.2-m) vessel on the drawing boards for the offshore casino industry.

Paradise II has two casino decks, and carries 150 slots plus 12 table games for a total of 240 gaming positions. The vessel is U.S. Coast Guard (USCG) certified for 370 passengers on a partially protected route. She is a Subchapter T vessel — less than 100 gt. This

was accomplished through the careful planning in the early stages of construction, and still allows use of all hull compartments.

The vessel is powered by a pair of 6CTA Cummins engines, 300 hp each at 2,500 rpm, attached to ZF marine gears. The special five-blade propellers were furnished by Padgett-Swan, and were specified by D&L to help reduce vibration. Electrical power is provided by two Cummins 6CTA 125-kW generators. Cummins also provided a 6BT engine to power the bowthruster.

The vessel was designed in aluminum to help minimize the draft, which is between 4 and 6 ft. Although this is not recommended for most offshore casino vessels, this vessel's unique operating location inside the offshore reef reportedly allows it to operate comfortably, and negotiate the shallow waters from its operating site to its docking location.

Structural fire protection requirements of the USCG for an aluminum vessel are extensive and difficult to install, and the USCG worked closely with D&L engineers in accomplishing this infrequently used design technique.

The *Paradise II* features a Carrier Transicold HVAC system, including a 90-ton package chiller. The system was designed to maximize the removal of stale, smoky air from the casino. D&L specifically hired a Ph.D. in the air conditioning field in response to industry and design demands to improve the air quality in casino vessels.

Paradise II replaced an existing 80-ft. (24.4-m), 150-passenger vessel which has moved to the west coast of Florida. The vessels are operated by Holiday Casino Cruises. The same company currently has a conversion underway — engineered by D&L — of a 150-ft. (45.7-m), 500-passenger vessel expected to be completed in Nov. 1995.

For more information on DeJong & Lebet
Circle 177 on Reader Service Card

CSI Wins Remodeling Contracts For Dubuque Diamond Jo And Players III

Custom Ship Interiors, Inc. (CSI) announced that it has completed the interior remodeling of the *Dubuque Diamond Jo* riverboat casino — begun at Leevac Shipyards in Jennings, La., and finished while en route to Iowa. CSI also announced its completion of the interior remodeling of the *Players III* riverboat casino in Lake Charles, La.

These deliveries represent CSI's 14th and 15th riverboat casinos completed to date, respectively.

"We will look upon this project with pride as it makes its grand opening," said **Darrell Price**, president of CSI, referring to the *Dubuque Diamond Jo*. Of the *Players III*, **Andy Brown**, vice president of CSI, commented, "We have a record of providing on-time quality service to all our customers."

Founded in 1984, CSI is a leading interior refurbishment specialist for riverboat casinos, cruise ships and dinner boats.

For more information on CSI
Circle 178 on Reader Service Card

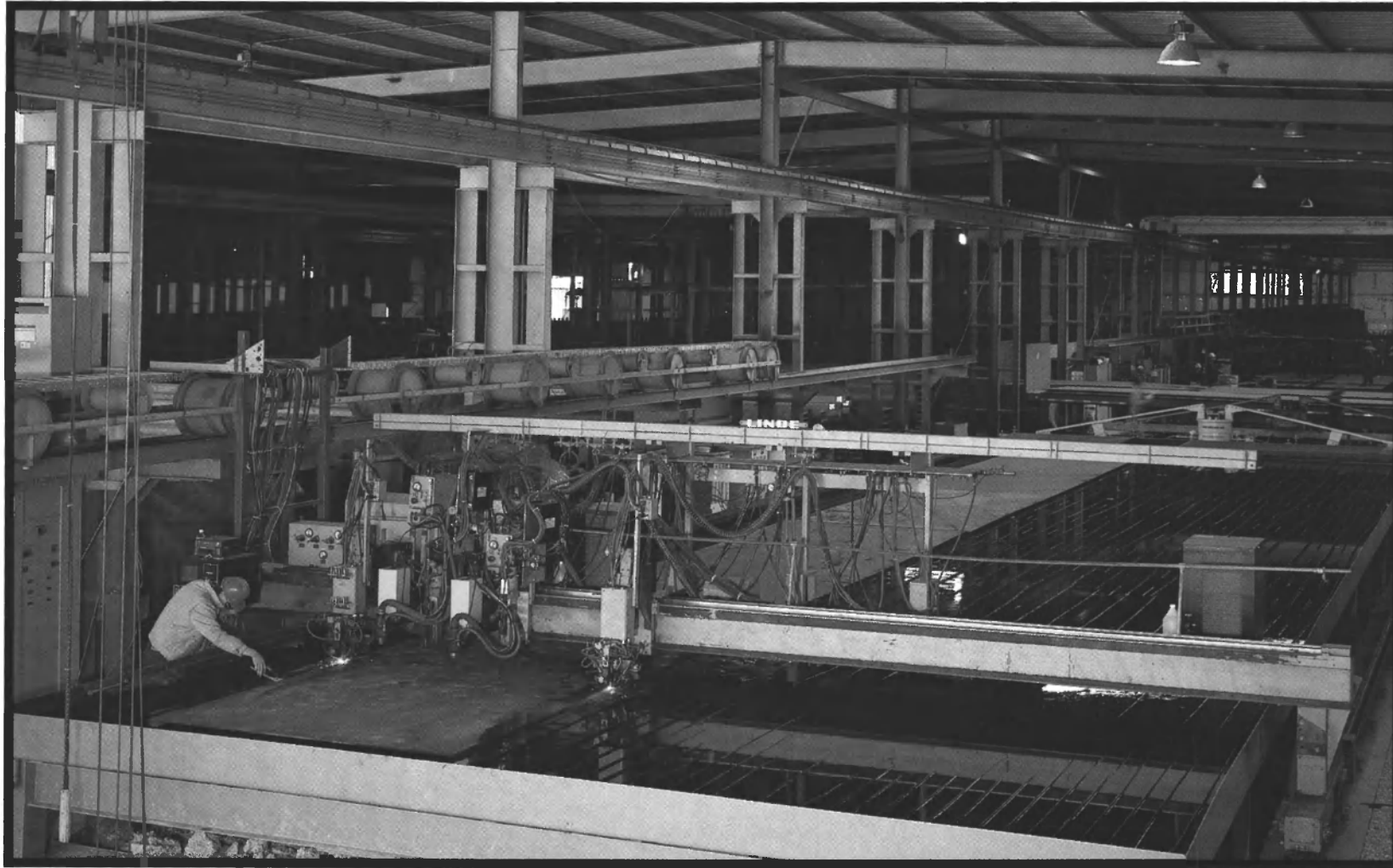
SMI Awarded Barge Modification And Newbuild Contracts

Service Marine Industries, Inc. (SMI), a full-service construction and repair yard in Morgan City, La., has been awarded a contract for the reconditioning and modification of eight existing deck barges for *Harrah's Casino* and *Player's Casino*, Kansas City, Mo.

When SMI completes the project, the two floating casinos will measure 950 ft. by 220 ft. by 7 ft. (289.5 m by 220 m by 2.1 m), and will be located close to the downtown riverfront section of the city. The four-month, turnkey project includes installation of a ballasting system and construction of the barges in two sections for delivery to the site through the inland river system. Once delivered to the site, the two sections will be maneuvered into place, fitted, and welded together to provide the floating platform upon which buildings will be erected.

SMI will also construct two floating barges for an unnamed midwestern casino operation. The barges will provide for double bottom protection, casino support systems, and office spaces inside the barge, and will accommodate the specific requirements of the casino operator. This barge order will be the company's eleventh project in this area.

For more information on Service Marine
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RIVERBOAT CASINO REVIEW

Trump Riverboat Project Gets USACE Green Light

Trump Hotels and Casino Resorts, Inc. announced that the Army Corps of Engineers has issued the permit that will enable

the Trump Indiana riverboat project in Buffington Harbor to continue to move forward toward its Spring 1996 opening.

