

**MARITIME  
REPORTER**  
AND  
ENGINEERING NEWS

**1995 SNAME  
ANNUAL**

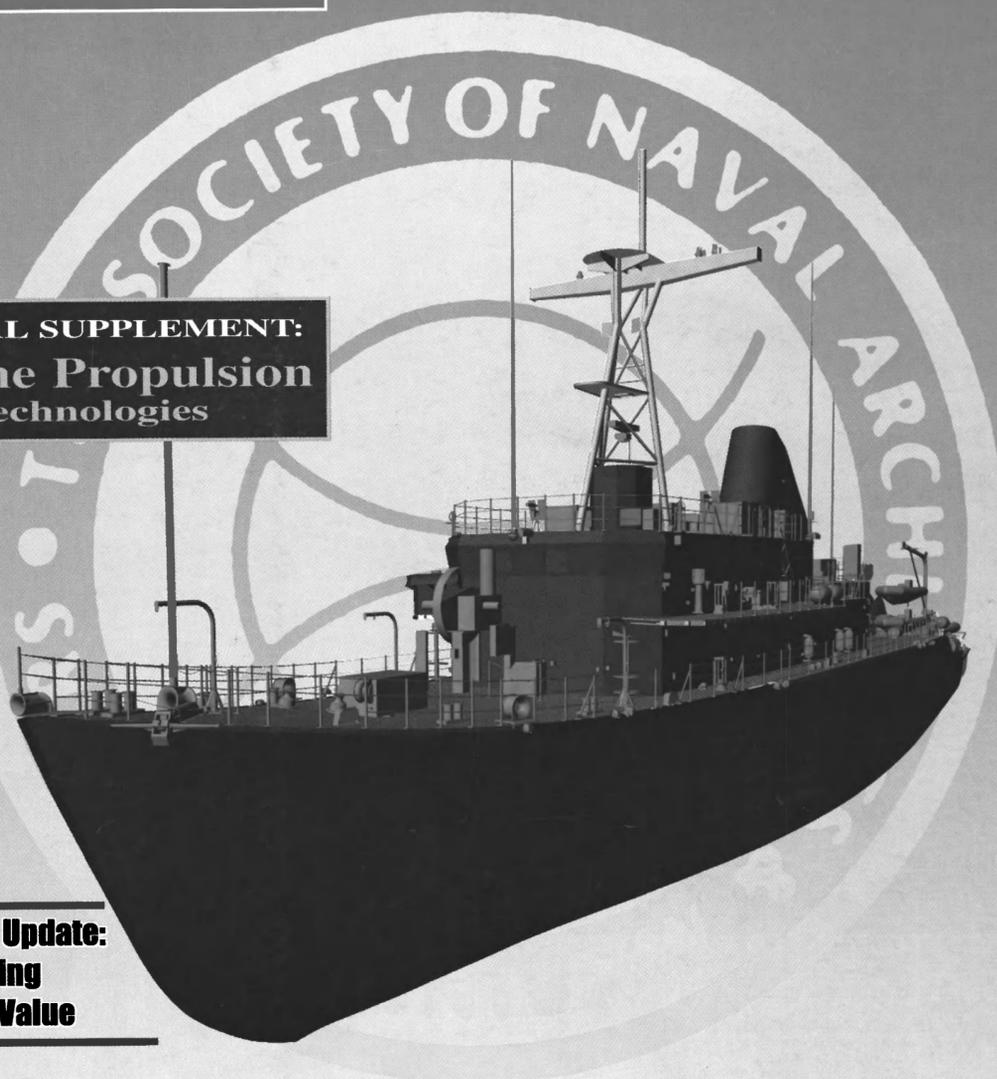
International Maritime Exposition  
Preview & Exhibitor Profiles

**SPECIAL SUPPLEMENT:**  
**Marine Propulsion  
Technologies**

**Financial Update:**  
**Determining  
Residual Value**

**Market Report: Panamax Bulkers • Avondale To Build 7 Tankers • CAD/CAM Update**

**SEPTEMBER 1995**



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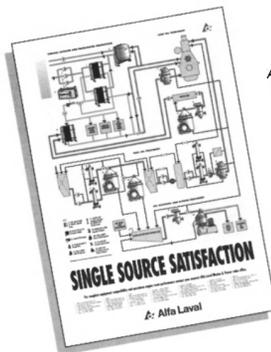
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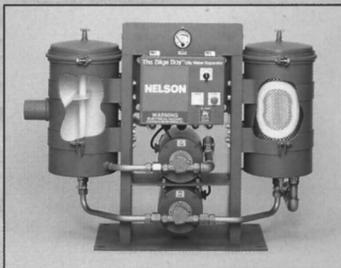
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## ON THE COVER

The cover illustration is a model of the USS *Sentry* (MCM3), produced at Puget Sound Naval Shipyard, Bremerton, Wash. It is the first complete ship 3-D Product Model produced by the U.S. Navy using Intergraph's Integrated Ship Design and Production (ISDP) suite of products. The model is planned to be used in Continuous Acquisition and Life-Cycle Support (CALC) initiative as a baseline for the ships in the USS Avenger (MCM1) class. The 3-D product model and its class variants are used for the design to production of ships, and continue with life cycle maintenance. For more on Intergraph, turn to page 12.

**53 SNAME:** The Society of Naval Architects & Marine Engineers will convene its annual meeting and the International Maritime Exposition in the nation's capital from October 4-7. A full schedule of educational sessions — covering everything from shipbuilding technology to naval affordability — coupled with nearly 100 exhibitors, promises to make this one of the organization's best offerings to date.



**PLUS:** A special insert focuses on Norwegian suppliers' efforts at SNAME (to follow page 50).

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## Marine Propulsion Technologies

*\* a special supplement to Maritime Reporter \**

A 52-page supplemental publication dedicated solely to marine propulsion issues, featuring a propulsion round-up from Graeme MacLennan and articles on everything from waterjets and propellers to gears and gas turbines.



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## EDITOR'S NOTE

**L**aunching a new project is always exciting, and the inaugural publication of "Marine Propulsion Technologies," a 52-page special supplement of the September edition, is certainly no exception.

This specialty publication is designed to deliver analysis and general trends in the vast world of marine propulsion. International Editor, **Graeme MacLennan** — no stranger in propulsion circles — delivers the centerpiece article, which encompasses information on everything from slow-speed diesels to gas turbines. Additionally, a Q&A with MAN B&W President **Claus Windelev** highlights the emerging trends in the increasingly competitive, and scrutinized, diesel engine market.

On the financial front, the Title XI financial guarantee program from the U.S. Maritime Administration continues to generate significant business for U.S. yards. There were several notable occurrences during the month, including:

- New Orleans-based **Avondale Industries** will be putting its new ship factory to use soon. Pending Title XI approval, it has been tapped to build seven 42,000-dwt product tankers for Russia's Primorsk. See the story on page 95.



- While product tanker orders have taken center stage in the U.S. yard resurgence, a deal between **MarAd** and **Nichols Brothers Boat Builders** (and partners **Gladding-Hearn Shipbuilding** and **International Catamarans Design**) shifts focus to another high-growth market segment: fast ferries. The cost-shared program — awarded as a part of the **Maritech** program — is designed to help U.S. companies capture a commanding share of the international fast ferry market. Coverage of this story, as well as an updated listing of Title XI guarantees awarded and pending, starts on page 32.

With all of the new business generated by the Title XI program, it should be noted that by the beginning of 1996 it could be changed significantly, pending Congressional enactment of legislation which accepts the terms of the OECD agreement regarding the elimination of shipbuilding subsidies. Although the rhetoric for and against the OECD agreement has been heard loud and often, there is not yet a definitive indication as to which way the voting will go. Look in our October issue for the latest on this, and other critical issues affecting the maritime industry.

Greg Trauthwein, editor

Please send any comments or suggestions to me via e-mail at [SHIPEDIT@ix.netcom.com](mailto:SHIPEDIT@ix.netcom.com), or you can fax me at (212) 254-6271. I look forward to hearing from you.

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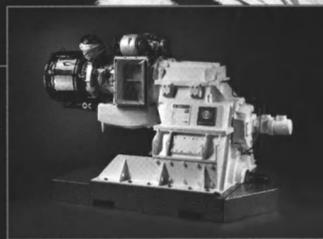
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### Trimble Signs Major USCG Contract

Trimble has signed a contract with the U.S. Coast Guard (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 including Alaska, Hawaii, and Puerto Rico, the Great Lakes region, and inland navigable rivers. The NT200CG will also be used for general marine navigation. "We are pleased to have been chosen once again by the U.S. Coast Guard to provide GPS technology to help build and maintain the nation's transportation infrastructure," said Charles

Trimble, president of Trimble. Trimble's NT200CG allows USCG vessels to quickly and precisely position these navigational aids. The NT200CG is a custom unit based on Trimble's NT200D, a marine navigation receiver with built-in differential GPS, capable of receiving differential correction signals broadcast by the USCG's beacon system.

For more information on Trimble Circle 84 on Reader Service Card

## MARITIME REPORTER

& ENGINEERING NEWS

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## NNS Wins \$65 M Contract For Submarine Work

Newport News Shipbuilding (NNS) was awarded a contract worth nearly \$65 million for continued design and support services for the U.S. Navy's Seawolf class of attack submarines. NNS has worked as the lead design agent for the Seawolf class since design work began in

1987. The first and second ships of the class are currently under construction at General Dynamics Electric Boat Div. in Groton, Conn. As the lead design agent for the ship, NNS will provide advice to the shipbuilder during ship testing and continued logistics support, such as digi-

tal technical manuals for the ship's equipment systems. "This contract extension is particularly important to us now that the Navy's submarine work is decreasing," said Jim Palmer, vice president, engineering, NNS. "It helps us maintain our competitive position for future sub-

marine design work while the Navy continues to get the benefit of the innovative design approach we are providing for the Seawolf submarine. "The first ship of the class, *Seawolf* (SSN 21) is scheduled for delivery in May 1996. For more information on Newport News Circle 102 on Reader Service Card

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## AWO Recognized For Responsible Carrier Plan

The American Waterways Operators (AWO) has been elected to the Association's Advance America Honor Roll in recognition for the establishment of the AWO Responsible Carrier Program. The program is a safety program for barge and towing companies which establishes operating principles, practices, and guidelines which exceed those currently required by federal law or U.S. Coast Guard regulations.

## JAMSTEC Awards Multibeam Survey System Contract To SeaBeam

SeaBeam Instruments was awarded a contract by the Japan Marine Science & Technology Center (JAMSTEC) for a multibeam bathymetric survey system which will feature a fully integrated sub-bottom profiler. SeaBeam will deliver a SEA BEAM 2100 survey system, model 2112.004, for installation on JAMSTEC's new 8,600-ton ocean survey vessel.

The SEA BEAM 2100 series is the company's fourth generation of multibeam bathymetric survey sonars.

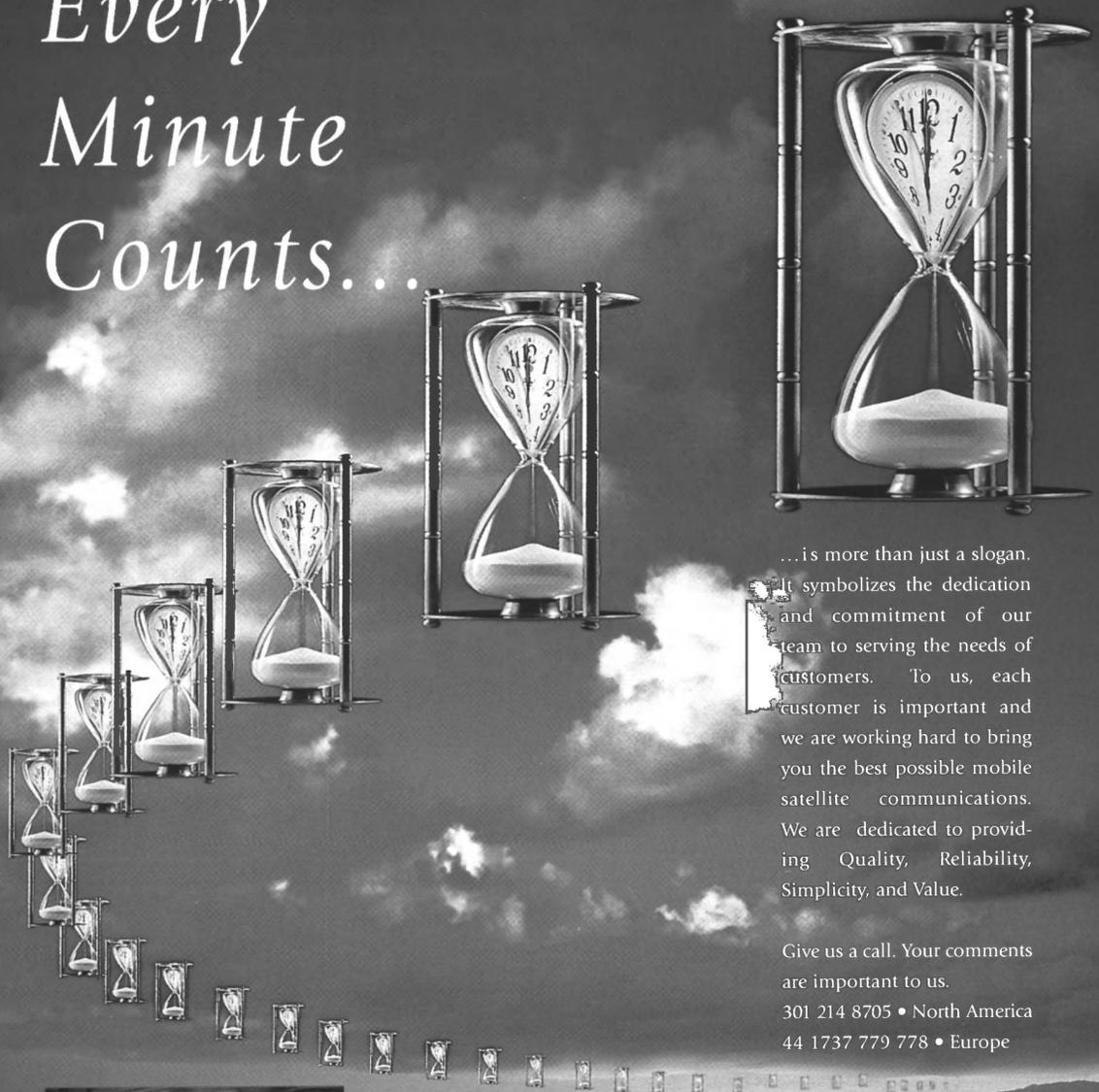
For more information from SeaBeam Circle 103 on Reader Service Card

## Sonardyne Installs Vessel Positioning System

An integrated long-ultra short baseline (LUSBL) positioning system has been installed on the pipelaying vessel *Norlift* by Sonardyne of the U.K. *Norlift* is operated by Northern Ocean Services Ltd. of the U.K., and the vessel will use the system to support flexible pipelaying work on BP's Foinaven Field, West of Shetlands. The system comprises a multi-element transducer cabled to a Navigation Processor, which is the system controller and display unit. The vessel will navigate to the Foinaven area and drop a transponder to the seabed. Using data from both the GPS and the Sonardyne system, the position estimate of the transponder is continuously upgraded and improved. In practice, this reportedly represents an accuracy of better than .5 percent of slant range from ship to the seabed transponder.

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Only OML designs, manufactures, tests, services and markets, all under one roof so that we can completely control the quality of our products and provide the optimum of service to our customers. In fact we are so confident of our quality that we offer an unprecedented Lifetime Guarantee on our pressure vessels!

Sea-Quencher™ series offer a complete line of systems; from the compact, economical Aegean model, and the high-output, modular Baltic system, to the commercial-duty Caspian models and custom-designed plants that can produce over a million gallons a day.

All Sea-Quencher™ systems come complete with top-of-the-line components, parts and features. When you compare our features, quality, service and price you'll see why we are the leader in the industry since 1978. For complete information see your dealer or contact us for specifications and the dealer in your area.

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## Hamworthy Has Major Shuttle Tanker Order In Hand

Hamworthy Marine received an order to supply a Shilling Mariner high-lift rudder for the 50/50 owned Bergesen/Statoil 103,000-dwt multi-purpose shuttle tanker under construction at Samsung in South Korea. The contract is Hamworthy's largest single order of its kind for a Shilling Mariner rudder.

"The exceptional maneuverability for large vessels using the Schilling Mariner rudder makes it ideal for multi-purpose shuttle tanker applications, where a vessel can tackle a variety of activities," said **Allan Bentley**, general manager, Hamworthy.

For more information on the Schilling Mariner rudder  
Circle 105 on Reader Service Card

## Cruise Ship Safety Jumps To The Forefront

Following a spate of problems, the U.S. Coast Guard (USCG) has launched a cruise ship safety review task force that will focus on safety in the cruise ship industry.

Radm. **James C. Card**, the USCG's chief of marine safety, security and environmental protection, has commissioned the task force in response to four recent passenger vessel mishaps that required the offloading of passengers. Although the USCG said there is no indication of a link between the incidents, Radm. Card felt that the occurrence of four mishaps in a span of six weeks necessitated a review.

At press time, the task force has begun inspection of about 125 cruise ships currently operating in U.S. waters and embarking from U.S. ports.

The task force agenda includes: a review of trends within the cruise ship industry to identify possible causal factors leading to the four incidents; identification of possible safety system inconsistencies within the industry and issues of concern to the USCG; making recommendations for improvements as required, and working with industry, through partnering, in implementing adopted recommendations.

## FastShip Market Demand Confirmed By MIT

A Massachusetts Institute of Technology (MIT) study of the potential market for FastShip service found that demand for the ship would open new markets for products between North America and Europe, with no new competition in sight.

"In the areas we investigated, the market for FastShip should be everything its supporters predict," said **Robert Simpson**, principal investigator for the project and director of MIT's Flight Transportation Laboratory, which prepared the analysis. According to the report, FastShip will provide transportation value superior to anything existing or realistically available in the foreseeable future.

The report featured three primary findings: there is definitely a market for FastShip service; FastShip will stimulate demand for shipping new commodities across the North Atlantic; and neither air nor ocean service can directly compete with FastShip.

## Seatex Introduces Innovative Products

Norwegian technology company Seatex has announced its newest innovation in attitude sensor technology, the Seatex Seapath 400, which the company claims represents a giant step ahead in position, attitude and heading accuracy. It has also launched the Seatex HMS 100 Helideck

Maritime Reporter/Engineering News

Monitoring System, which provides pilots with helideck motion parameters and meteorological data via the landing officer to ensure increased safety.

The Seapath is a high-precision heading, attitude and position sensor. Based on a combination of DGPS carrier-phase measurements and motion data from the Seatex motion sensor — or Motion Reference Unit (MRU) — a heading and attitude accuracy down to .05 degrees is reportedly achieved.

For more information from Seatex  
Circle 106 on Reader Service Card

#### Keppel Joint Venture Results In Australia Yard Opening

In a joint venture between the Keppel Group of Singapore and the Maritime Engineering Group of Australia, the Keppel Cairncross Shipyard Ltd. (Keppel Cairncross) recently opened in Brisbane, Queensland. The yard was leased last year from the Port of Brisbane Authority, and became fully operational earlier this year, after an investment of nearly \$20 million that went towards a nine-month refurbishment and upgrade program. Mr. Wayne Goss, Premier of Queensland, and Mr. Goh Chee Wee, Minister of State for Trade and Industry of the Republic of Singapore, were present at the shipyard's opening.

Keppel Cairncross is capable of providing round-the-clock integrated ship repair services for a complete range of vessels. The yard's drydock is reportedly the largest in the Southern Hemisphere, and can take in Panamax-sized vessels of up to 85,000 dwt. To date, the yard has repaired more than 30 vessels, most of which are Australian-registered.

The Keppel Group is an industrial conglomerate based in Singapore, with core businesses in ship repair, shipbuilding, rig building, transportation, engineering, and telecommunications.

For more information on  
Keppel Cairncross Ltd.  
Circle 161 on Reader Service Card

#### McDermott Elects New Director; Declares Dividends

McDermott International, Inc. has elected **John W. Johnstone, Jr.** as a director of the company. Since 1987, Mr. Johnstone has been chairman of the board and CEO of the Olin Corporation, which manufactures and supplies chemicals, metals, and defense-related products and services.

Following Mr. Johnstone's appointment, the McDermott International Board of Directors voted a quarterly dividend of \$.25 a share on the Common Stock of the company, payable October 1, to stockholders of record on September 1, 1995. The Board also declared a quarterly dividend of \$.71 a share on the Series C Cumulative Convertible Preferred

Stock of the company, payable at the same time. A quarterly dividend of \$.55 a share on the Series A \$2.20 Cumulative Preferred Stock and \$.65 a share on the Series B \$2.60 Cumulative Preferred Stock was also declared payable.

McDermott International, Inc. is a worldwide energy services company, with subsidiaries that are involved in offshore construction, the manufacture of environmental equipment and steam-generating

equipment, and the provision of engineering and construction services for industrial facilities.

For more information on  
McDermott International, Inc.  
Circle 162 on Reader Service Card

#### Scottish Shippers Announce Plans For Fleet Merger

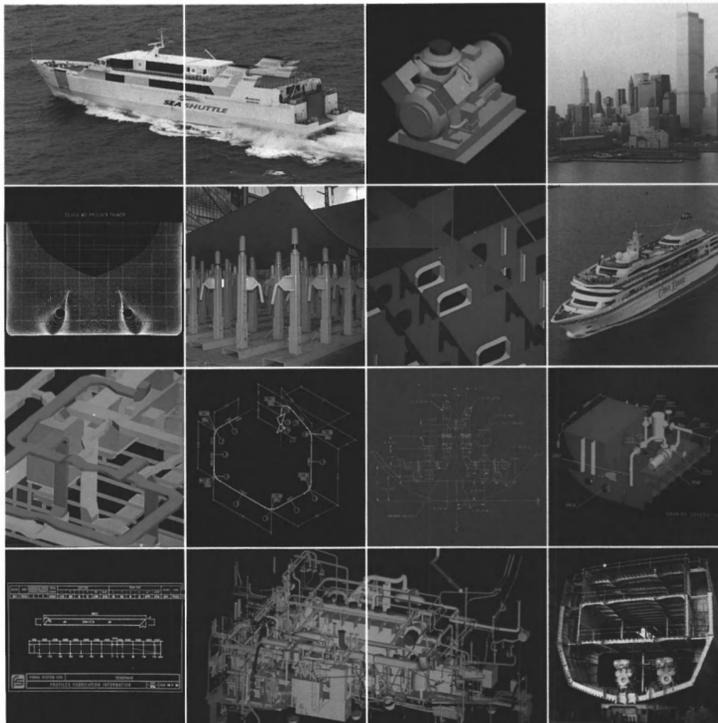
Stirling Shipping Company Ltd., of Glasgow, and Star Offshore Ser-

vices Plc, of Aberdeen, have announced plans for a fleet merger. The merger is the outcome of a provisional agreement whereby Stirling Shipping will purchase Star Offshore's entire fleet, comprising six platform supply vessels and two anchor handling supply tugs. According to company reports, this merger will make Stirling Shipping

(Continued on page 14)

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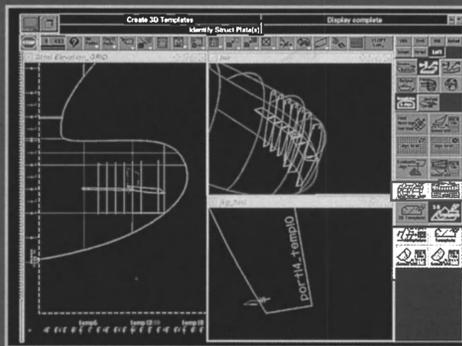
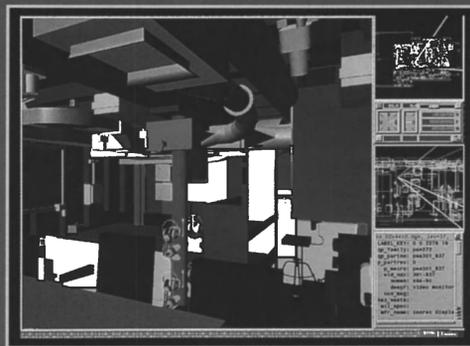
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## CAD/CAM UPDATE

# Intergraph Offers VR-Like Ship Software For Windows NT



LEFT: Intergraph's PMR software, now available for the Windows NT operating system, allows simultaneous remote 3-D walk-throughs of vessel or industrial computer-generated models.

RIGHT: I/Loft, from Intergraph, was designed to help shipbuilders to prepare plates and stiffeners for fabrication.

Intergraph announced that its Product Model Review (PMR) software is now available for Microsoft's Windows NT operating system.

PMR is built on Intergraph's DesignReview software, supporting simultaneous, remote, 3-D walk-through sessions. Users at separate locations can conduct concurrent design walk-throughs of 3-D models of ships, aircraft or industrial environments in a virtual environment, across a network.

PMR's unique architecture requires nominal network bandwidth (several hundred bytes), so performance is limited only by the local personal workstation. Driver control can be passed from one site to another during the session, and convenient access to model data is provided through a point-and-click interface.

For shipbuilders, PMR is a powerful design tool for reviewing 3-D ship models created using Intergraph's Integrated Ship Design and Production suite of software. Since it is built on DesignReview, PMR also serves as an effective concurrent visualization tool for plant design and architecture, and engineering and construction (AEC) applications.

Intergraph can tailor the interface to the specific needs of each site, providing access to external databases and electronic documents such as ASCII or raster files. When the user selects an object for which an attribute-data linkage has been defined, external data can be retrieved. In addition, PMR supports redlining for raster documents that are retrieved during the review session.

George M. Heeschen, Intergraph's executive manager for Integrated Ship Design and Production, commented, "PMR has generated substantial interest in the plant design community, and should become even more popular now that it's available for Windows NT systems. One of the most practical benefits of the concurrent review process is that users at each location have direct graphical access to the model and associated data, enabling them to retrieve information or redline raster files. These redlines can be stored in a central database for later review."

### I/Loft

Intergraph is also offering new technology for shipbuilders to prepare plates and stiff-

eners for fabrication, the Intergraph Vehicle Lofting System (I/Loft).

I/Loft is part of Intergraph's Integrated Ship Design and Production (ISDP) suite of software designed to support the entire ship life cycle — from design and construction through maintenance, overhaul, alteration, repair, refurbishment, and even decommissioning.

Emphasizing shipbuilding production processes, I/Loft incorporates powerful lofting functions that automatically create production information for the cutting and forming of shell plates and associated stiffeners. Using I/Loft, shipbuilders can design and modify shell structural elements and send the results to nesting and cutting systems. The ISDP system includes software for designing jigs, preparing manufacturing documents, and extracting accurate material quantities from 3-D ship models.

In addition, I/Loft is integrated with third-party tools for nesting and burning applications.

Mr. Heeschen said of the program, "I/Loft enables shipbuilders to move closer to the efficiency and accuracy of a paperless shop environment. With ISDP software, ship-

builders can develop an intelligent 3-D ship model that supports all engineering and manufacturing activities. Once a ship's structure has been designed in the 3-D model, I/Loft automatically creates a manufacturing plan that includes profile cards representing the sections of the ship that need to be bent or cut.

Previously, the three to four thousand profile cards that make up a typical shipbuilding project each required approximately three hours of manual work. With I/Loft, each card requires an average of one minute to produce, dramatically reducing the time needed for the entire lofting process."

Intergraph, which claims to be the world's largest company dedicated to supplying interactive computer graphics systems, offers products ranging from point-to-point solutions and meeting individual and departmental needs for integrated, enterprise-wide systems. Intergraph bases its products on Windows, Windows NT, and UNIX operating systems.

For more information on Intergraph Circle 115 on Reader Service Card

## TECHNOLOGY UPDATE:

### TransFRESH's Tectrol Controlled Atmosphere Gives Shippers Options

TransFRESH Corporation was formed by Whirlpool Corporation in 1966 to provide its Controlled Atmosphere (CA) technology — called Tectrol® Atmosphere — in transportation vehicle applications. The Tectrol system is based on modifying the atmosphere (including temperature) around perishable fruits and vegetables so they remain fresh longer. This technology allows the shipment of perishables on vessels that previously were not fast enough to get the products to their destination before spoilage occurred.

The system is incorporated into 20-ft. and 40-ft. containers for shipping purposes. A

shoebox-sized electronic controller monitors, controls and records O<sub>2</sub> and CO<sub>2</sub> levels, as well as other critical data concerning the atmosphere in a TransFRESH CA container.

The controller is housed in a security enclosure in an environmentally-sealed modified reefer fan access panel. The electronic controller is programmed by TransFRESH technicians to maintain the exact Tectrol atmosphere specified for the commodity inside the container.

Common to all Tectrol Atmosphere containers, two port plug assemblies are built into opposing ends of the container sidewalls.