Trump will make an estimated \$8 million in improvements to the harbor site, including the installation of a 1,500-ft.-long breakwater

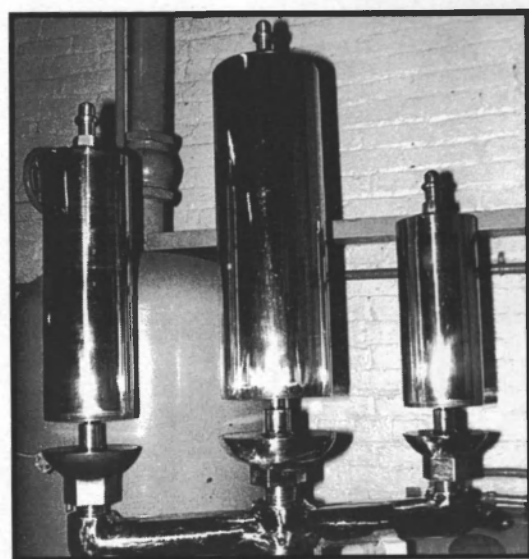
and a 1,900-ft.-long, 60-ft.-wide sheet pile and concrete bulkhead. With the issuance of the permit, Trump Indiana will complete harbor construction in early 1996.

Trump Indiana is a wholly owned subsidiary of Trump Hotels and Casino Resorts, Inc., which

also owns and operates Trump Plaza Hotel and Casino in Atlantic City, N.J., and which will develop all new Trump gaming activities.

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DNAV-212 The GPS Receiver for Professionals.

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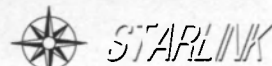
ting, diagnostics, waypoint, and configuration capability.

The waterproof DNAV-212 is designed for rugged professional use. The receiver has multiple interface ports and interfaces easily with any software package or system capable of accepting standard GPS data input.

THE SOFTWARE
The software provides GIS data collection, BDHI, GPS and beacon control, position plot-

APPLICATIONS

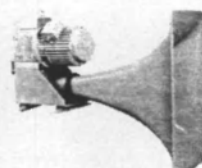
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Aztar Corp. Reports Third Quarter Results, Prepares For Indiana Opening

Aztar Corporation announced third-quarter 1995 net income of \$4.6 million, or 11 cents per share, fully diluted, compared with \$7.6 million, or 19 cents per share, fully diluted, a year earlier. Revenues for the quarter ended September 28, 1995 were \$154.9 million compared with \$146.8 million for the quarter ended September 29, 1994. Operating income was \$19.0 million in the 1995 quarter, compared with \$22.3 million a year earlier.

The Casino Aztar in Caruthersville, Mo., tallied third-quarter 1995 revenues of \$6.7 million, and an operating cash flow loss of \$200,000. The Caruthersville property opened April 28, 1995.

"The current quarter's performance can be largely attributed to continuing weak market conditions in southern Nevada and lower-than-anticipated results at our riverboat casino property in Caruthersville," said Paul E. Rubeli, Aztar chairman of the board, president and CEO. While the news from Missouri is disappointing, there is good news, namely the company's pending opening of its Indiana facility.

Mr. Rubeli noted that Aztar anticipates a December opening for its riverboat casino facility planned to be licensed in the Evansville, Ind. market. "Work is progressing rapidly on the mooring facility, and the boat itself is scheduled to arrive in Evansville on its maiden voyage on November 2," he said. "An aggressive pre-opening marketing campaign is underway, and we are gearing up for the commencement of operations in December." The main elements of Aztar's full Evansville project are: A riverboat with a capacity for 2,500 passenger guests and 300 crew; a casino with 1,250 slot machines and 70 table games; and a 250-room hotel.

The Indiana Gaming Commission granted Aztar a certificate of suitability, a preliminary step before licensing, on February 10, 1995. Aztar was selected by the City of Evansville as its choice for the development on June 30, 1994, and the City of Evansville and Aztar have signed a project agreement for the development.

Maritime Reporter/Engineering News

CALENDAR OF EVENTS

NOVEMBER

International Oil and Gas Exhibition: November 13-16, Beijing, People's Republic of China.
Contact: SPE, Office, 4 Mandeville Pl., W1M 5LA, London, England, tel: +44 171 487 4250; fax: +44 171 487 4229.

Pacific Fishing '95: November 16-18, Pier 48, Seattle, Wash.
Contact: Julia Higgins, 1515 N.W. 51st St., Seattle, Wash. 98107, tel: (206) 789-5333; fax: (206) 784-5545.

International Meeting on Petroleum Engineering: November 14-17, Beijing, P.R. of China.
Contact: SPE, Office, 4 Mandeville Pl., W1M 5LA, London, England, tel: +44 171 487 4250; fax: +44 171 487 4229.

Euro Port 95: November 14-18, Amsterdam RAI Congress Center, Amsterdam, The Netherlands.
Contact: Euro Port 95, Amsterdam RAI, P.O. Box 77777, 1070 MS Amsterdam, The Netherlands, tel: +31 20 5491212; fax: +31 20 6464469.

Advances in Ocean Weather Routing: November 15, SUNY Maritime College.
Contact: The Nautical Institute, Box 581, Center Moriches, N.Y. 11934, tel: (516) 773-5447; fax: (516) 773-5529.

Trans Marine Propulsion's 2nd Diesel Engine Propulsion Seminar: November 15-16, Seattle, Wash.
Contact: Terje Wennberg, Trans Marine Propulsion Systems, Inc., 4200 24th Ave. West, Seattle, Wash. 98199; tel: (206) 282-9142; fax: (203) 282-6514.

Pacific Fishing '95: November 16-18, Seattle, Wash., Pier 48.
Contact: Bruce Buls, tel: (206) 789-5333; fax: (206) 784-5545.

Offshore Northern Seas Advanced Projects Conference 1995: November 21-22, Stavanger, Norway.
Contact: May-Lis Thorsson, ONS conference manager, Norwegian Petroleum Society, P.O. Box 175, N-4001 Stavanger, Norway, tel: +47 51 53 55 45 46; fax: +47 51 55 22 70.

ISOPE Ocean Mining Symposium 1995: November 21-22, Tsukuba, Japan.
Contact: Prof. Jin S. Chung, International Society of Offshore and Polar Engineers, P.O. Box 1107, Golden, Colo. 80402-1107, tel: (303) 420-8114; fax: (303) 420-3760.

Viet Portex 95: November 21-24, Ho Chi Minh City, Vietnam.
Contact: Viet Portex 95 Project Management, Hamburg Messe und Congress GmbH, JungiusstraBe

13 D-20355, Hamburg, Germany, tel: +49 40/ 35 69-21 90/92; fax: +49 40/ 35 69-21 87.

2nd International Forum On Aluminum Ships: November 22-23, Melbourne, Australia.
Contact: Capt. Bill Duthie, conference manager,

Australian Exhibition Services Pty Ltd., Illoura Plaza, St. Kilda Rd., Melbourne, Victoria 3004, tel: +61 03 867 4500; fax: +61 03 867 7981.

Maritime Technology Exhibition Conference 1995: November 22-24, Royal Exhibition Building,

Melbourne, Australia.

Contact: Bill Hare, Australian Exhibition Services Pty Ltd., Illoura Plaza, St. Kilda Rd., Melbourne, VIC 3004 Australia, tel: (03) 867-4500.

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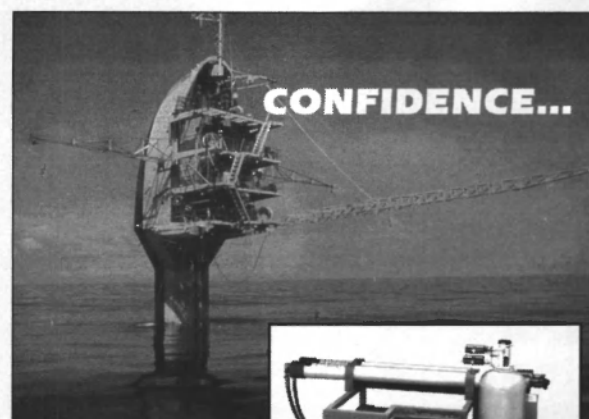
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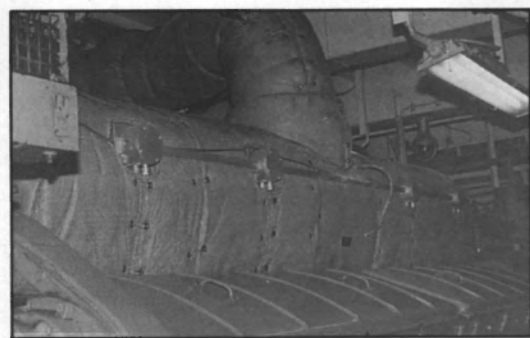
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Defense: November 23-24, London, U.K.
Contact: **Amanda Wilkes-Brough**, Royal Institution of Naval Architects, 10 Upper Belgrave St., London, U.K. SW1X 8BQ, tel: +44 171 235 4622; fax: +44 171 245 6959.