The plugs are temporarily removed during servicing for each load to allow the initial atmosphere to be ejected.

The CO<sub>2</sub> Scrubber Box is an auxiliary system, operated by the electronic controller, used to control the CO<sub>2</sub> level in the container. The scrubber is connected to the controller by a cable. When the atmosphere reaches a certain level, a fan is activated to push the atmosphere through a hydrated lime filter bed, scrubbing the excess CO<sub>2</sub> out of the atmosphere.

The company claims the benefits of its technology include:

- Maintaining the product's weight by lowering the amount of water evaporated
- Reducing decay by inhibiting the ability of organisms to attack a fruit or vegetable
- Reducing discoloration or oxidation of bruised, cut or damaged areas
- Reducing rejections, claims, price adjustments and distribution disruptions
- Reducing tied up dock space and time lost in inspections and negotiating problems
- Providing consistent arrival quality, improving the possibility of repeat purchases.

For more information on TransFRESH Circle 138 on Reader Service Card



**Time is running out on  
CFC refrigerant production.**

**Don't get caught  
unprepared.**

At the end of December, CFC production will end worldwide. Before long, CFC-12 won't be available at any price, anywhere. Avoid the prospect of uncertain refrigerant supplies and escalating costs by retrofitting or replacing your CFC-based systems to accommodate ozone-friendly refrigerants.

**Mobil's EAL Arctic®  
Series polyolester oils  
ease the transition  
to ozone-friendly  
refrigerants.**

The Drew Ameroid Marine – Mobil Oil alliance offers shipowners the experience, technical resources, and polyolester synthetic lubricants needed to enter the new age of ozone-friendly refrigerants.

**Call now to discuss  
your options for  
CFC conversion.**

Don't let any more time slip away before you take action. Contact your local Mobil representative, or call Drew Ameroid Marine for a consultation.

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Circle 31C on Reader Service Card

(Continued from page 11)

the largest operator of platform supply vessels in the U.K. sector of the North Sea, thus consolidating the role of British operators in a market traditionally dominated by Scandinavian competition.

Commenting on the merger, **James Cowderoy**, managing director of Stirling, said, "Stirling and Star are a natural fit...The merged fleet provides a broader and deeper scope of service for our cus-

tomers, more opportunities for sea-going staff, and a base for further growth for the company."

This merger is the latest in a series of market development initiatives recently undertaken by Stirling. Earlier this year, the company contracted with Kvaerner Govan Ltd. and Ferguson Shipbuilders Ltd. for two new, very large platform vessels, due for delivery next summer.

#### Sima-Peru Appoints H.M.S. Marine As U.S. Rep

H.M.S. Marine Services, Inc. has been appointed Sima Peru's representative for the U.S. and Canada. Sima Peru's activities include ship repair and construction, steel structures fabrication, the manufacture of small weapons, and assembly and repair of electronic equipment. The

company has three port facilities, including one on the Amazon River, and has the capability to build, repair, or modify ships of any type, up to weights of 45,000 dwt. H.M.S. Marine Services is a full-service maritime company.

#### Seaway Corp. Releases 1995 Closing Procedures

The U.S. St. Lawrence Seaway Development Corporation and the Canadian St. Lawrence Seaway Authority have announced formal closing procedures for the Seaway's 1995 navigational season. The clearance date by which all ships desiring to use the Seaway must report for final passage at designated points at either end of the St. Lawrence River section, from Montreal to Lake Ontario, is midnight, December 20.

The closing procedures also explained that vessels not reporting to the two Seaway agencies by the clearance date may be subject to a \$20,000 a day Canadian surcharge. It will be announced no later than Dec. 15 whether, based on operating conditions, surcharges will be assessed. According to Seaway Development Corporation Acting Administrator **David G. Sanders**, "We are expecting another strong December this year for cargo shipments and vessel transits. Many in the Great Lakes/Seaway maritime and business community are hopeful that the Seaway can remain open as long as possible to meet end of season shipping demands."

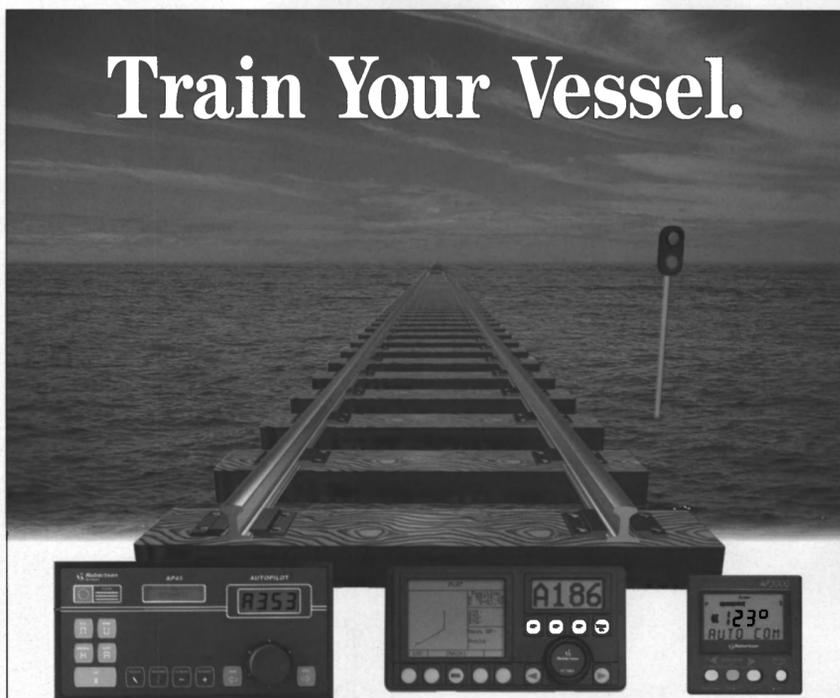
#### 25-Year History Of RCCL Published By Miami Co.

In celebration of Royal Caribbean Cruise Line's (RCCL) 25th anniversary, On-Board Media, a Miami, Fla.-based company, will publish *Under Crown & Anchor*, a compilation of the cruise line's history. The publication will include color photographs and narration from cruise industry historians **Bard Kolltveit**, director of the Norwegian Maritime Museum, and **John Maxtone-Graham**, author of three works on passenger vessels. The book will be available in November. For more information call: (305) 673-0400.

#### Sonsub Completes Subsea Installation For Philips

Sonsub Inc. has completed a contract with Philips Petroleum Co., installing a variety of subsea completion hardware, without diver intervention, on the Seastar project in Garden Banks 70/71 in the Gulf of Mexico. After winning the contract in February, Sonsub equipped a Triton 75-hp Advanced Remotely Operated Vehicle (AROWS) with a variety of specialized tooling packages designed to interface with the subsea hardware. The ROV was then mobilized onto the *Diamond M Ocean Ambassador*. The vehicle made more than 60 dives, completing the installation successfully. Sonsub develops cost-effective solutions for the subsea environment, and has offices worldwide.

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A Robertson autopilot not only keeps your vessel on a straight course, it steers you clear of complex operating procedures and adjustments.

That's because of the comprehensive engineering built into each unit. Our AP300 autopilot precisely monitors rudder movement and at-sea conditions, automatically making adjustments when needed. This hands-free operation allows ship crews to stay productive.

To make sure things stay straight, our AP45 and AP9MKII autopilots connect directly with our RGC50 gyrocompass. The 0183 input on all models also provides no-hassle interfacing with other nav equipment.

There's a Robertson autopilot for any type and size of vessel. And more than a century of combined advanced technology means you're getting the best. Just ask the NMEA - who has voted our autopilots top in their respective classes eight years running.

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**A**s marine applications became more demanding, the rope industry faced a new challenge -- to engineer a better performing polyester rope product.

Through a program of intense fiber research, AlliedSignal engineers discovered the solution. By applying a unique and proprietary SeaGard® finish to the ACE polyester fibers, a better performing wet abrasion resistant rope was now able to be constructed.

In independent testing and in field testing by several rope manufacturers, ACE Polyester SeaGard ropes -- 3-strand and braided -- outlasted and out-performed ordinary polyester ropes by incredible margins, even under the most severe wet abrasion conditions.

Today, rope manufacturers have found that they require a higher level of performance plus cost-effectiveness for the most demanding applications, such as: tethers for balloons, underwater surveillance systems, offshore oil rigging and transmission and distribution (T&D) lines. ACE Polyester SeaGard meets these requirements. And, for the sailor who wants the best in performance, SeaGard ropes offer that certain added security plus easy, smooth handling.

For further information and test results, contact:  
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### Trion Acquires Enviroco For \$8 Million

Trion, Inc. of Sanford, N.C., has acquired all the outstanding stock of Enviroco Corporation, headquartered in Albuquerque, N.M., for \$8 million. The purchase, completed August 1, is part of Trion's strategic plan to complement its internal growth with acquisitions that expand its technology-based air cleaning and high efficiency air filtration business. Trion specializes in the design, manufacture and sale of high-performance air cleaning products, and provides environmentally sound clean air solutions for industrial, commercial, residential and consumer markets throughout the world. Enviroco garnered revenues of \$12 million in its latest fiscal year, manufacturing High Efficiency Particulate Arrestment filters, and cleanrooms and workstations for microelectronics manufacturers, pharmaceutical companies, hospitals, and other industrial applications requiring ultra-clean environments for critical technologies.

For more information from Trion  
Circle 171 on Reader Service Card

### Drew's Cutting, Welding Line Detailed In New Catalog

Drew Ameroid Division of Ashland Chemical Company offers a new catalog detailing its recent additions to its welding and cutting product line. Using a new format for more convenient reference, product descriptions are provided for the Amerox® and Amerarc™ lines of welding gases, gas and arc welding and cutting equipment, and consumables and accessories.

The catalog reflects additions to the product line effected through the company's NEW ERA program. The NEW ERA program originated with a packaging innovation for welding electrodes that contributes to reliable, high-strength welds. All of Drew Marine's electrodes are now completely protected from moisture by impermeable, metal-foil, resealable packaging.

For more information on Drew  
Circle 172 on Reader Service Card

### Intermarine Inc. Awarded By La. Safety Group

Intermarine Inc., a provider of ocean transportation services for breakbulk, specialized project and heavy lift cargo, has been awarded the 1995 Louisiana Workers Compensation Corporation (LWCC) Safe Workplace Award.

"Through your safety experience, you have not only accomplished much for your own company, but also for your employees, other policy holders, your industry, and LWCC as well," Bill Mesa, senior vice president, policy services for LWCC, reportedly said at the awards presentation. Intermarine, headquartered in New Orleans, with offices in Houston and agents throughout Europe, South America and the Far East, operates a fleet of more than 30 multi-purpose vessels.

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## New Book Reviews Escort & Assist Business In San Francisco

A new publication entitled *The Oil Tanker/Barge Escort & Ship Assist Review* provides a statistical breakdown of the business in the area, offering a comprehensive review of tanker and barge escorting in the San Francisco Bay. The book serves as a financial "tell-all," providing market and revenue shares for all major players in the market.

The book, produced by TM Marketing, was created to gauge the financial impact placed upon the oil transportation industry by government regulation. It does so by analyzing tug escort costs and company revenues, and reviewing local shipping information and specific port data.

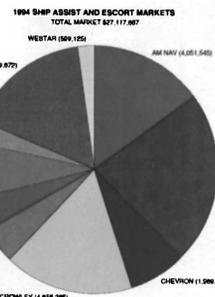
The publication is filled with colorful charts and graphs, providing information such as:

- 1994 Ship Assist & Escort Markets: The tugboat business in San Francisco Bay was estimated to be approximately \$27.1 million. The

book breaks down each company's share of that market — for instance, showing that of that total, Bay & Delta Towing garnered \$6.1 million, with Crowley second at \$4.7 million.

- 1994 Number of Escorts by Oil Company: In 1994, there were 1,845 tanker escorts in the San Francisco Bay, with only five of the most active companies responsible for 1,330 escorts, representing 72 percent of the business. SeaRiver Maritime led the pack with 411 escorts, followed by Chevron, which required 319.

The books contains hundreds of pages of graphics, statistics and industry contacts to provide the complete picture of the area's business.



TM Marketing plans to expand the 1996 edition to encompass the entire West Coast of the U.S.

For more information on receiving the book  
Circle 115 on Reader Service Card

### BBN Creates Acoustic Technology Division

BBN announced the formation of a new division, BBN Acoustic Technologies, to address increased customer demand for advanced noise and vibration control solutions. The new division, which consolidates BBN's expertise in acoustic and environmental technologies, develops and applies technology across the complete spectrum of active and passive noise and vibration control.

Dr. Erich K. Bender, vice presi-

dent of BBN and head of the new division, has managed many of the company's structural, acoustic, environmental and noise control programs, including the development of Active Noise and Vibration Control (ANVC) systems. Active control of noise and vibration is accomplished by introducing one or more secondary sources of noise and vibration to generate "anti-waves" that significantly reduce the original disturbance.

BBN Acoustic Technologies, a division of Bolt Beranek and Newman Inc., develops and markets innova-

tive, cost-effective noise and vibration control solutions to government and commercial organizations. BBN is a leading provider of internetworked systems that help people work and learn together. This year BBN celebrates the 25th anniversary of its development of the ARPANET, the predecessor of the modern Internet. For its fiscal year ended June 30, 1994, BBN had revenue of \$196 million.

For more information on BBN Acoustic Technologies  
Circle 173 on Reader Service Card



## You talked, we listened.

Recently, I invited you to fax your thoughts on Crowley Marine Services. Thank you for all the response.

As a result of your feedback, we're streamlining our administrative procedures to make them more compatible with yours. We're customizing more vessels for your specific marine jobs, and we're empowering our people to make more decisions at the operations level.

So keep those faxes coming. By listening, learning and changing we can continue to put your needs first.

Sincerely,

Brent Stienecker  
President, CMS, Inc.



CROWLEY MARINE SERVICES, INC.

## NKK Corp. Launches Icebreaking Patrol Ship



NKK Corp.-built Teshio can continuously break through ice more than 85 cm thick.

Japanese shipbuilding interest NKK Corp., a corporation well-versed in ice-resistant engineering expertise, has supplied a 500-gt icebreaking patrol ship for Japan's Maritime Safety Agency (originally reported in *MR/EN's* August 1995 edition).

The icebreaker, dubbed *Teshio*, is 160.7 ft. long (49 m) and 33.4 ft. (10.2 m) wide, and has the capacity to break ice more than 75 cm thick while in charging mode.