The Environmental Regulation Course: November 28-30, Atlanta Hilton Hotel & Towers, Atlanta, Ga.
Contact: **Executive Enterprises**, 22 W. 21st St., N.Y., N.Y. 10010-6990, tel: (800) 831-8333.

International Dredging Conference & Trade Show: November 29-30, Downtown Athletic Club, New York City.
Contact: **The Maritime Association of the Port of New York/New Jersey**, 17 Battery Pl., Suite 115, tel: (212) 425-5704; fax: (212) 635-9498.

Marichem '95: The Industry Meeting For Bulk Chemicals: November 28-30, Cologne, Germany.
Contact: **Marichem Secretariat**, Glen House, 200/208 Tottenham, London W1P 9LA, U.K., tel: +44 171 436 9774; fax: +44 171 436 5694.

Pacific Cruise Convention: November 28-December 2, The Cairns International Hotel, Cairns, Australia.
Contact: **Chris Cotton**, Miller Freeman/Seatrade, 4401 China Resources Building, 26 Harbour Rd., Hong Kong, tel: +852 2827 9128; fax: +852 2827 7831.

17th Annual International Workboat Show: November 30-December 2, New Orleans, La.
Contact: **Diversified Expositions**, P.O. Box 7437, Portland, Maine 04112-7437, tel: (207) 772-3005; fax: (207) 772-5059.

DECEMBER

American Waterways Operators (AWO) Winter Convention & Board of Directors Meeting: December 7-8, Washington, D.C.
Contact: **AWO**, 1600 Wilson Blvd., Ste. 1000, Arlington, Va. 22209, tel: (703) 841-9300; fax: (703) 841-0389.

Marintec China 95: December 5-8, Shanghai.
Contact: **Tony Nash**, The Seatrade Organisation, Seatrade House, 42 N. Station Rd., Colchester CO1 1RB, U.K., tel: +44 206 45121; fax: +44 206 45190.

American Gaming Summit: December 13-15, The Mirage, Las Vegas, Nev.
Contact: **American Gaming Summit**, 8025 Black Horse Pike, Ste. 470, W. Atlantic City, N.J. 08232, tel: (800) 394-2467; fax: (609) 645-1661.

1996

JANUARY

Riverfest '96: January 20-23, Regal Riverfront Hotel, St. Louis, Mo.
Contact: **Passenger Vessel Association**, 1600 Wilson Blvd., Suite 1000A, Arlington, Va. 22209, tel: (703) 807-0100; fax: (703) 807-0103.

U.S.C.G. Briefing on the "STCW": January 24, Seaman's Church Institute. Contact: **The Nautical Institute**, Box 581, Center Moriches, N.Y. 11934, tel: (516) 773-5447; fax: (516) 773-5529.

FEBRUARY

5th Annual International Boatbuilders' Exhibition & Conference (IBEX): February 8-10, Ft. Lauderdale/Broward County

Convention Center.
Contact: **CMC**, 200 Connecticut Ave., Norwalk, Conn. 06856-4900, tel: (203) 852-0500; fax: (203) 838-3710.

1996 Ship Production Symposium: February 13-16, Hyatt Regency, Lajolla, Calif.
Contact: **Peter E. Jacquith**, tel: (619) 544-3500.

ASNE Channel Islands Section Meeting, Combat Systems Symposium: February 14-15, Port Hueneme, Calif.
Contact: **Margaret New**, American Society of Naval Engineers, tel: (703) 836-6727; fax: (703) 836-7491.

1996 Customs/Trade/Finance Symposium of the Americas: February 25-27, Intercontinental Hotel, Miami, Fla.
Contact: **Buck Banks** or **Cristy Clavijo**, Stewart Newman Associates, 3191 Coral Way, Ste. 204, Miami, Fla., tel: (305) 461-3300.

MARCH

Sea Japan '96: March 5-9, 1996, Pacifico, Yokohama.
Contact: **Anthony Nash**, Seatrade House, 42 North Station Rd., Colchester CO1 1RB, U.K., tel: +44 1206 45121, fax: +44 1206 45190, or contact: **Christopher Eve**, Shuwa Kioicho TVR Bldg., 9th floor, 5-7 Koji-machi, Chiyoda-ku, Tokyo 102, Japan, tel: +81 3 3222 6901; fax: +81 3 3222 4320.

ASNE Day 1996, Annual Meeting and Exhibition: March 12-15, Sheraton Washington Hotel, Washington, D.C.
Contact: **Margaret New**, American Society of Naval Engineers, tel: (703) 836-6727; fax: (703) 836-7491.

Seatrade Cruise Shipping Convention: March 12-15, Miami Beach, Fla.
Contact: **Michael Kazakoff**, Seatrade, Princeton Forrestal Village, 125 Village Blvd., Suite 220, Princeton, N.J. 08540-5703, tel: (609) 452-9414; fax: (609) 452-9374.

United States Merchant Marine Academy STCW Panel Discussion: March 13, Kings Point, N.Y.
Contact: **The Nautical Institute**, Box 581, Center Moriches, N.Y. 11934, tel: (516) 773-5447; fax: (516) 773-5529.

Shipping '96: March 18-20, Stamford Sheraton, Stamford, Conn.
Contact: **Carleen Klass**, International Marketing Strategies, 66 Field Point Rd., Greenwich, Conn. 06830, tel: 202-639-4006.

Advanced Hydrographic Surveying Workshop: March 18-22, Mobile Convention Center, Mobile, Alabama.
Contact: **Barbara Sanders**, Coastal Oceanographics, Inc., 40 Salted Lane, Durham, Conn. 06422-1111, tel: (203) 349-3800; fax: (203) 349-1982.

ASNE Mechanicsburg Section, 10th Annual Logistics Symposium: 3rd week of month, Harrisburg Hilton, Harrisburg, Pa.
Contact: **Margaret New**, American Society of Naval Engineers, tel: (703) 836-6727; fax: (703) 836-7491.

Corrosion '96: March 24-29, Colorado Convention Center, Denver, Colo.
Contact: **NACE International**, P.O. Box 218340, Houston, Texas 77218-8340; tel: (713) 492-0535; fax: (713) 492-8254.

International Gaming & Business Expo (IGBE) '96: March 25-27, Sands Expo & Convention Center, Las Vegas, Nev.
Contact: **Christopher McCabe**, group show director, CMC, 200 Connecticut Ave., Norwalk, Conn. 06856-4990, tel: (203) 852-0500; fax: (203) 838-3710.

Maritime Reporter/Engineering News

BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.