NKK has also recently constructed two icebreaking leisure vessels designed for tourist excursions off the northeastern coast of Hokkaido. NKK Corp. is an engineering and shipbuilding enterprise, as well as Japan's second largest steelmaker.

For more information on NKK Corp.  
Circle 126 on Reader Service Card

## Cascade General Wins Portland Ship Yard Bid



The *Star Princess* will return to the Alaskan cruise circuit after a successful repair project by Cascade General at Portland Ship Yard. She is shown here just before her return to service.

At a meeting on August 9, the Port of Portland Commission approved a lease and series of transactions under which Cascade General, Inc., will operate and manage the Portland Ship Yard (PSY).

Commencement of the lease is scheduled to begin in January 1996, following a transition period during which Cascade will submit operating plans for Port approval which address various PSY functions.

Under the agreement, Cascade will lease PSY for an initial five-year term. Extension options include two additional five-year terms, plus a 15-year option. This sole contractor agreement with Cascade represents the culmination of the Port's efforts to restructure the yard, which began in 1993.

For more information on  
Cascade General  
Circle 163 on Reader Service Card

## Griffin Expands Containership Fleet

South African-based Griffin Shipping Holdings has expanded its fleet to 15 ships with the purchase of two 1,000 TEU containerships from Unicorn Lines. The vessels *Bastion* and *Maersk Santos*, built in 1993 and 1994, respectively, were purchased by Griffin for approximately \$40 million. Both vessels were constructed in Szczecin, Poland, to the B183 standard design, and have a service speed of 16.5 knots. The *Bastion* has a six-month charter with Korean operator Dongnama, and the *Maersk Santos* has a fifteen month charter with Maersk. The ships will be transferred to the Hong Kong register and managed by the company's Asian division.

Griffin Shipping Holdings owns a mixed fleet of dry cargo vessels, including mid-size containerships and handysize bulk carriers, which are managed from its Hong Kong offices. All of the company's ships are employed on charters in South Africa, Asia, and Europe.

**FAX:**  
**1-206-443-8519**



Operating Headquarters:  
2401 Fourth Avenue  
Seattle, WA 98121  
(206) 443-8100  
1-800-248-8632

Dear Brent, \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
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To help me respond, please provide the following:

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Circle 242 on Reader Service Card

### Unitor Contracting Div. Gets Work On RCCL Ships

Unitor's new Marine Contracting Division is making a name for itself in the installation of passenger cabins on luxury passenger cruise liner newbuildings.

The latest contract for Unitor in this area concerns the turnkey responsibility for the installation of

900 pre-fabricated passenger cabins (450 per ship) aboard two 74,000-grt vessels currently building at the Helsinki New shipyard of Kvaerner Masa-Yards for Royal Caribbean Cruise Line (RCCL), *Grandeur of the Seas* and *Enchantment of the Seas*. The total contract value is estimated to be approximately \$4 million.

The work includes the provision of carpeting and floor coverings, as

well as furniture and all technical contact points. Also included are bulkheads and ceilings in the adjoining alleyways and a number of other rooms.

All ventilation work, sanitary and electrical systems, sprinkler systems and insulation will also be provided in these areas.

Also at the Helsinki yard, Unitor is involved in a turnkey project on the 38,000-grt cruise liner building

for Germany's Deutsche Seereederei. This project concerns the provision of two complete main passenger staircase systems covering 11 decks. The value of this contract is approximately \$3 million.

For more information on Unitor Circle 170 on Reader Service Card

### TT Club Warns Operators Of Colombian Crackdown

The worldwide intermodal transport insurer, the TT Club, is warning transport operators of severe fines being imposed by the Colombian customs authorities for inaccuracies in documents covering cargo arriving in the South American country's ports.

In a crackdown against inaccurate cargo documents, as part of the Colombian Authority's anti-smuggling campaign, they are comparing:

- The bill of lading (which may not be the ocean bill) against the ship's manifest;
- The bill of lading against the commercial invoice presented for import clearance;
- The ship's manifest against the commercial invoice; and
- The cargo against all the above documents.

Any discrepancy discovered during these stringent checks will be the subject of a thorough investigation by customs officials. Heavy fines may be imposed, pending investigation, before release of the goods is permitted.

According to the TT Club, fines based on up to 200 percent of the value of the goods have been imposed for such freight document discrepancies as:

- Showing the cargo weight in pounds on one document and kilograms on another for the same consignment; and
- Describing the goods generically as "machinery" when the invoice lists various items by their correct description, despite the fact that the various individual items could have been accurately described as machinery.

### Cavalier Opens South African Chandlery

Cavalier Marine Supply Co., of Norfolk, Va., — which has served the ports of the U.S. East Coast as a ship chandler for more than 50 years — has opened Cavalier Marine Supply Co. — Cape Town, South Africa. The chandlery will be managed by **Attilio Juric**, a native South African. Cavalier's new office is a full-service ship chandlery, offering the supply of fresh provisions, deck and engine stores, consumables, and bonded stores. In addition to being a full-service chandlery, the branch serves as Cavalier's import/export office for South Africa. The office imports mixed and full containers of consumer goods from the U.S.

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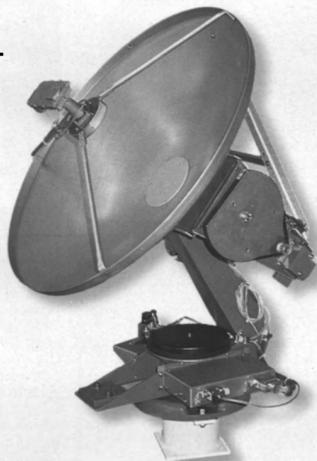
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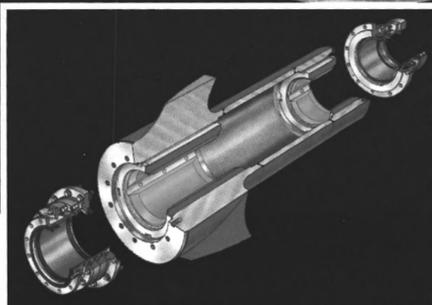
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Circle 226 on Reader Service Card

## EUROPEAN UPDATE

# Hi-tech RoRos boast green image

by Carol Fulford and Andy Smith

The newly coined combi-carriers, *Robin Hood* and *Nils Dacke*, ordered by TT Lines from the Rauma yard of Finnyards in Finland are to boast a wealth of technical innovations intended to make them more efficient, economical and environmentally friendly than other RoRo passenger ferries to date.

With an innovative cargo handling system for three cargo decks and a diesel-electric propulsion system — reportedly a world first for a RoRo — each 589-ft. (179.6-m) long vessel has a carrying capacity of 155 trucks, 317 passengers and 35 crew.

Passengers are accommodated on the upper decks to increase safety, also allowing designers to make the best use of space for trucks and trailers. The cargo decks are designated as main, upper and lower, the latter being a large easily accessible cargo space below the main deck. With two large double-lane hoistable ramps to the upper deck and a fixed ramp to the lower hold — at each end of the ship — all three levels can be reached directly from quayside. The decks provide about 7,872-ft. (2,400-m) of 10-ft. (3.1-m) wide trailer lanes in a totally drive-through arrangement — even to the lower hold — thus reducing storage losses dramatically.

Other layout advantages include optimized cargo flow and the ability to load and unload all decks simultaneously, a design feature which results in shorter docking periods.

Making the most of the lower hold space, within the restrictions of SOLAS requirements for watertight side compartments of at least one third of the ship's breadth on each side, was given high priority. Space was maximized by: choosing a diesel-electric propulsion system with the diesel engines located in side compartments next to the lower hold; locating the access ramps as close to the ends of the ship as possible; and installing a hydraulically operated end-hinged



Combi-carrier *Robin Hood* is scheduled for imminent delivery.

part-ramp in the front. The result is believed to be the creation of the biggest lower hold to date for vessels of this type with access from both ends of the ship.

Although the diesel-electric propulsion system was chosen to save space, the choice also brings a host of other benefits. Operating with one central power station to serve propulsive and

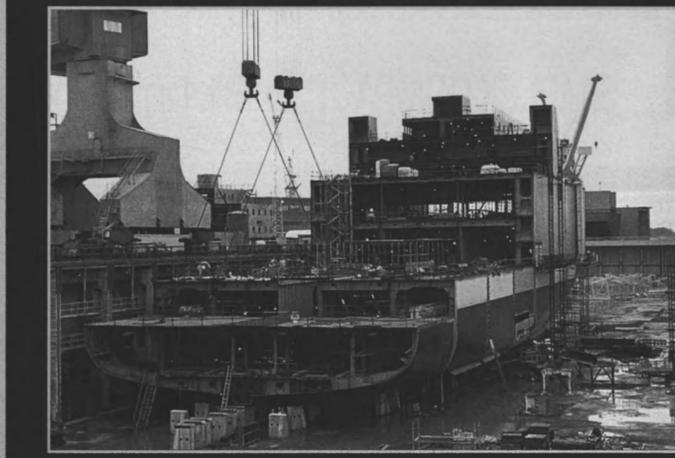
auxiliary purposes has reduced diesel engines by 50 percent. Each vessel is fitted with four Krupp Mak 552C medium-speed diesel generators with a total power of 19,000 kW supplying two STN Atlas Elektronik electrical propulsion systems. The latter are of synchro-converter design, each having an output of 6,500 kW at 120-135 rpm.

The system has also obviated the need for auxiliary diesels and reduced ancillary systems such as fuel, lubricating oil and cooling systems accordingly. The diesel package requires less maintenance by having fewer spare parts (all engines are of a single type) and reduced components. The electrical system is said to be much more reliable than conventional diesel-mechanical systems. Control and maneuverability are also enhanced.

The speed range of the electric propulsion motors can be adapted accurately to the range required by the propellers, so no reduction gears are needed. The entire package is designed to run quietly with low vibration levels. The speed of the motors can be controlled continuously forward and backward from zero to maximum rpm, providing constant high torque throughout nearly the entire range. Easy reverse and control of the motors results in excellent maneuverability and allows the use of fixed-pitch propellers.

The propulsion system also constitutes part of a package which can genuinely be described as environmentally friendly. Running the diesel engines at constant speed keeps exhaust gas emissions at a low level in all operating conditions. According to TT Lines, constant speed operation means: the emission of nitrogen oxides is up to 50 percent lower under part-load conditions (for example, when maneuvering in harbor and during estuary trading); emissions of carbon monoxide and hydrocarbons are lower; and soot production is greatly reduced.

*Robin Hood* being built at Finnyards.



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## EUROPEAN UPDATE

The operator is also keen to point out that the use of marine diesel oil (MDO) as fuel simplifies the machinery and thus enhances reliability and safety. Unlike heavy fuel oil, MDO does not need to be heated to remain fluid, and this simplifies the fuel oil system: no heating sys-

tems are needed for tanks, pipes etc.; the number of separators, pumps and filters is reduced; no tank insulation is required; an emergency system which may be needed in case of a heating system failure can be omitted; and the significant reduction in the amount of required

heating means that complex thermo oil or steam systems, including exhaust gas boilers, can be replaced by a simple hot water system. MDO is also a cleaner fuel. TT Lines estimates that around \$1.3 million can be saved, compared with ships of the previous generation.

Other economies have been achieved by utilizing a streamlined hull, the design of which has been under development in Finland since the mid-1980s. Described as a "pram type semi-tunnel form," the improved lines — claimed to require around 18 percent less power — are achieved by means of a lower block coefficient and a slender forebody in combination with wide, moderately tunneled aft lines. Optimized forebody lines above the water also improve the ship's behavior at sea and reduce stresses, particularly on the bow doors. An aerodynamically-shaped superstructure front bulkhead also reduces air resistance in head winds, thus reducing speed loss in bad weather.

Aside from improvements in exhaust gas emissions and fuel consumption, *Robin Hood* and sistership have other environmental features such as a pre-sorting waste handling system for solid and hazardous waste — all of which is collected on board and disposed of on land — and a fully biological onboard sewage plant. All refrigerators are CFC-free; all cables are halogen-free so as not to emit dangerous smoke in the event of fire; waste heat from the diesel engines is recovered wherever possible; paints used are largely water soluble; and anti-fouling is tin-free.

A futuristic approach has also been adopted with regard to safety factors, particularly damage stability in the event of grounding or collision, more than satisfying SOLAS 90 regulations (Stab 90 Rules). Double skin has even been incorporated above the bulkhead deck although not a legal requirement. Further improvements have been achieved by two longitudinal bulkheads on the main deck which also contain ventilation ducts for the lower hold. These ensure that, in the unlikely event of cargo shifting, the effects are minimal and stability is enhanced.

The newest fire safety regulations covering improved insulation, dimensioning and arrangement of escape routes and stairs, fire alarms and sprinklers, and low location lighting, have also been followed.

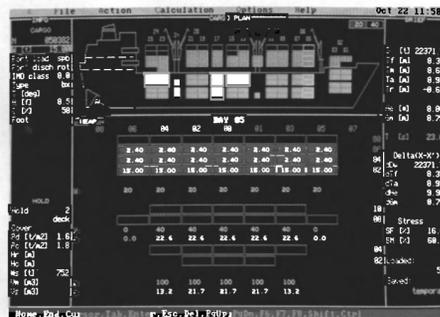
Advanced navigation electronics with anti-collision radars are found on the bridge, where highly automated engine control also takes place. The integrated automation system for control and monitoring of ship operation technology is based largely on the Damatic XD system supplied by Lyngsø Marine, a subsidiary of STN Atlas Elektronik. Acting as a junction point for data coming from the areas of ship control, safety and cargo, it enables the navigator to monitor all ship operation equipment from the bridge. Modular in design, the Damatic XD has numerous computer stations for fail-safe operation, and is powered by a Geapas automatic power supply system.

Atlas has also supplied an integrated navigation and command

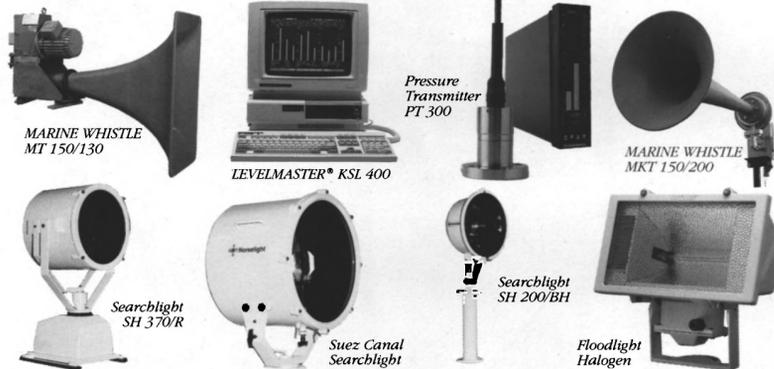
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## EUROPEAN UPDATE

system, NACOS-25, which has been tailored to the difficult navigating conditions on the chosen ferry route. The system includes three radar pilot systems on which the planned route and the route already sailed — as well as the current position of the ship — can be displayed at any time. Navigation lines represent a simplified form of chart, enabling the navigator to coordinate his maneuvers with full knowledge of the sea area and traffic. A second screen also makes the navigator's task far easier by displaying standard nautical information such as position, course, and speed, thus bucking the usual practice of having different displays distributed over the bridge.

The radar mast is equipped with two Atlas radar antennas; a further antenna is located on the forecastle, and a fourth unit in the stern area. These are used, for example, to obtain detailed information about obstacles when approaching a port or sailing in unfamiliar waters.

*Robin Hood*, due for delivery at the end of May, but postponed due to damage to her electric propeller motor during sea trials, will operate between Trelleborg in Sweden and Travemunde in Germany on an eight-hour crossing. *Nils Dacke* is scheduled for delivery in the fall.

### Red Funnel tug to enter service soon

Following a fairly quiet period in the U.K. tug industry, Southampton-based Red Funnel Group is now preparing to take delivery of the 108.2-ft. (33-m) tug *Redbridge*. Ordered in September of last year from Humber-side yard Yorkshire Dry Dock (YDD), with official contracts signed at the International Towage & Salvage Convention (ITS '94), *Redbridge* is Voith-Schneider-powered for escort and harbor duties, and has been designed to serve the port of Southampton for some years to come. **Stuart Bradley**, chairman of Red Funnel explained: "The feature that we most value about this advanced design is the ability of the tug to handle the existing and forthcoming generations of still larger containerships and car ships which will be using the port. The maneuverability imparted by the Voith-Schneider units and the increase in bollard pull will fully satisfy these requirements."

*Redbridge* will indeed be the most powerful vessel in the company's fleet to date as her twin Stork Wartsila FHD240 engines of 1,510 kW each ensure a bollard pull of 45 tons, a speed of 13 knots (ahead) and 12.5 knots (astern). Maneuverability is provided by twin five-bladed Voith-Schneider type 28G units.

**John Dempster**, managing director of YDD, talked to *MR/EN* from his office amid his active Lime Street drydock yard, one of three

facilities utilized by the company. "It was an excellent opportunity for us to win a contract for the first 'official' tug we've built for many, many years," he said. "But in terms of track record, it's worth remembering that over the past couple of years we've built the two most so-

phisticated 300 survivor stand-by vessels for the North Sea oil industry which, although they were not built, were capable of a 31-ton bollard pull."

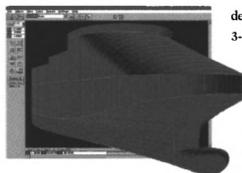
Red Funnel needed no further proof of the yard's ability when the contract went to tender and liaised

over the vessel's design with YDD and consultant naval architects Burness Corlett & Partners. Significant features include a high sheer aft to protect the vessel during escort duties and positioning of funnel ahead in order to avoid an obstructed view of the stern, essential as the



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## EUROPEAN UPDATE

vessel will spend much of her service life in stern operation and will be crewed by just three. With the latter factor in mind, all winches are controlled from the bridge.

Onboard equipment includes an Effer crane, SES electronics package, a Jason's Cradle man-overboard device, a Vicam alarm and monitoring system and two wheelhouse top-mounted water/foam monitors.

When the contract, valued at \$5.5 million, was placed, an option for a second identical vessel was also mooted but, said Mr. Dempster, Red Funnel has been forced to reconsider following the decision by competitive operator Howard Smith to locate one of its recently ordered tugs at Southampton early next year.

"Basically, the new Howard Smith tug will leave no capacity for another from Red Funnel and, therefore, the plan has had to be shelved. This is obviously a disappointment to us, but since the Red Funnel work started we've had other enquiries for tugs. We've enough work at the moment to take us into mid-1996, but another contract would be good for overall security. The best news perhaps is that U.K. yards are now becoming very competitive on a worldwide level," he explained.

### Spanish buy British

U.K. yards have been complaining long and loud about "unfair" competition from Spanish boatbuilders. It is, therefore, a remarkable reversal of current trends for a small boatyard located on an island in the upper reaches of the River Thames to secure an order for two 30-ft. (9-m) steel line-handling boats from La Coruna in Spain. The first vessel has been shipped, work on the second is soon to start, and the yard, Hampton Marine Services, is confident that orders for nine more similar vessels will follow.

The customer, seeking workboats for use at oil terminals, originally approached bidders Sunrise International for a secondhand steel vessel with a very low air draft, enabling it to pass under the pile mounted pipeline to which discharging tankers connect. Despite a wide ranging search it proved impossible to find a vessel meeting this requirement, and consequently Hampton Marine was asked to quote for a newbuild — a small photograph of an existing vessel being the only guide. A design proposal was made by yard owner, Bob Sandall, and his quotation surprised the Spanish

customer with its competitiveness, even when shipping costs of \$7,000 were taken into account. An initial order for two boats was placed.

Trials of the first craft, observed by *MR/EN*, took place on the Thames just five weeks after building commenced. The vessel proved highly maneuverable with abundant power from a single 130-hp Perkins Sabre diesel driving a 30 by 19-in. propeller through a PRM gearbox with a 3:1 reduction ratio.

### Busy Dutch yard confirms versatility

Confirming its status as one of Europe's most innovative and versatile aluminum boat builders, the Engelaer Shipyard in Holland followed the announcement of an order for three 65.6-ft. (20-m) pilot boats (*MR/EN* August 1995) with details of its latest, completely contrasting delivery — a 101-ft. (30.7-m) aluminum schooner. Designed by **Andre Hoek**, the vessel, called *Reesele*, will be kept at La Rochelle on France's Atlantic coast for corporate entertainment purposes.

The yacht features a computer controlled hydraulic system allow-

ing the helmsman to singlehandedly activate eight concealed winches, five sail furling operations, two anchor winches and a retractable bow-thruster. Power is from a pair of 240-hp MTU diesels driving 850-mm, four-bladed Hundested CP props through Twin Disc MG 5050 gearboxes. Crankshaft-

driven hydraulic motors are fitted to each engine. Aluminium 5083 was used for frames and plating, and a bulb keel fitted. The hull is divided into six watertight compartments with the engine room amidships having watertight doors fore and aft.

Under construction at the yard is a 62-ft. (20-m) aluminum sailing yacht. Ease of operation was a primary consideration, and designer **Gerry Dijkstra** incorporated lightweight AeroRig mast and spars for effortless handling. The vessel will have two engine rooms — allowing a central corridor access to the owner's cabin in the stern.



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BP MARINE

## First Of New Azimuth Sterndrive Tug Series — *Adulis* — Completes Sea Trials

The Azimuth sterndrive tug 2509 — following the success of the ASD Tug 3211 developed in 1992 — is a new standard of tug at Damen shipyard. The vessel — with a maximum bollard pull of 40 tons — was designed specifically to fill the market need for tugs with below-40 tons of bollard pull. The ASD tug 3211 series, with seven units already built, covers a bollard pull range from 40 to 65 tons.

The *Adulis* was built for the Ports Authority, Port of Massawa, Eritrea, and is designed for towing and mooring operations.

The standard design of the ASD tug 2509 was developed for a wide range of powers, with steerable thruster diameters between 1,600 and 2,100 mm, capable of transmitting powers up to 1,250 kW each, giving a total power of 2,500 kW. Developed in two years of design time, the builder claims the series is the optimal ASD tug for a bollard pull range of 20 to 40 tons.

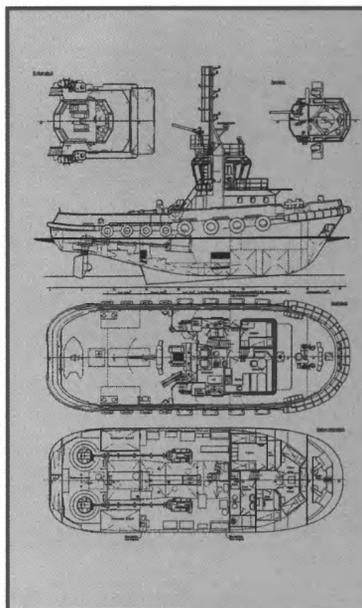
The first of the 2509 series, *Adulis*, recently completed sea trials. The hull shape — a round bilge type with a raised forecastle deck — confirmed the vessels' anticipated performances in terms of seaworthiness and stability. Damen points out that the hull is of an exceptionally heavy construction with, for example, a shell and bottom plating of 12 mm and a sheerstrake of 20 mm thickness.

Main propulsion on the *Adulis* is a pair of 12-cylinder Cummins KTA 38-M diesels, with a maximum continuous output of 1,402 kW. The propulsion and steering is by means of two Aquamaster US901 rudderpropellers in the aft ship. The rudderpropellers are fitted with fixed-pitch propellers of 1,600-mm diameter, and run

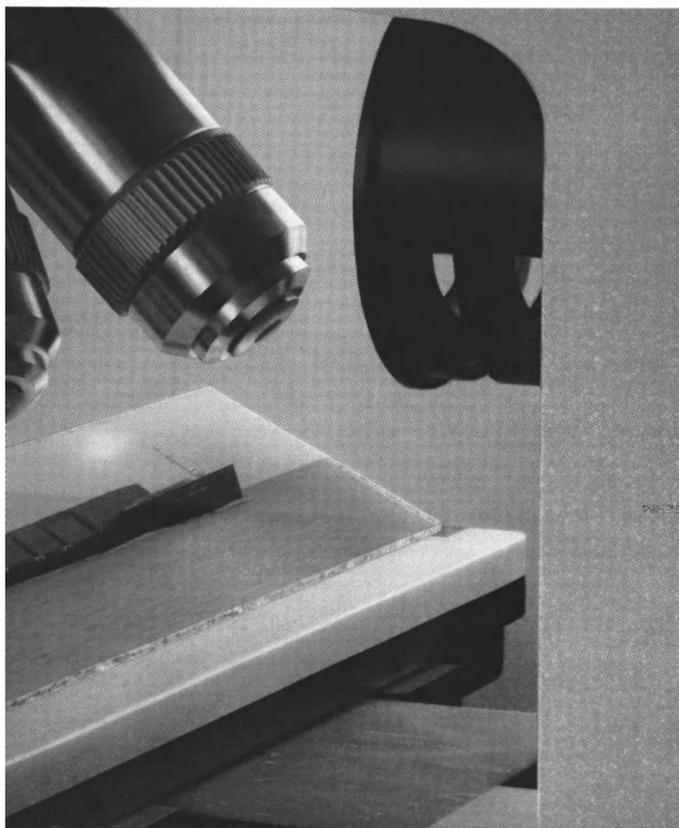
in nozzles with stainless steel inner rings. The rudderpropellers are designed to give the vessel excellent maneuverability, including on-spot turning and side-stepping possibilities. During trials the vessel had a speed of 11.5 knots.

The air-conditioned wheelhouse is arranged with a central control position, from which a good all-around view is possible. Wheelhouse sky windows are fitted for good upward view to the aft deck. The complete propulsion installation can be remotely controlled from the wheelhouse; all controls are grouped together on the two compact consoles in the middle of the wheelhouse. Electronic equipment includes Furuno radar, GPS, echosounder and Navtex radio; an Observer Kotter compass; a Sailor VHF radio telephone; and Jotron EPIRB.

For more information from Damen  
Circle 174 on Reader Service Card



Adulis - Equipment List	
Main engines .....	Cummins
Couplings .....	Vulcan
Cardan/Shafts .....	Aquamaster
Rudderpropeller .....	Aquamaster
Exhaust installation .....	Merwede
Exhaust silencers .....	Mercurex
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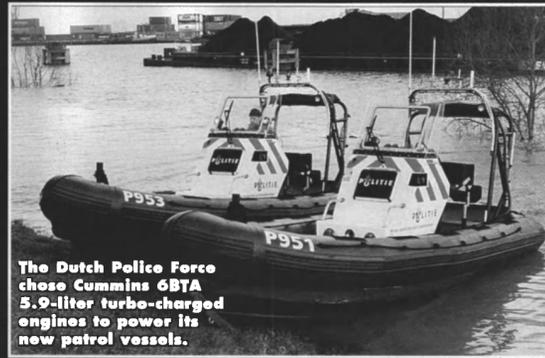
## Cummins' 6BTA 5.9-Liter Engines Power Dutch Patrol Vessels

In the design of its new patrol vessels, the Dutch Police recently commissioned Cummins Marine to provide propulsive power in the form of its 6BTA 5.9-liter turbo-charged engines. Reportedly, the owners considered the Cummins engine an ideal match for the Parker jet thruster already incorporated into the vessel design, in order to provide speeds surpassing 40 knots. The engine and thruster combination allows for maximum maneuverability, dead stop capability, and the ability to beach without damaging the boat's underside.

According to Cummins Marine Marketing Manager Peter Bold, "The engine's compact size and high power-to-weight ratio giving good acceleration were also important factors in the customer choosing a Cummins engine." The Dutch Police Force has ordered six of the Cummins-equipped vessels from Mulder & Rijke Shipyard in IJmuiden, and these will

be the first police boats fitted with Cummins engines. The vessels have a crew of two, a 16-person capacity, and are equipped to a high specification with a waterproof radio-telephone, air-heating for the crew, and a variety of safety equipment. The role of the patrol boats will be to ensure there is safe and smooth traffic on Dutch rivers and waterways, and to support the regional police in nautical matters. They can also be used at accident scenes and to assist in flood relief.

For more information on Cummins Marine  
Circle 125 on Reader Service Card



The Dutch Police Force chose Cummins 6BTA 5.9-liter turbo-charged engines to power its new patrol vessels.

### Specifications

Vessel type ..... Ribsea 650DJ  
Overall length ..... 21.3 ft. (6.5 m)  
Overall width ..... 8.5 ft. (2.6 m)  
Material ..... Fiberglass reinforced polyester  
..... for hull, deck, superstructure  
Tube material ..... Hypalon/neoprene coated nylon

Propulsion ..... Cummins 6 BTA 5.9-liter,  
..... Vulcan coupling to  
..... PP 100 G-type waterjet  
Maximum speed ..... 40 knots  
Maximum range ..... 120 nautical miles  
..... with a speed of 30 knots

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Blount Industries has delivered the M/V *Cayo Norte* to the Puerto Rico Ports Authority in San Juan. The vessel, which was completed July 27, was scheduled to arrive in San Juan in early August.