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Minerals Research & Recovery Inc., 4820 South Coach Dr., Tucson, AZ 85714

ACOUSTICS

Profil-UL, 253 Winslow Way West, Bainbridge Island, WA 98110

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AIR CONDITIONING AND REFRIGERATION - Repair & Installation

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Bill Brown Enterprises, Inc., 4955 Ocean Pines, Berlin, MD 21811
Carrier Transicold, P.O. Box 4805, Syracuse, NY 13221
Novenco Hi-Press AS, P.O. Box 310, Roskildevej 325A, DK-2630 Taastrup, DENMARK

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ALUMINUM BOATS

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Mineral Research & Recovery Inc., 4820 South Coach Dr., Tucson, AZ 85714

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Beard Industries, P.O. Box 3115, Shrewport, LA 71130
Kraissl Co., 299 Williams Ave., Hackensack, NJ 07601

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B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401
Blom & Voss AG, P.O. Box 100720, D-2000 Hamburg 1, GERMANY
U.S.A. Reps: Simplex-Turner Inc., P.O. Box 168, Little Neck, NY 11363p, -0168
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Orion Corp., 1111 Cedar Creek Rd., Galton, WI 53024
Orkot Engineered Prods., 2535 Prairie Rd. Unit D, Eugene, OR 97402
Thordon Bearings Inc., 3225 Millway, Burlington, Ont., CANADA L7M 1A5

BILGE OIL/WATER SEPARATORS

Northstar Marine, 84 Wall Street, Farmingdale, NY 11735

BILGE SYSTEMS

Nelson Division, Exhaust & Filtration Systems, Hwy. 51 West, P.O. Box 428, Stoughton, WI 53589

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Sa Systems Inc., 187 Ward Hill Ave., Ward Hill, MA 01835-0679

BRIDGE WIPERS

Di-Mar Systems, Yellowstone Street, Kenner, LA 70064

BROKERS

151 Maritime Services, 34062 El Encanto, Dana Pt. CA 92629
Captain Asad Company, Inc., P.O. Box 350486, Ft. Lauderdale, FL 33335
Jack Faulkner, 2415 Caddy Lane, P.O. Box 371, Rosemont, IL 60022
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown, NJ 07960

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Panels Specialists, Inc., 306 Dodge Drive, Temple, TX 76704

CABLE ASSEMBLIES

Times Microwave Systems, P.O. Box 5039, Wallingford, CT 06492

CABLE TRANSIT SYSTEMS

Corc Corp., P.O. Box 3593, Tulsa OK 74153-0493

CAD/CAM SYSTEMS

Abacore Research Ltd., 3080 Uplands Rd., Victoria, BC V8R 6B4
Al Alpha Int'l. Inc., P.O. Box 48886, Cincinnati, OH 45249
Autoshop Systems Corp., #403, 611 Alexander St., Vancouver, BC, Canada V6A1E
Chand Corporation, 157 Hwy 654, Matthews, LA 70375
Creative Systems, Inc., P.O. Box 1910, Port Townsend, WA 98368
IMS-202 C Packets Ct., Williamsburg, VA 23185
Kokkum Computer Systems AB, P.O. Box 50555, S-202 15 Malmo SWEDEN
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
TIMSCO, P.O. Box 91360, Mobile, AL 36691
Daniel H. Wagner, 2 Eaton St., Ste. 500, Hampton, VA 23669

CATADOLPH PROTECTION SYSTEM

Electrocatyls Inc., 2 Milltown Ct., Union, NJ 07083

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Crandall Dry Dock Engineers Inc., 2 Williams Street, Chelsea, MA 02150
Marit Chain, 230 Avenue Desandrouns, 55300 Valenciennes FRANCE
Washington Chain & Supply Inc., Box 3645, Seattle, WA 98124
Waterman Supply Co., P.O. Box 598, Wilmington, CA 90748

CHAIRS

Gasser Chair Co., 4136 Logansway, Youngstown, OH 44505

CHEMICALS

Ashland Chemical/Drew Ameroil Marine, One Drew Plaza, Bonton, NJ 07005
Unisevice Americas, 57174 Hardin Rd., Sidell, LA 70461
Unitor Ship Services Inc., 2375 West Easter Street, Long Beach, CA 90813

CLAMPING—Pipe, Tubes, Hose

ZSI, 12749 Richfield Ct., Livonia, MI 48150

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American Bureau of Shipping, 2 World Trade Center, 106th Fl., New York, NY 10048

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Inventory Locator Service, 3965 Mendenhall Rd., Memphis, TN 38115
Marine Electric System, 2 Bridewell Place, Clifton, NJ 07014

COMPOUNDS

ITW Philadelphia Resins, 130 Commerce Dr., Montgomeryville, PA 18936

COMPUTER LOFTING

Battistini Lofting Co., Inc., 1616 Baratara Blvd., Ste. 4, Marrero, LA 70072

COMPUTER SOFTWARE

Autoshop Systems Corp., #403, 611 Alexander St., Vancouver, BC, CANADA V6A1E
Creative Systems, Inc., P.O. Box 1910, Port Townsend, WA 98368
IMS-202 C Packets Ct., Williamsburg, VA 23185
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CONTROL SYSTEM—Monitoring

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Engine Monitor, Inc., 179 Hickory Avenue, Harahan, LA 70123
Kobei Mfg. Co., 11720 Horseshoe Way, Richmond, BC, CANADA V7A 4V5
IMO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06062
MIC International, 80 Trip Dr., Inwood NY 11696
Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

CONTROL SYSTEM—Steering

Engine Monitor, Inc., 179 Hickory Avenue Harahan, LA 70123
Kobei Mfg. Co., 11720 Horseshoe Way, Richmond, BC, CANADA V7A 4V5
Kookum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068

CONTROL VALVES

Pulsar Controls, 10231 Telecom Dr., Tampa, FL 33637

CONVERSIONS & REPAIRS

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CORROSION CONTROL

Corrosal Inc., 1045 12th Ave. NW #FSA, Issaquah, WA 98027
TMT Services Corp./RUSTTECO P.O. Box 11398, Toronto, CA 90813

COUPLINGS

American Vulkan, P.O. Drawer 674, Winter Haven, FL 33882
Hohel Engineering, 1320 Kemper Meadow Drive, Cincinnati, OH 45240
Lo-Rex Vibration Control Ltd., 186 West 8th Avenue, Vancouver, BC CANADA V5Y 1N9

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Mapeco Products, 90 Forest Avenue, P.O. Box 382, Locust Valley, NY 11560

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Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241
Schuyler Mfg. Co., Inc., 18901 Woodville-Rosedmont Rd., Woodville, WA 98072
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98
Clearbrook, VA 22624
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Viking Fender Co., 1160 State St., Perth Amboy, NJ 08861

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Beard Industries Inc., P.O. Box 3115, Shrewport, LA 71130

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Autronics Marine AS, Drammensveien 128, N-2027 Oslo 2, NORWAY