The 156-ft. (47.5-m) oceangoing ferry can accommodate eight full-size trailers. Its air-conditioned passenger space will seat 125, plus four disabled passengers on runs between Fajardo and the islands of Vieques and Culebra. The vessel also meets ADA compliance for the disabled. *Cayo Norte* is a slightly larger ship, but still similar to the 155-ft. (47.2-m) delivery M/V *Santa Maria*, completed in 1990.

*Cayo Norte* is fitted with Twin Disc gears and an Ellis four-blade propeller. She has a Furuno radar, an Icom radio and a Ritchie compass.

The vessel is the 291st vessel built at the Blount Shipyard in Warren, R.I., and the 19th ferry built by Blount for the Puerto Rico Ports Authority over a 40-year period.

For more information on Blount Industries  
Circle 118 on Reader Service Card



Industrias Verolme-Ishibras (IVI) of Rio de Janeiro, Brazil — a recently formed merger of Ishikawajima do Brasil-Estaleiros and Emaq-Verolme, two established Brazilian shipbuilders — has several bulk carriers currently on order. One of the first vessels to be completed by the newly-merged company is the 70,000-dwt Panamax bulk carrier M/V *Brazilian Venture*, now in service in Wah-Kwong. The 738-ft. (225-m) *Brazilian Venture* has been built to the requirements, and under the survey, of Bureau Veritas (BV). Of conventional all-aft configuration with accommodation for a crew of 26, *Brazilian Venture* has seven cargo holds. The holds have a hopper profile with upper wing tanks port and starboard, and lower wing tanks port and starboard for water ballast. Double bottom tanks of varying dimensions are provided for water ballast in way of holds No. 1 and 2, and for fuel in the remaining holds. Propulsion is by a Hyundai-Sulzer 6RTA62 direct-coupled diesel engine developing 11,000 hp at 79 rpm, and driving a Stone Manganese five-bladed, fixed-pitch propeller with a 24-ft. (7.3-m) diameter. The vessel's service speed is 14 knots. Electrical power requirements of 450 V, 60 Hz, are met by three 440-kW diesel generator sets each comprising a Daihatsu 6DL-20 diesel engine driving a Nishishiba NTAKL brushless alternator at 900 rpm.

For more information on BV  
Circle 119 on Reader Service Card

September, 1995

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27

## INTERNATIONAL UPDATE

# CHINA:

## Its role in world trade and shipping

China, considered the world's biggest emerging market, has one of the fastest growing economies in the world. Double digit growth has been recorded in each of the last three years and Gross Domestic Product (GDP) growth in the first quarter of 1995 was 11.2 percent. Projections for the whole of 1995 suggest that GDP growth will register at around 10.5 percent.

*China and World Shipping: An Analysis of the Impact of China on the World's Maritime Industries*, is the title of the latest report from Drewry Shipping Consultants. The report, which is part of a series of regular economic surveys of the shipping industry, was excerpted for this article.

It is likely that China will

remain a dynamically growing economy for the remainder of the decade and this scenario will have significant implications not only for the Asia-Pacific region, but also, in a wider context, for the industrialized nations of the Organization for Economic Cooperation and Development (OECD). China's long-term economic potential is enormous.

The remarkable growth of the Chinese economy during the last decade has had an incisive impact on international trade and shipping. The explosion in Chinese seaborne trade in both the liner and bulk tramp trades has in part been responsible for sustaining the freight markets.

China is also playing an increasingly important role in the shipbuilding market, and was until recently a major player in the world demolition market.

China, as well as being a major user of shipping services, is also an important operator of both liner and tramp shipping. There are massive terminal developments taking place which will influence the direction and pattern of transshipment trades.

### FOREIGN TRADE

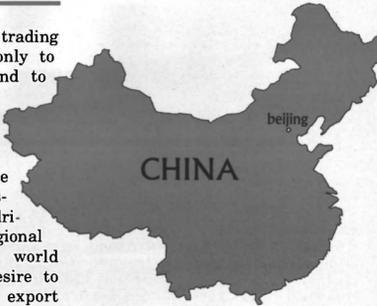
Within the Pacific Rim trading group, China is second only to Japan as an exporter and to Japan and Hong Kong as an importer. The latter is, of course, an important conduit for Chinese trade.

China clearly also has the capacity to become increasingly more important as a driving force behind inter-regional and, more significantly, world trade. Given China's desire to secure foreign currency, export growth will doubtlessly continue at a rapid rate. Parallel acceleration in imports is also probable, considering the eagerness of western countries to supply a vast population beginning to develop as a consumer society. China now has substantial trading surpluses with the world's three largest trading groups. This success has been based on the export of low value consumer goods. As technology improves, China will also become more involved in the export of higher value consumer goods.

### SEABORNE TRADE

The Chinese economy has been a major factor behind the growth of Pacific Rim and world trade. Providing China is able to maintain its impressive rate of economic growth, the remainder of the 1990s should see China become an increasingly important driver of world dry bulk trade — this will be particularly true of the iron ore, coal and grain trades.

The outlook for the oil trades is less clear since China has a voracious appetite for energy, as befits a country with a population of 1.2 billion. The key to resolving China's oil trade deficit is a new



infrastructure which, if developed, could lessen China's growing reliance on imports and help make the country self-reliant.

### SHIPPING

The Chinese controlled fleet is the fifth largest in the world with more than 23 million gt. If the Chinese and Hong Kong fleets are combined, they form the world's third largest fleet (a large proportion of the Hong Kong fleet is not beneficially owned by Chinese interests). China Ocean Shipping Co. (Cosco) is the third largest shipowning group in the world. The Chinese fleet has grown primarily through secondhand acquisitions and, to a lesser extent, through newbuildings. Dry bulk carriers are the preferred vessel type in terms of carrying capacity. But when looking at sheer vessel numbers, general cargo ships are the most popular, as they offer flexible trading opportunities both in Chinese coastal and river trades, and also within the Asia-Pacific region.

For more information on obtaining the full report Circle 101 on Reader Service Card

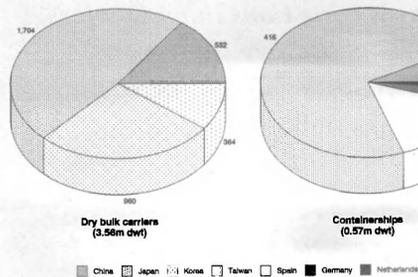
**Table 1**  
Chinese Trade in Bulk Commodities, 1993  
(millions ton)

	World	Asia-Pacific	China
Crude oil	1,346.9	431.4 (a)	16
Products	355.9	120.1 (a)	17.7
LNG	60.8	44.8	—
Iron ore	352	159	32.9
Coking coal	159.3	88.4	4.3
Steam coal	203.9	100.6	15.5
Grain	199.8	61.1	5.5

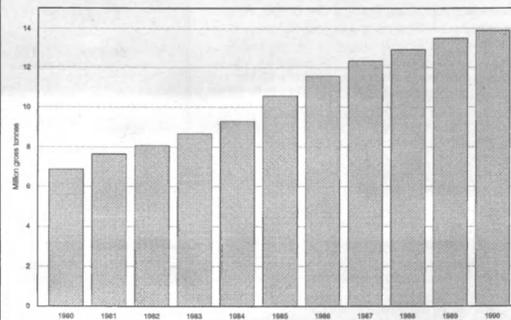
(a) Figures refer to all of Asia

Source: Drewry Shipping Consultants

### CHINESE ORDERBOOK BY COUNTRY OF BUILD



### CHINESE FLAG FLEET DEVELOPMENT



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## Washington D.C. Report

### Aquaculture Relief Measure, NOAA Budget Considerations, Maritime Reform Bill Busies Senate

On August 11, Senator **John Kerry** (D-Mass.) introduced a bill designed to promote alternatives for the overburdened domestic fishing industry, and to encourage the development of an environmentally sound marine aquaculture industry in the U.S. The measure, called the Marine Aquaculture Act of 1995, encourages investment in the area of marine aquaculture (the farming of fish and shellfish in ocean and coastal waters) in order to stimulate local economies, bring new jobs, and help restore wild fish stocks.

According to Sen. **Kerry**, "...the fishing industry is in decline, suffering from depleted stocks and overfishing...Clearly we need to find long-term solutions that will provide long-term results — new jobs, new resources, a new means of sustaining the global fishing industry...A strong marine aquaculture industry would provide high quality fish and seafood products for American consumption and export, and help reduce our multi-billion dollar fisheries trade deficit."

The bill would require the Department of Commerce to act as the single agency responsible for regulating the distribution of permits for owning, constructing, and operating offshore marine aquaculture facilities in federal waters; for creating a coastal and marine aquaculture R&D program through the Sea Grant Program; and for providing open financial assistance programs, formerly reserved for fishermen, to marine aquaculture development. The measure would also require the Secretary of Commerce to establish environmental standards for offshore marine aquaculture facilities.

#### Battling Budget Constraints

The proposed budget for the National Oceanic and Atmospheric Administration (NOAA) — mandating the termination of HF radiofacsimile weatherchart broadcasts, and consequently affecting the safety of mariners who rely on such broadcasts for oceanographic data — is currently under examination in Congress.

The National Oceanic and Atmospheric Act of 1995, S. 1142, the piece of legislation responsible for setting the NOAA budget through 1998, was introduced in the Senate Committee on Commerce, Science and Transportation in August of 1994. If passed, S. 1142 will authorize appropriations in the amounts of \$1.84 billion for FY 1996, \$2.02 billion for FY 1997, and \$2.03 billion for FY 1998.

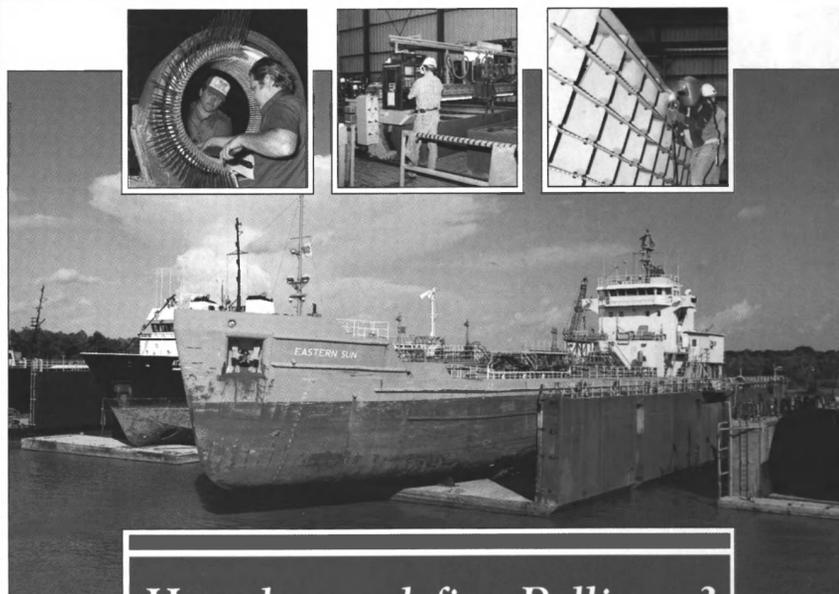
The NOAA's operations include atmospheric and satellite programs, ocean and coastal programs, and marine fisheries programs. Budget debate has been intensified by the terms of the proposed bud-

get that call for eliminating several National Weather Service (NWS) HF radiofax transmitters — specifically, transmitters located in Marshfield, Mass.; Pt. Reyes, Calif.; Kodiak, Alaska; Honolulu, Ha-

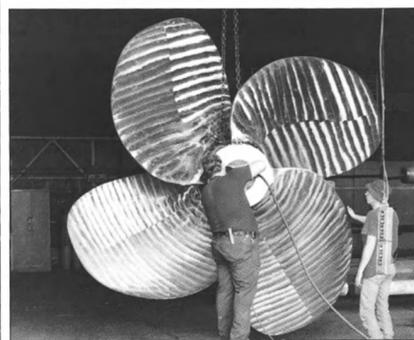
waii; and Rogers City, Mich — that supply commercial fishermen with weather charts, as well as other oceanographic data on which they base their catch. The elimination of this information source poses a

threat to members of the U.S. commercial fishing industry, many of whom have come to rely on this data for determining fishing strat-

(Continued on page 40)



How do you define Bollinger?



**Bol-lin-ger** \bäl-in-jør\ n. Synonym for quality and service; also known as "The Boat People;" see also: COMPLETE MARINE SERVICE.

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## Maritime Administration News

### NEWTARGET: International Fast Ferry Market

The Maritime Administration (MarAd) and Nichols Brothers Boat Builders, Inc., Freeland, Wash., have entered into a 10-month, cost-shared cooperative agreement intended to help U.S. companies capture a commanding share of the international fast ferry market. Gladding-Hearn Shipbuilders, Somerset, Mass., and International Catamarans Design (Incat), Sydney, Australia, are Nichols' partners in the project. The purpose of the project is to specify and enhance Incat designs for export sources through Nichols and Gladding-Hearn, to secure the know-how to upgrade Nichols and Gladding-

Hearn production methodologies to reduce costs and produce the particular Incat designs at international market prices, and to implement a comprehensive international marketing program for 1995 to sell Incat designs sourced through the two American companies. MarAd, an agency of the U.S. Department of Transportation, is acting as an agent for the Department of Defense's Advanced Research Project Agency (ARPA). The cooperative agreement, awarded on a competitive basis, is part of Maritech, a program designed to enhance the competitiveness of American shipyards.

Participation in the industry-initiated Maritech program is one element of the President's plan to strengthen America's shipbuilding industry and thereby retain the critical shipyard journeyman skills necessary to build future naval combatants and to help preserve a shipbuilding mobilization base in the U.S.

The total value of the agreement is \$625,564. The government will contribute funding in the amount of \$305,000, and Nichols Brothers Boat Builders, Inc. and partners are providing the same amount in cash and in-kind services.

#### Four Shipping Companies Join SOCP

MarAd has announced that four U.S. shipping companies have joined the Ship Operations Cooperative Agreement Program (SOCP). The SOCP is an industry/government partnership formed in 1993 under the leadership of MarAd. The purpose of SOCP is to promote commercially beneficial innovations in vessel operations through the identification, development and application of new methods, procedures and technologies. The objectives are to improve the competitiveness, efficiency, productivity, safety and environmental responsiveness of U.S. vessel operations. The newest members are: Bay Ship Management of Englewood Cliffs, N.J.; InterOcean Ugland Management of Voorhees, N.J.; Marine Transport Lines of Weehawken, N.J.; and U.S. Marine Management of Norfolk, Va.

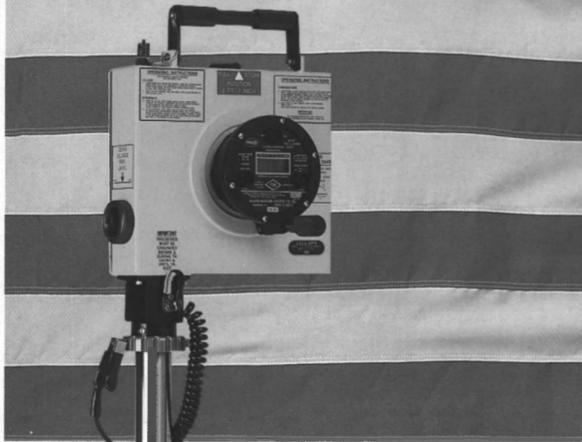
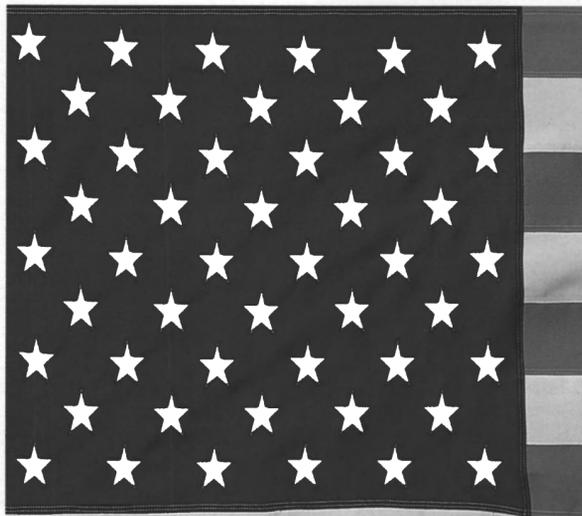
#### Removing Obsolete Regs

MarAd has issued a final rule removing obsolete regulations from 46 CFR Parts 201, 206, 246, 253, 275, 276, 285, and 290 as a result of President Clinton's Regulatory Reinvention Initiative. Regulations and identified obsolete regulations for removal by part, subpart, section or portion of a section are noted above. For additional information, please contact Edmund T. Sommer, Jr., chief, Division of Regulations and Administrative Law, Tel: (202) 366-5181. This rule, Docket No. R-160, becomes effective upon publication in the Federal Register.

#### MarAd, NOAA, IRS Determine Rate

MarAd, the National Oceanic and Atmospheric Administration and the Internal

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Revenue Service have determined that 7.18 percent is the applicable rate of interest on the amount of additional tax attributable to any non-qualified withdrawals from a Capital Construction Fund established under section 607(h) of the Merchant Marine Act of 1936, as amended, in the taxable year beginning 1995. The rate was determined according to joint regulations under 46 CFR 391.7(e)(2)(ii).

#### MarAd Regs Spell Out Port Protocol During War Or National Emergency

MarAd has issued a final rule which amends the agency's Federal Port Controllers regulations (46 CFR Part 345, 346 and 347) and provides a clear definition of Federal Port Controller. These regulations now provide that, when needed upon the deployment of the Armed Forces of the U.S. or other requirements of the nation's defense, certain U.S. port facilities can be controlled and used exclusively by the Federal Government, operating through MarAd, acting as the National Shipping Authority (NSA) during a state of war or national emergency proclaimed by the President. Federal Port Controllers are appointed by MarAd and operate under service agreements.

The regulations (in 46 CFR Part 340) establish procedures for assigning priority for use by defense agencies, when appropriate, on commercial terms, of commercial shipping services, containers and chassis, port facilities and services, and for allocating commercial vessels, container and chassis, and port facilities and services for exclusive use by defense agencies.

For additional information, contact **John Pisani**, Director, Office of Ports and Domestic Shipping, Maritime Administration, Washington, D.C. 20590. Telephone: (202) 366-4357. This rule has been assigned Docket No. R-155 and becomes effective 30 days after publication in the *Federal Register*.

#### Approvals Granted

• MarAd has approved an application from Shano International Inc., Great Falls, Va., for permission to sell the 83,659-dwt. tanker *Liberty Belle* to Nicksos Exports Pvt., Ltd., an Indian corporation, for scrapping in India.

• MarAd has approved a request by LTD, Seattle, Wash., for permission to transfer to Russian registry the fishing vessel *Bounty Hunter*, without change in ownership. The vessel was built in 1992 in Anacortes, Wash. MarAd's approval is required under section 9 of the Shipping Act, 1916, as amended.

• MarAd has given Matson Navigation Co., Inc., permission to operate the U.S.-flag container ships *Presidents Hoover*, *Grant* and *Tyler* in the domestic trade commencing December 1, 1995, for a period not to exceed six months per vessel. The vessels were built with the aid of construction-differential subsidy. A notice of the application, assigned Docket S-921, was published in the *Federal Register*. Comments were received from the Seafarers International Union of North America and the International Orga-

nization of Masters, Mates and Pilots. Both unions strongly supported Matson's application for domestic service. Section 506 of the Merchant Marine Act of 1936, as amended, permits the temporary entry of subsidy-built vessels in the domestic trades, provided the owners receive written permission from MarAd and repay CDS on a pro rata basis for periods of domestic trading.

• MarAd has approved a request by Raytheon-Ebasco Overseas, Ltd., Lyndhurst, N.J., to sell the power barge *Megan Victoria* to Smith/Enron Cogeneration Limited Partnership, a Turks and Caicos Islands limited partnership. The vessel will be transferred to Panamanian registry. The 3,472-gt barge was built in 1994.

• MarAd has announced the approval of approximately \$60 million in Title XI guarantees for the financing of the largest paddlewheel passenger steamboat ever built. The 418-foot-long, 436-passenger *American Queen* recently joined the *Delta Queen* and the *Mississippi Queen* carrying passengers through the heartland of America — up and down the Arkansas, Ohio, Missouri and

Value is a full line of high-performance chillers and condensing systems.

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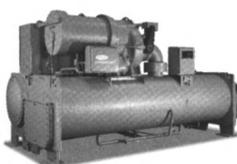
It's a decision that keeps passengers comfortable wherever you sail.

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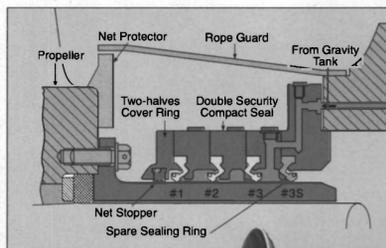


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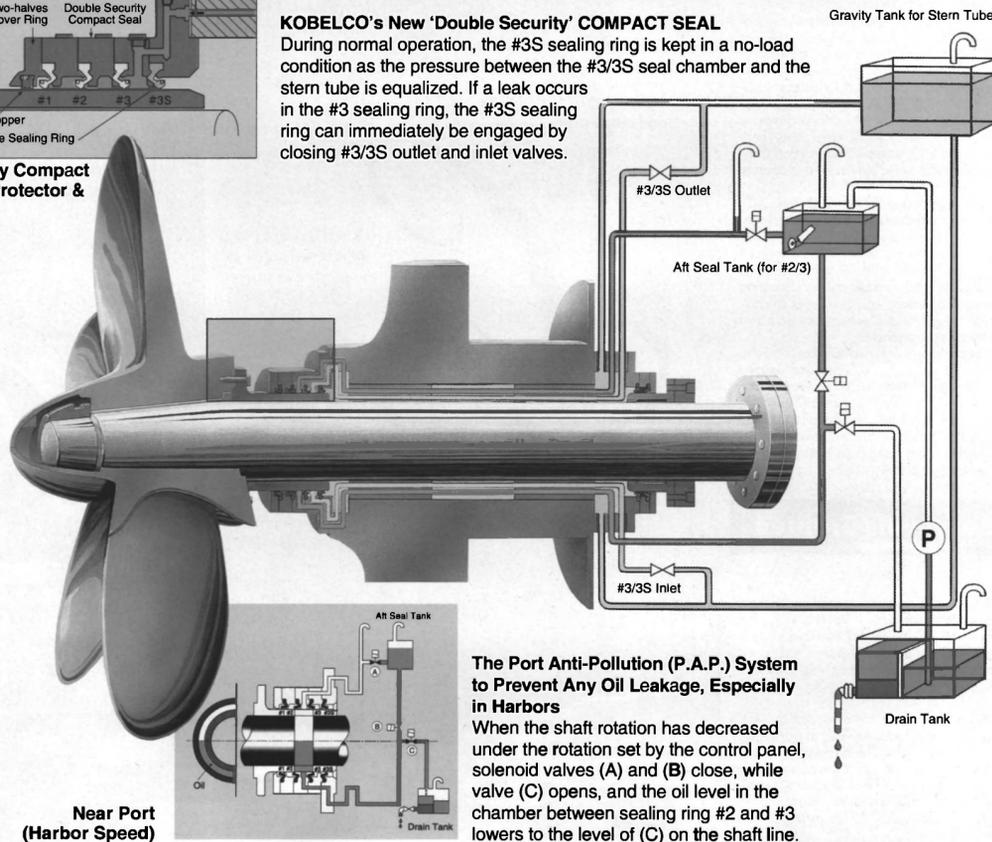
**Double Security Compact Seal with Net Protector & Net Stopper**

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## Maritime Administration News

Mississippi Rivers. Approximately 180 American seafaring and additional shoreside jobs were created when the ship began operations on June 27, 1995, according to the vessel's owners, Great A. Q. Steamboat Company, which is a subsidiary of Delta Queen Steamboat Company of New Orleans, La. Delta Queen is a wholly-owned subsidiary of American Classic Voyages. MarAd oversees the federal shipbuilding loan guarantee program (Title XI), a critical segment of the Administration's National Shipbuilding Initiative.

• MarAd has approved a federal loan guarantee to aid in financing the construction of a new U.S.-flag, double hull tank barge and tug. Martin Gas Marine, Inc. (MGM), Kilgore, Texas, requested the guarantee. The barge will be built by AMFELS, Inc., Brownsville, Texas, at a cost of approximately \$10.5 million. It is expected to be delivered in December. Trinity Marine Group, Inc., Moss Point, Miss., will build the tug. Valued at approximately \$6.1 million, it is expected to be completed in mid-1996. The approved guarantee is for approximately \$14.5 million of the project's total cost. Under the ship financing program administered by MarAd, the government does not make direct loans. Funds are secured in the private sector with repayment guaranteed by the government. Upon delivery, the tug and barge will be time chartered to Martin Gas Sales, Inc., an affiliate of MGM, and will operate between the Gulf Coast and Tampa, Fla.

• The Maritime Subsidy Board granted approval to terminate the final chartered voyage of the *Sue Lykes* (ex-*President Wilson*) in Capetown, South Africa prior to returning the vessel to its owner, American President Lines, Ltd. Lykes will deliver the vessel to APL in Capetown following completion of cargo operations. The vessel was operating under a operating-differential subsidy (ODS) agreement on Trade Route 15-B U.S. Gulf/South and East Africa. The board's approval was required because Lykes' subsidy contract states that a vessel's final subsidized voyage would terminate at a U.S. port. The *Sue Lykes* will be deleted from Lykes ODS contract after cargo is discharged in Capetown.

• The Maritime Subsidy Board granted approval to Ultra Maritime Inc. and Fortune Maritime Inc. to sell the *Ultramax* (ex-*Ultramar*) and *Ultrasea* to Octavia Holdings S.A., a Panamanian corporation, for documentation and registry under Bahamian flag. Conditions on the foreign transfer are that the vessels are re-flagged under the Panamanian, Honduran, Liberian, Bahamian or Marshall Islands registry. The *Ultramax* and the *Ultrasea* were built by National Steel and Shipbuilding Co., San Diego, in 1973 and 1974, respectively, with the aid of construction differential subsidy.

• MarAd Maritime Subsidy Board granted approval to OMI Patriot Transport, Inc., OMI Courier Transport, Inc., and OMI Rover Transport, Inc. to amend all operating-differential subsidy (ODS) agreements which currently cover the *Courier*, *Patriot*, *Ranger*, *Rover*, *OMI Missouri* and *OMI Sacramento* to include the *OMI Columbia* in a subsidy sharing agreement. Penn-Attranco Corp. opposed the inclusion of the *OMI Columbia* in the subsidy-sharing arrangement. The board noted, however, that "any domestic opera-

tions of the *OMI Columbia* during the subsidy-sharing arrangement would have no adverse effect on Penn-Attranco." The board also noted that the amount of ODS payable under the contracts would not be increased beyond that already authorized.

• MarAd and the Maritime Subsidy Board approved Farrell Line Inc.'s request to extend the subsidizable life of the *Export Freedom* for five months, from Aug. 7, 1997, until Dec. 31, 1997. The MSB stated that this determination "does not constitute a precedent for a board action in any similar cases."

• The Maritime Subsidy Board has approved a request by American Maritime Transport, Inc. (AMT) to sell the tanker *Golden Endeavor* to Western Overseas, Inc. for scrapping in India. The vessel is subject to a construction differential contract (CDS) under Title V of the Merchant Marine Act 1936. The CDS con-

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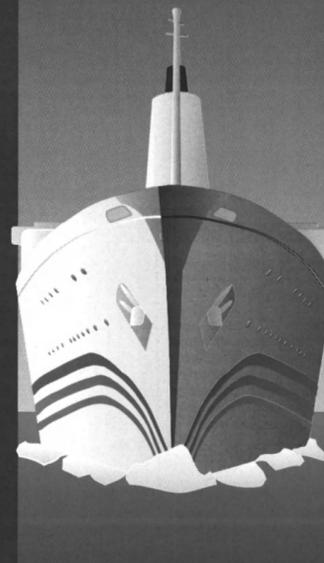


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## Smit Makes Salvages From U.S. To Belgium

Smit salvage teams spent July responding to casualties in U.S. waters, the Caribbean and off the Belgian coast. On the first day of July, Smit Americas mobilized following a collision off the mouth of the Mississippi. The accident involved the Singapore-owned general cargo vessel *Enif*, 12,060 grt, and the Greek bulk carrier *Alexia*, 34,439 grt.

Smit Americas obtained an International Salvors Union (ISU) subcontract to assist the 1981-built *Alexia*. Another team provided salvage services for the *Enif*, which had suffered heavy damage to the port side near the No. 3 hold. A number of spaces flooded as a result.

The *Alexia* had suffered bow damage. Both vessels were locked together by the force of the collision.