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American

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Datrix Inc., P.O. Box 1150, Kinder, LA 70648
Glimco, 44 Austin Street, P.O. Box 18322, St. John's, NF CANADA A1B 4B8
Gollen Marine, 160 Van Buren St., Brooklyn, NY 11231
Kolumb Schiffs, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70066
Paulson Electric Mfg. Co., Inc., 1516 N. Main, P.O. Box 53, Pearland, TX 77581
Francis Searchlights/Sun Supply Co., 4415 6th N.W., Seattle, WA 98107
LIQUID LEVEL GAUGES
Eugene Ernst Products Co., 116 Main St., Farmingdale, N.J. 07727
King Engineering Corp., P.O. Box 1228, Ann Arbor, MI 48106
LIQUID LEVEL INDICATORS
Midland Mfg. Corp., 7723 Gross Point Rd., Skokie, IL 60076-0226
LIQUID OVERFILL PROTECTION SYSTEMS
E.L. Marine Products, P.O. Box 1025, New Albany, IN 47151-1026
Melriape, Inc., 59 Porter Rd., Littleton, MA 01460
Midland Mfg. Corp., 7723 Gross Point Rd., Skokie, IL 60076-0226
LOGISTICS
Newport News Shipbuilding, Logistics & Technical Services, 12129 Jefferson Ave., Newport News, VA 23603
QED, 4646 N. Wickhamp Road, Virginia Beach, VA 23455
VL Logistics Consultants, Inc., 3420 Bienville Blvd., Ocean Springs, MS 39564
LUBRICANTS
Texaco, International, 2000 Westchester Avenue, White Plains NY 10650
MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
Del Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072
Gullen Marine Company Inc., 150 Van Buren Street, Brooklyn, NY 11231
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150
MACHINERY MONITOR CONTROL SYSTEMS
Electronic Marine Systems, 800 Fendale Pl., Mahwah, NJ 07065
MARINE ACCOMMODATIONS
Directions & Design Inc., 11457 One Cabin Rd., Ste 100, St. Louis, MO 63141
Hopman Brothers, P.O. Box 820, 435 Essex Ave., Weynesboro, VA 22980
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave., Boca Raton, FL 33431
Marine Accommodations, 635-3 Baymeadows Rd., Jacksonville, FL 32256
Marine Services Corp., 3457 Guiguard Dr., Hood River, OR 97031
MARINE CEILING
Hydro-Aluminum, Veik, N-5880 VIK I SOGN, Norway
MARINE DECKING
Hopman Brothers, Inc., P.O. Box 820, Weynesboro, VA 22980
Selsby, P.O. Box 1600, Sapulpa, OK 74067
MARINE ELECTRONICS
Frank L. Bauer Radio, Highgate Drive, Metairie, LA 70001
Kocum Sונים, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70066
Saab Marine Electronics AB, Box 13045, 402 S1 Göteborg, SWEDEN
Scientific Marine Services, Inc., 101 State Pl., Suite E, Escondido, CA 92029
MARINE ELEVATORS
Alimak Elevator Co., 1100 Boston Ave., Bridgeport, CT 06601
McEloy Machine, 1101 Lorraine Rd., Bloom, IL 62624-6454
MARINE EQUIPMENT
Bohne & Associates, 1150 Rite Rochdale, Sebel, VA 70458
EIDE Trading AS, P.O. Box 130454, Slus, NORWAY
McEloy Machine, P.O. Box 4454, Bloom, MS 39535-4454
MARINE FINISHING
Safeco Credit Co., Inc., 499 156th Ave. NE, Redmond, WA 98052
MARINE FIRE PROTECTION
Hiler Systems, 2711 LaSalle Court, Mobile AL 36652
Unitor Ship Service, Inc., 2375 West Esther Street, Long Beach, CA 90813
MARINE FURNITURE
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave. Boca Raton, FL 33431
Marine Services Corp., 3457 Guiguard Dr., Hood River, OR 97031
MARINE GEARS
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
The Falk Corp., PO Box 482, Milwaukee, WI 53201-0482
Marine Gears, P.O. Box 683, Greenville, MI 49701
Westech Gear Corp., 2520 East Imperial Hwy., Lynwood, CA 90422
ZF Industries Inc., 777 Hickory Hill Drive, Vernon Hills, IL 60061
MARINE HYDRAULICS
De Gaudio Marine, 619 Industrial Rd., Carlstadt, NJ 07072
MARINE INSURANCE
De Gaudio Marine, 619 Industrial Rd., Carlstadt, NJ 33316
MARINE INTERIORS
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431
Lynch Construction Specialties, Inc., 3420 Rusk P.O. Box 1980 Houston Texas 77251
Marine Services Corp., 3457 Guiguard Drive, Hood River, OR 97031
MARINE LADDER
Sea Systems, Inc., 75 Avo Rd., Ward Hill, MA 01085
MARINE LUBRICANTS
Royal Lubricants Co., P.O. Box 518, East Hanover, NJ 07936
MARINE PLUMBING
Heller Enterprises, Inc., 4995 Ocean Pines, Berlin, MD 21811
MARINE PUMPS
Gibbs & Cox, Inc., P.O. Box 658, Seabrook, TX 77586
MARINE SUPPLIES SALES
Defense Reutilization & Marketing Service, 2163 Airways Blvd., Memphis, TN 38114
MARINE TRAINING & SPILL PREVENTION
Center for Maritime Education, New York, NY 10038
MULTI-CABLE PENETRATION DEVICE
NMP, 12427 E. 60th St., Tulsa OK 74132
NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202
Donald L. Broun, 2550 Elmiers Ave., Ste. K, Norfolk, VA 23513
C. Baxter & Associates, P.O. Box 8006, Mobile, AL 36609
CDI Marine Co., 4040 Woodcock Dr., Suite 200, Jacksonville, FL 32207
Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., 21 Pottery Ln., Dedham, MA 02026
Crane Consultants, 15301 First Ave S., Seattle WA 98148
C.R. Quating, 18 Neary St., New York, NY 10007
CT Marine, 56 Crooked Trail, Rowleyton, CT 06853
Arthur D. Darden, 3200 Ridgeway Dr., Suite 403, Metairie LA 70002
Dalong & Leber, Inc., 1724 Emerson Street, Jacksonville, FL 32207
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, 2120 Washington Blvd., Suite 200, Arlington, VA 22204
Diversified Technologies, 812 Lee Oak Dr., Chesapeake VA 23320
Elliott Bay Design Group 5301 Shishole Ave. N.W. Ste. 200, Seattle, WA 98107
Enzon Mgmt. & Engineering Consultant Services, P.O. Box 7780, Beaumont, TX 77706
GHM Inc. (Ind. Measurement Consultants), P.O. Box 1836, Newport News, VA 23601
Gibbs & Cox, Inc., 59 West 23rd St., New York, NY 10010
John W. Gilbert & Assoc., Inc., 68 Long Wharf, Boston, MA 02110
The Glosten Assoc., Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104
Guido Peria & Assoc., 720 3rd Ave., Ste. 1200, Seattle, WA 98104
Morris Gushki Associates, Inc., 130 Sutter St., Ste. 400, San Francisco, CA 94104
C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110
Hydrocomp, Inc., 202 C Packets Court, Williamsburg, VA 23185
J.H. Inc., 3412 Progress Dr., Bensalem, PA 19020
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
James S. Kroger, 799 Brickell Plaza Ste. 701, Miami, FL 33131
Rodney E. Lay & Associates, 12891 Atlantic Blvd., Jacksonville, FL 32225
MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626
Alan C. McClure Associates, Inc., 2800 South Gessner, Houston, TX 77063
McEloy Machine & Mfg Co., Inc., P.O. Box 4454, Bloom, MS 39535-4454
John J. McMullen Associates, Inc., 1 World Trade Ctr., Ste 3000, N.Y. NY 10048
Fardal Marbury, P.O. Box 2321, Annapolis, MD 21401
Marine Design & Operations, Inc., 228 Chestnut St., Roselle Park, NJ 07024
Marine Power Systems Inc., 102 Hamilton Ave., Stamford CT 06902
Marine Power Associates, 1010 Turquoise St., Ste 217, San Diego, CA 92109
Marltech, Seaside, Bay Road, Newmarket, NH 03857
Maritime Design, Inc., 3200 Hanley Rd., Jacksonville, FL 32257
R.J. Miller & Co., 71 Hudson St., New York, NY 10013
Nautical Designs, Inc., 2101 S. Andrews Ave. Suite 202, Ft. Lauderdale FL 33316
Ocean Mations Co., P.O. Box 150, 49 Shore Drive, Barrington, RI 02806-0150
Open Marine Surveyors Co., P.O. Box 283, Fort Jefferson, VA 23707
QED Systems Inc., 4646 Wickhamp Rd., Virginia Beach, VA 23455
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 620 Fulson St., Ste. 301, San Francisco, CA 94107
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112

Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
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 975; Barnegat Light, NJ 08006; 2 Sycamore Pl., 5203 Leesburg Pike, Suite 700, Falls Church, VA 22041;
50 Vashell Way, Orinda, CA 94563
George G. Sharp, Inc., 100 Church St., New York, NY 10007
R.A. Steam, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
A.K. Suda & Ass., 3004 19th St., Metairie, LA 70002-4989
TIMSCO, P.O. Box 91360, Mobile AL 36691
NAVIGATION & COMMUNICATIONS EQUIPMENT
Astronika Marine AS, Drammensveien 126, NO-2277 Oslo 22
Consul Maritime Services, 650 E. Hurler Plaza SW, Washington DC 20024
Cousaphone, 2100 Park Central N., Pompano Beach, FL 33064
Electronic Marine Systems, 800 Fendale Pl., Rahway, NJ 07065
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Hose-McCann, 1241 W. Newport Center Dr., Deerfield Beach, FL 33442
ICS Electronics Ltd., Unit V, Rufford Industrial Estate, Ford, Arundel, West Essex, UK
Mackay Communications, 300 Columbus Circle, Edison, NJ 08837
Negron Marine Consultants, 940 Bond Street, Elizabeth, NJ 07201
Offshore Systems Ltd., 107-830 West 1st St., North Vancouver, B.C. V7P 3N4 CANADA
Raytheon Marine Co., 676 Island Ford Rd., Manchester, NH 03109-5420
Rosi Engineering, 12505 E. Starkey Rd., Largo, FL 34643
Scandinavian Micro Systems P.O. Box 155, N-1411, Kolbotn, NORWAY
Scientific Marine, Inc., 1650 International Court, Norcross, GA 30093
Sea, Inc., 7000 220th S.W., Mountlake Terrace, WA 98043
Serrad, 19210 3rd Avenue West, Lynnwood, WA 98036
Neilson Robertson, 10801 Hammett, Suite 100, Houston, TX 77043-1923
Sperry Marine Inc., 1070 Seminole Trail, Charlottesville VA 22901
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Starline, Inc., 6400 Highway 290, Suite 202, Austin, TX 78752
Trimble Navigation, 565 North Mary Avenue, N.Y. Box 3642, Sunnyside, CA 94086
Wayway Communications System, Inc., 453 E. Park Pl., Jeffersonville, IN 47130
NOZZLE SYSTEM
Rice Propellers, Av. Rioo Espinosa #88, Mazatlan, MEXICO 82180
Oil-Marine-Additives
MOB Oil Corporation, 2225 Lakeside Road, Fairfax, VA 22037-0001
Texaco, International, 2000 Westchester Avenue, White Plains NY 10650
OIL SPILL CONTAINMENT
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141
OIL/WATER SEPARATORS
Hempel Coatings, 5801 Highway 51 West, Soughton, WI 53529
Bohm & Voss AG, P.O. Box 107, D-20457 Hamburg 1, GERMANY
U.S.A. Repps Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
Faint Systems, 2840 North Broadway, St. Louis, MO 63147
MMC International, 60 Inp Dr., Inwood NY 11696
National Fluid Separators, 827 Hanley Industrial Ct., St. Louis, MO 63144
Nelson Industries, Highway 51 West, Soughton, WI 53529
PAINT-COATING-CORROSION CONTROL
Astrand Chemical Co., Drew Marine Co., One Drew Plaza, Boston, NJ 07005
Corrosel, Inc., 104 E. Main St., Westport, MA 02887
Devco Coatings 4000 Dupont Circle, Louisville, KY 40207
Eggsell, Inc., P.O. Drawer 2698, Lafayette, LA 70502
Ferro Corp., 1301 North Flora St., Plymouth, IN 46563
Jamestown Distrib., 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02835
Hempel Coatings, 5801 Highway 51 West, Soughton, WI 53529
International Zinc, 450 Seventh Ave., New York, NY 10123
Microphor, Inc., Marine Div., 452 E. Hill Rd., P.O. Box 1460, Willis, CA 95490
Remastop Rod, 264 South Main St., Wallingford, CT 06492
Product Research Service, Inc., 229 Hwy 23, PO Box 159, Belle Chasse, LA 70037
Royal Chemical, 2705 Concord Road, Belle Chasse, LA 70037
Signa Corp., 2525 West 10th St., Houston, TX 77059
Harvey, LA 70059, 1100 Adams St., Hoboken, NJ 07030
Unitor Ship Services, 3457 Guiguard Drive, Hood River, OR 97031
PIPE FITTING/CUTTING/CONNECTING SYSTEMS
George Fischer Pipe Tools, 407 Hadley St., Box 40, Holly, MI 48442
Lohmeyer Corp., 586 E. 17th Ave., Foster City, CA 94044
PLATING EQUIPMENT
SIFCO Selective Plating, 5708 Scharf Rd., Cleveland, OH 44131-1394
POLLUTION CONTROL / PRODUCT-SERVICE SERVICES
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141
Oil Mfg. Co., 221 Rue De Jean, Lafayette, LA 70508
POTLIGHTS
Cornell Car., P.O. Box 253, Monroe, CT 06468
PREDICTIVE MAINTENANCE
Mitsubishi Electric, 251 West, Barnbridge Island, WA 98110
PROPELLERS
Rolia SP Propellers SA, Via Silva S., P.O. Box 251 - 6828 Balaena - SWITZERLAND
Rolia SP Propellers USA, Inc., 4300 Mustang Road, Melbourne, FL 32934 USA
Sound Propeller, 608 Fairview Ave., Seattle, WA 98102
PROPULSION EQUIPMENT
-Distributors, Diesel Engines, Gears, Propellers, Shafts, Turbines
Avondale Industries, Harvey Quick Repair, P.O. Box 116, Harvey, LA 70058
American Infil, P.O. Box 25205, Houston, TX 77025
ABB Drives Inc., P.O. Box 372, Milwaukee, WI 53201-0372, USA
ABB Industry Dr., P.O. Box 185, 00381 Helsinki, FINLAND
ABB TURBOSCHARGER, Inc., 1000 Lakeside Avenue, Brunswick, NJ 08902
Aquamaster-Raumal Ltd., Box 220, SF-26101, Rauma, FINLAND
Aquamaster-Raumal Inc., 2315 North Woodlawn Ave., Ste. 103, Metairie, LA 70001
Ardur Johnson Company, P.O. Box 1528, Paeppack, PA 19387
Brunvoll AS, P.O. Box 270, N-6401, Molde, Norway
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320
Crommet Gear Co., 2657 Wooster Pike, Cincinnati, OH 45227
The Falk Corp., PO Box 482, Milwaukee, WI 53201-0482
Financiel, Diesel Engines OMT-CMT, Bagnol della Rossana 234, Trieste ITALY
GE Naval & Drive Turbine Systems, 166 Boulder Dr., Rittsburg MA 01420
Gollens Marine Company, 160 VanBuren St., Brooklyn, NY 11231
Hobart Engineering, Inc., 1520 Kemper Meadow, Ste. 500, Cincinnati, OH 45240
In-Place Machining Co., Inc., 1929 North Buttrick Street, Milwaukee, WI 53212-3793
Kahlerberg Box Co., P.O. Box 358, Two Rivers, WI 54241
Kopp Mak., 7255 Danborn Crescent, Mississauga, Ontario, CANADA L5N 6P9
Kobalt Manufacturing, 11720 Horseshoe Way, Richmond, BC Canada V7A 4V5
LIPS B.V., P.O. Box 6, 5151 HP Drunen, The Netherlands
LIPS U.S.A., Inc., 3817 Koppers Way, Chesapeake, VA 23323
Lohmann & Stoltefroh, P.O. Box 1860, D-58408 Waten, Germany
Lo-Rac Vibration Control, 186 West 8th Ave., Vancouver, BC CANADA, V5Y 1N2
Macco Products Inc., 30 Forest Ave., Locust Valley, N.Y. 11550
Mantsches Werk, P.O. Box 1442, D-5884 Halver GERMANY
MAN B&W Diesel, 17 State St., New York, NY 10004
MAN B&W Diesel AS, Alpha Diesel, Næs, Julevej 15 DK-8900
Friedensthan, DENMARK
MAN B&W Diesel GmbH, Stadthachtstrasse 1, D-86153 Augsburg 1 GERMANY
North American Marine Jet, P.O. Box 1232, Benton, AR 72015
Ormetruster, Inc., 8515 Soranen Ave., Santa Fe Springs, CA 90670
Orion corp., 1111 Cedar Creek Rd., Galton, WI 53024
Rolia SP Propellers SA, Via Silva S., P.O. Box 251 - 6828 Balaena SWITZERLAND
Rolia SP Propellers USA, Inc., 4300 Mustang Road, Melbourne, FL 32934 USA
Karl Senner, Inc., 25 W Third, Kenner LA 70062
Schottel-Werft, Metzger Strasse 99, D-52322 Spayrtheim, GERMANY
Schottel North America, Inc., 1505 Corbin Ave., Hammond, LA 70403
Siemens Electric Ltd., 1180 Courtneypark Rd., Mississauga, ONTARIO
Stewart & Stevenson, 1400 Drexelton, P.O. Box 8, Harvey LA 70059-0008
Ustlen Bergen Diesel A/S, P.O. Box 182, N-5002, Bergen, NORWAY
J.M. Voith GmbH, Marine Division, Postfach 1940, D-7820, Heidenheim/Brenz, GERMANY U.S. Rep: Voith Schneider America, Inc., 121 Susquehanna Ave., Great Neck, NY 11021
Oy Wärtsila Ab, Vasa and Abo Divisions, P.O. Box 244, SF65100 Vasa, FINLAND
PUMP-LIFEBOAT (hand operated)
Bedson, P.O. Box 3336, Bridgeport, CT 06605
PUMP—Repair—Drives
De Gaudio, 619 Industrial Rd., Carlstadt, NJ 07072
Gibbs, Inc., PO Box 628, Seabrook, TX 77586
Jim's Pump Repair, 48-55 36th St., Long Island City NY 11101
Jerry B. Litch Co., Box 71, 647 State Rd., Cherokee, VA 28620
Lesair Corporation, 165 Chestnut Street, Allentown, NJ 07401
Via Motorist, 566 Porter St., New York, NY 10019
REFRIGERATION EQUIPMENT/SERVICES
Acroc Marine, 141D, Central Ave., Farmingdale, NY 11735

Aphland Chemical Co., Drew Marine Co., One Drew Plaza, Bonton, NJ 07005
RTF Mfg. RD #1 Route 66, Hudson, NJ 12534
Unitor Ship Service Inc., 2375 West Esther Street, Long Beach, CA 90813
REMOTE VALVE OPERATORS
American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906
Eliott Manufacturing, P.O. Box 773, Englewood, NY 13622
Triflex, Inc., 771 First Ave., King of Prussia, PA 19409
RIGID INFLATABLE BOATS
American Eagle, 703 E. Peane-Jensen Way, LaCrosse, WA 98257
Willard Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806
Zodiac of N. America Thompson Creek, P.O. Box 400, Stevesville, MD 21666
ROPE—Manila—Nylon—Haweser—Fibers
Allied Signal Inc., Fibers Division, 101 Columbia Rd., Morristown, NJ 07962
American Mfg. Co., 200 Southpark Rd., Lafayette, LA 70508-3609
RUBBER BUSHES
Vesco Plastics P.O. Box 40647, Cleveland 2022, South Africa
RUST CONVERTERS
Corrospond, Inc., 1045 12th Ave. NW #FSA, Issaquah, WA 98027
SAFETY LIGHTING
Gates, Inc., P.O. Box 1150, Kinder, LA 70648-1150
SALVAGE/REPAIR RESPONSE
Donjon Marine, 1250 Liberty Ave., Hillsdale, NJ 07025
SANITATION DEVICE—Pollution Control
Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans, LA 70130
Etech International Corp., 1110 Industrial Blvd., Sugarland, TX 77478
Envirowac, Inc., 1280 Tanager Dr., Rockford, IL 61105
Fast Systems, 3240 North Broadway, St. Louis, MO 63147
Microphor, Inc., 452 E. Hill Rd., P.O. Box 1460, Willis, CA 95490
Research Products Bienship, 2529 Androm Dallas, TX 75220
SATELLITE COMMUNICATIONS
British Telecom, Room 203, 43 Batholomew Close, London EC1A 7HP
Comsat Mobile Communications, 22300 Comsat Dr., Clarksburg, MD 20871-9475
CP Comm. Int'l., 2100 Park Central North, Ste. 900, Pompano Beach, FL 33064
IDB Mobile Comm., 6903 Rockledge Dr., Ste. 500, West Bethesda, MD 20817
Maritime Cellular Network, 580 Village Blvd., W. Palm Beach, FL 33409
Nowegian Telecom, Postboks 8701 St. Olavs Plass, N-0130, Oslo, Norway
Station 12, P.O. Box 30150-2500 JIJ The Hague, NETHERLANDS
Scientific Marine, Inc., 1650 International Court, Norcross, GA 30093
Singapore Telecom, 15 Hill Street, Telephone House, 2nd Storey, Singapore 0617
T-Mobile Satellite & Radio Services, 79 S. Hillers Rd., Auburn NSW 2144, AUSTRALIA
SCALE MODELS
Marklect, PO Box 225, Oconomowoc, WI 53066
Scale Reproductions, 16346 County Road 13, Fairhope, AL 36532
Sturgeon Bay Model Shop, 187 N. 14th Ave., Sturgeon Bay WI 54235
SEALS
Bohm & Voss AG, P.O. Box 107, D-20457 Hamburg, GERMANY
U.S.A. Repps Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
Kobeco Marine Engineering Co., 6F Tatsunuma Bldg., 3-19, Yaezu 1-Chome, Chuo-Ku, Tokyo 103, JAPAN
U.S.A. Rep. Roland Marine Inc., 90 Broad Street, New York, NY 10004
John Crane Marine, 1536 Barclay Blvd., Buffalo Grove, IL 60089
SEALS—JAPAN
Boatite, Inc., Div. of Life Ind., 205 Sweet Hollow Rd., Old Bethpage, NY 11804
SEALING
Skid Systems, Inc., 220 Carpenter St., Greenport, NY 11944
SELF UNLOADING SYSTEM REPAIR
Kaiser Rubber Engineering, Greenport, NY 11944
U.S. Rep: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
SHIP CERTIFICATION
Kaiser Rubber Engineering, Greenport, NY 11944
U.S. Rep: Simplex-Turmar Inc., P.O. Box 168, Little Neck, NY 11363-0168
SHIP EQUIPMENT
Jared Brown Brothers Inc., 1606 Newcastle St., Brunswick, GA 31521-0904
SHIP REPAIR
Curacao Drydock Co., P.O. Box 3012, Curacao, Netherlands Antilles
Gollens Marine Company, 160 Van Buren St., Brooklyn, NY 11231
Dredgeport Marine, P.O. Box 100, East Princess Ann Rd., Norfolk, VA 23504
SHIP VALUATION
East, E.S. Gary, P.O. Box 1246, Fajardo, Puerto Rico 00738
SHIPBUILDING EQUIPMENT
NEI Synco, Inc., 8870 S W 87th Ct., Miami FL 33176
SHIPBUILDING—Repairs, Maintenance, Drydocking
Amfels, Inc., P.O. Box 3107, Brownsville, TX 78523
Asbestos Espanoles, S.A. Ochandiano, 14-16 28023 El Planito SPAIN
Atlantic Marine, Inc., P.O. Box 2020, Mobile, AL 36655
Atlantic Marine, Inc., 8500 Keschler Dr., Jacksonville, FL 32226
Avondale Industries Inc., P.O. Box 92628, New Orleans LA 70150
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601
Bisso Marine Co., P.O. Box 4113, New Orleans, LA 70178
Boilinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374-0250
Carole, P.O. Box 1141 Fort Of Spain, Melbourne, FL 32934 USA
Chris-Marine AB, P.O. Box 9025, S-2000 39, Malmö, SWEDEN
CMC Helix Int'l., 400 Kobby St., Fort Lee, NJ 07024
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381
Fincantieri SpA Cantieri Navali Italiani, Via Copro 11, 6123 Genoa ITALY
Gollens Marine Company, 160 Van Buren St., Brooklyn, NY 11231
Gulf Coast Fabrication, Inc., P.O. Box 539, Lakeshore, MS 38658
HOW Kiel, Germany/USA Rep: Roland Marine Inc., 90 Broad St., NY, NY 10004
Kishida Zosen, Hasechi Shipbuilding & Engineering Co., 1-11 Hitobishashi Chiyoda-Ku Tokyo 100 Japan
IH, Tokyo Chuo Bldg., 6-2, Chiyoda Tokyo 100 Japan
Intermarine (USA), Inc., 301 N. Lathrop Ave., Seawanh, GA 31402
In-Place Machining Co., Inc., 929 North Buttrick Street, Milwaukee, WI 53212-3793
Jacksonville Shipyard, 750 E. Bay St., Jacksonville, FL 32202
Jillhoff, Inc., P.O. Box 610, Jeffersonville, IN 47130
Kvaerner Masa-Yards Oy, Box 132, SF-00151, Helsinki, FINLAND
Kivick Marine, 615 N 5th St., Seattle, WA 98103
Luevack Shipyard, P.O. Box 1190, HWY 90 East, Jennings, LA 70546
Linderau GmbH, Spagenerkrufer 10, Postfach 9093 D-2300 Kiel, Friedrichshof GERMANY
Motor-Servico AB, Box 2115, 141 04 Rominge, SWEDEN
Munson Manufacturing, 150 West Dayton, Edmonds WA 98020
Newport News Shipbuilding, 4101 Washington Ave., Newport News, VA 23607
Nordrop, P.O. Box 2100, Norfolk, VA 23501-2100
Peterson Builders, Inc., 101 Penneyville Ave., Sturgeon Bay, WI 54235-0650
Thomas Marine, 37 Brinsford Street, Patchogue, NY 11772
Samsung Heavy Ind., 25, 1-ha, Bong-dong, Chung-Ku, Seoul, Korea
SeaArk, P.O. Box 210, Monticello AR 71655
SeaArk, P.O. Box 1851, 4111 Cedar St., Pascagoula, MS 39357
Service Marine Industries, P.O. Box 3606, Morgan City LA 70381
Skippinliner Shipyard, 621 Park Plaza Dr., Dept 21, LaCrosse WI 54601
Steiner Shipyard, Inc., P.O. Box 742, Bangor la Bats, AL 36509
Swath Ocean, 979 G Street, Chula Vista, CA 92011
Trinity Marine Group, Box 3029, Guilford, MS 39055-3029
Westport Shipyard, P.O. Box 358, Westport, WA 98595
Willard Marine, Inc., 1250 N. Grove St., Anaheim, CA 92806
Zodiac Marine Corp., 3121 S.W. Moody Street, Portland, OR 97201
Zodiac of North America Inc., Thompson Creek Rd., P.O. Box 400, Stevesville, MD21666
SHIPYARD / CABLES
Amenable, 350 Bay Road, El Dorado, AR
Bethsho, Sparrows Point, MD 21219-2589
NMP Corp., P.O. Box 25493, Tulsa, OK 74153-0493
Ocean Technical Services 634 Peters Road, Harvey, LA 70058
T.A.S.T. Corp. PO Box 10392, Fairfield, NJ 07004
SILENCERS
Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130
Nelson Division, Exhaust & Filtration Systems, Hwy. 51 West, P.O. Box 428, Soughton, WI 53589
STAIRMASTER SAFETY TREADS
Wooster Products, Inc., 1000 Spruce Street, P.O. Box 896, Wooster, OH 44681-6005
STERLING GEARS
Cunnam Marine Hydraulics Co., 201 Harrison St., Hoboken, NJ 07030
STERN TUBE BEARINGS
Kobeco Marine Engineering Co., 6F Tatsunuma Bldg., 3-19 Yaezu 1-Chome, Chuo-Ku, Tokyo 103, JAPAN
U.S.A. Rep: Roland Marine Inc., 90 Broad Street, New York, NY 10004
STERN TUBE BUSHES
Kobeco Marine Engineering Co., 6F Tatsunuma Bldg., 3-19 Yaezu 1-Chome, Chuo-Ku, Tokyo 103, JAPAN
U.S.A. Rep: Roland Marine Inc., 90 Broad Street, New York, NY 10004
Vesco Plastics, P.O. Box 40647, Cleveland 2022, South Africa
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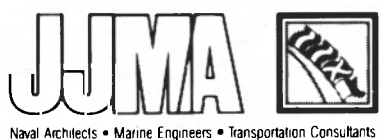
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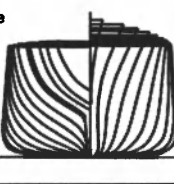
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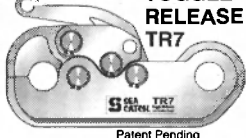
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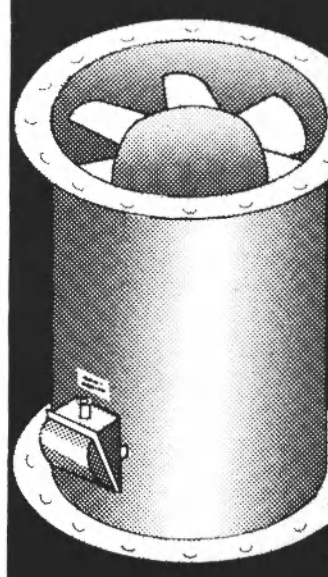
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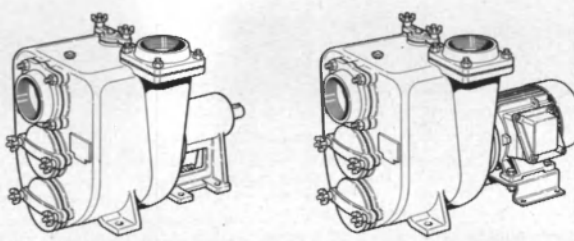


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Federal openings in Norfolk and New Orleans for analysts with experience in shipwork project planning and management. U.S. citizens only. The Maritime Administration is an Equal Opportunity Employer. Call for application package: Norfolk position (804) 441-3355, ask for AN-6-0023. New Orleans position, (202) 366-4149, ask for MA-95-67).

NAVY AIR COMPRESSORS

We are an established Navy supplier of shipboard air compressors who seek local representation to sell overhaul and repair services. Must regularly call on fleet and shore activities. Immediate need is Pearl Harbor HI, followed in mid-96 by Mayport, FL, Norfolk, VA and San Diego, CA. **Reply: Compressors, PO Box 155, Harwood, MD 20776-0155.**

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REQUIREMENTS: Masters of Science in Naval Architecture, which must include 40 units in mechanical engineering course work; two years work experience in job offered or in naval architecture in design of commercial ships and yachts, coordinating structural and piping design, utilizing structural lofting and nesting principles; Must include at least one year utilizing finite element analysis and AutoShip and GHS software programs for structural and mechanical engineering design.
Salary range: \$43,286 to \$48,000 DOE plus semi-annual bonus based on profitability of company. 8:00 a.m. to 5:00 p.m.
Location: Seattle, WA area. Must have proof of legal authority to work in the United States. Send resume by December 11, 1995 to Employment Security Department, E&T Division, P.O. Box 9046, Job Number 520136-K, Olympia, WA 98507-9046.

BULK SHIPPING CONSULTANT

The Nassau-based ocean bulk shipping consulting firm of JONES, BARDELMEIER & CO., LTD., requires a Senior Shipping Consultant.

Individual should have experience in ship operations and, particularly, the conduct of economic studies and analysis relating to tanker and bulk carrier operations. Familiarity with shipping related computer software programs essential. The firm has worked for over 375 International clients and presently serves on a continuing basis as shipping consultants and advisers to shipowners, charterers and other entities outside The Bahamas.

The person selected will be required to travel and meet with, assist and advise clients throughout the world in connection with their problems and activities relating to shipping. Also, some travel for sales purposes will be a collateral duty. Salary commensurate with education and experience. Stock participation may also be possible after trial period. If you believe you are qualified, please write and give full details of your experience.


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Naval Architect

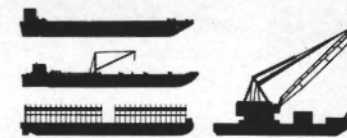
The Research and Development Division of Babcock & Wilcox, a subsidiary of McDermott International, a dynamic innovator of state-of-the-art energy systems, marine construction, and shipbuilding technology, has an immediate opening for a Naval Architect at their Alliance, Ohio location.

The Manufacturing Development Laboratory is seeking an experienced Naval Architect to provide support for McDermott's shipbuilding operations. The candidate must have demonstrated capabilities in naval architecture or marine engineering. The candidate must also have thorough knowledge of the marine industry; modern design methods; and classification requirements for ocean-going ships including hydrostatics, stability, and propulsion. Hydrodynamics or marine structures CAD/CAM/CIM technology knowledge is desired. Experience with Ship Structures Committee projects and/or National Shipbuilding Research Program efforts is preferred. Effective written and oral communication skills are required. A BS degree in Naval Architecture and U.S. Citizenship are required.

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All Leica DGPS navigation products already support USCG and IALA Type 1 and Type 9 RTCM DGPS beacon broadcast.

The U.S. Coast Guard has decided to utilize the RTCM SC104 Type 9 message format for its beacon broadcasts instead of Type 1 and Type 2 messages, to provide a faster update rate and better accuracy. Some GPS manufacturers indicate that their GPS receivers will require modifications in order to work with this format. Leica's navigation products already work with Type 9 just fine!



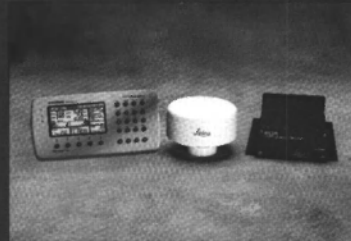
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In February 1994 Leica purchased the Magnavox GPS Division, and its Navigator product line.

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