The salvage vessel *Smit Hunter* attended the casualties, in the company of four other tugs. A salvage plan was prepared and submitted to the U.S. Coast Guard. Having obtained USCG approval, the salvage team began to ballast down the bow of the *Alexia*. When sufficient bow trim had been achieved, it proved possible to pull the vessels apart.

Steps were taken to prevent pollution from the *Alexia*'s bunker tanks. The vessel was inspected by the USCG and approval was given for the ship to be towed into Mobile, Ala. Meanwhile, a second salvage team was engaged in extensive pumping and cleaning activities on board the *Enif*. The vessel was also brought to a condition which allowed the authorities to sanc-

tion a tow to safety. The *Enif* was also taken to Mobile.

The *Enif* commenced permanent repairs at Bender's Yard 9 on Blakely Island. Considerable work was executed with the vessel afloat, while she waited to go on drydock in late August. Complete repairs are expected to take two months.

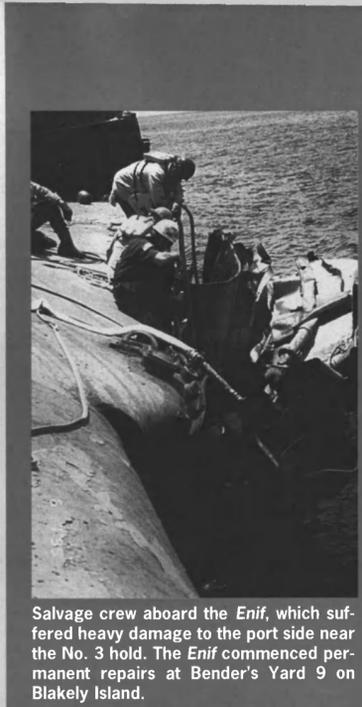
### Kingston Casualty

Smit personnel also responded to a casualty in the Caribbean in early July. A Smit Tak salvage team was dispatched to assist the Italian-owned gas tanker *Atlantic Star* (7,014 dwt). The vessel, part laden with 2,616 tons of propane and butane, grounded on sand in the port of Kingston, Jamaica.

The *Atlantic Star* had just left the berth when she went hard aground on July 8. Responding under an LOF 95 (Lloyd's Open Forum) contract, Smit Tak deployed the vessels *Smithbank* and *Olivierssen*, together with the chartered tug *Petrojam Negril*.

Calculations suggested that the grounding force totaled 1,200 tons. Sand had built up amidships and threatened to complicate the re-floating operation. This problem was solved by bringing the *Olivierssen* and *Petrojam Negril* alongside and using propeller wash to shift the sand. This proved successful and the *Atlantic Star* was refloated on a rising tide. Divers found only minor damage to the ship's hull.

Smit Tak was also involved in one of the more unusual cargo recoveries of 1995 — the rescue of



Salvage crew aboard the *Enif*, which suffered heavy damage to the port side near the No. 3 hold. The *Enif* commenced permanent repairs at Bender's Yard 9 on Blakely Island.

some 4,500 tons of frozen french fries from the vessel *Carina*, which was involved in a collision off Ostend.

The 8,509-grt refrigerated cargo vessel and the 40,000-grt containership *MSC Samia* collided in dense fog during the late evening of July 7. Smit Tak worked with URS of Belgium under an ISU subcontract to perform the salvage.

At dawn on July 8, both vessels were still locked together. The *Carina* had suffered severe damage to port, at a point forward of the accommodation. The engine room had flooded, together with hold No. 5 — astern of the accommodation. The damage to the *Samia* was restricted to the bow area.

The order to safeguard the *Carina* (together with her cargo of fries, destined for a well-known fast food chain), the URS/Smit Tak team decided to move the vessels clear of the fairway in their locked condition. The casualties were then maneuvered over a sandbank, in order to prevent any danger of the *Carina* sinking.

By about 9:40 that morning, the team had safely disengaged the ships. The *Carina* dropped her anchor while the *Samia* began the short voyage to Flushing under her own power, escorted by a salvage tug.

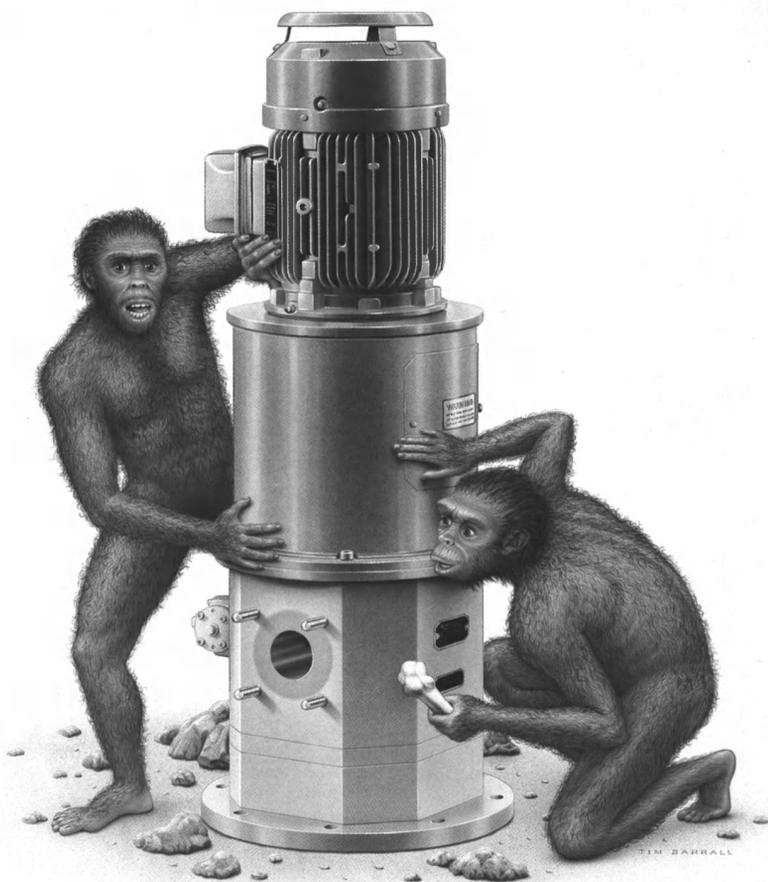
Meanwhile, the salvage vessel *Onrust* had been dispatched to the scene, carrying oil booms and special salvage equipment. An immediate problem was posed by a pollution threat from bunkers; booms were deployed and divers completed temporary patching to stem further leakage.

The cargo was the next priority. The vessel's refrigeration systems were dead and there was a risk that the french fries would spoil in the time required to transfer the cargo to another vessel. A solution was found — containers packed with dry ice. This way, the fries remained frozen throughout the cargo recovery operation, which proceeded rapidly despite heavy swell conditions. With the cargo transfer completed, the *Carina* was rowed safely into port.

For more information on Smit  
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After colliding off the mouth of the Mississippi, separating the *Enif* and *Alexia* — which had been locked together by the collision — had to be accomplished without compromising vessel stability. The salvage team began to ballast down the bow of the *Alexia*, and when sufficient bow trim had been achieved, it proved possible to pull the vessels apart.



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tract will also be transferred to the buyer and will terminate when the vessel is actually scrapped. The vessel cannot be documented under the laws of any foreign nation other than one ballast voyage to India. The vessel was built with CDS in 1974. A previous Section 9 application announced on July 15 was voluntarily revoked by AMT.

to Lati Baza, also of Bhavnagar. The vessels would be scrapped in India.

- MarAd has received an application from U.S. Water Jet Express, Inc. of Glastonbury, Conn., for a Title XI guarantee to aid in financing the construction of four Tri-Cata-

maran passenger vessels, and four loading ramps. Each vessel would be propelled by two turbine engines with waterjets. They would operate between Western Long Island and New London and Bridgeport, Conn. The proposed builder has not been determined, but delivery dates are proposed 12, 14, 16

and 18 months after approval. The estimated guarantee amount is for \$45,322,606 of the total estimated actual cost of \$51,797,262. Construction period financing would be covered for 18 months and mortgage period financing would be covered for 15 years.

### Applications Received

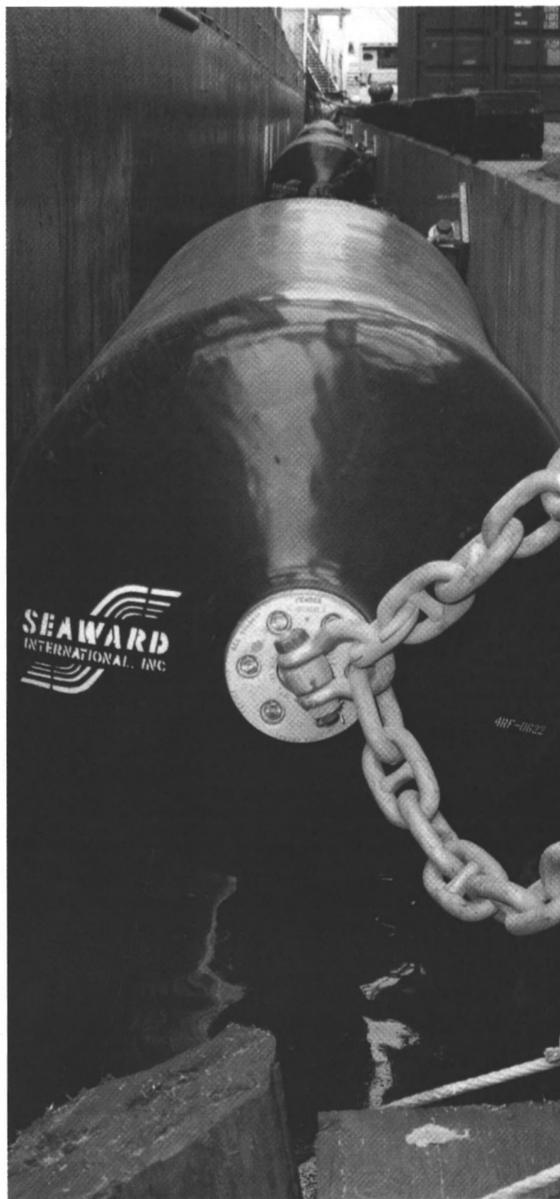
- Mid-Continent Marine Partnership, Spring Hill, Kan., has asked MarAd's permission to sell and transfer to Canadian registry the 1,048-dwt. deck barge *Tecumseh* (ex-U-727). Lower Lakes Towing, Ltd., of Ontario, Canada, would use the vessel in foreign trade between the U.S. and Canada. MarAd's permission is required by section 9 of the Shipping Act of 1916, as amended.

- MarAd has received an application from Mormac Marine Transport, Inc., seeking to extend subsidizable life on the *Mormacstar* and *Mormacsun* to January 31, 1997. Mormac is also asking to modify its operating-differential subsidy agreement on the *Mormacsky* to permit a subsidy sharing arrangement between the three ships. According to Mormac's application, extending the subsidized life of the two vessels and establishing a subsidy sharing arrangement will permit the ships to remain active participants in the U.S. foreign trade for a longer timeframe, and ensure employment of U.S. seafarers for this additional time. The company contends that the vessels are actively engaged in the international trade and are well maintained.

- MarAd has received an application from Shibley Marine Services Corporation, Clear Lake Shores, Texas, for a Title XI guarantee to aid in financing the construction of one oceangoing tug barge unit. The shipbuilder is Trinity Marine Group, Harvey, La. The vessel is scheduled to be delivered approximately 11 months after the signing of a contract to build the unit. The estimated guarantee amount is for \$22,375,000 of the total estimated actual cost of \$25,000,000, with a loan term of 25 years.

- Atwood Deep Seas Ltd., Houston, Texas, has asked permission to transfer two drilling rigs to Panamanian registry, the 9,562-gt *Eagle* and the 8,896-gross-ton *Hunter*. The vessels were built in 1982 and 1981 in Mobile, Ala. If approved, the vessels would be used in offshore drilling operations.

- Western Overseas, Inc., Sylvania, Ohio, has asked permission to sell three vessels for scrapping in India. The 30,785-dwt barge *American Veteran* would be sold to Ruby Enterprises of the British Virgin Islands, for resale to Bharat Ship Breakers Corporation, an Indian corporation. The 16,225-gt cargo vessel *Margaret Lykes*, built in 1968 in Hamburg, Germany, would be sold to Mayur Steel Corp., of Bhavnagar, India, and the 16,891-gross-ton cargo ship *Charlotte Lykes*, built in 1968 in Vegesack, Germany, would be sold



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## Washington D.C. Report

(Continued from page 31)

egies in domestic waters.

Senator **Olympia Snowe** (R-Maine) has introduced an amendment to these terms regarding closure certification criteria for NWS offices, which has been approved by the Commerce, Science and

Transportation Committee. The **Snowe** amendment adds the criterion of looking at the possible impacts of closures of older Weather Service offices on rural communities.

## Maritime Security Program Headlines Reform Efforts

On August 9, 1995, S.B. 1139, the Maritime Reform and Security Act of 1995, was introduced by Senator **Trent Lott** (R-Miss.). It is designed to establish a Maritime Security Program (MSP) which would retain an active, privately-owned, U.S.-flagged and U.S.-crewed vessel presence in U.S. foreign commerce, as well as provide for sealift

capabilities in time of national emergency. The terms of the MSP program include the allotment of \$100 million per year for 10 years, for the support of approximately 47 ships, with each vessel receiving \$2 million annually. This bill also terminates the existing operating-differential subsidy program, removes existing operating restrictions on participating U.S. flag vessel operators, and reforms the Title XI loan guarantee program.

Another maritime measure, S. 810, the Coastal Barrier Resources System Fairness Act, introduced on May 16, 1995, by Senator **Strom Thurmond** (D-S.C.) and Senator **Ernest F. Hollings** (D-S.C.), received attention at a recent Senate committee meeting. The bill mandates that the Secretary of the Interior remove from the Coastal Barrier Resources System a tract of land in South Carolina that was added to the system without notice to the county in which it is located.

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## Bender Wins \$1.6 Million Contract

Bender Shipbuilding & Repair of Mobile was awarded a \$1.6 million contract for the drydocking and deactivation of the S/S *Cape Jacob*. The drydocking and deactivation package, which includes hull preservation, propeller and shaft examination, and piping system draining and cleaning, ultimately completes with a dead ship tow back to the National Defense Reserve Fleet in Beaumont, Texas.

## Controls Unlimited Chosen For Nine Vessel Contract

Controls Unlimited Inc., based in Long Beach, Calif., was recently awarded contracts for the design and installation of an intrinsically safe pumproom Lower Explosive Limit monitoring and alarm system for nine vessels. The system has U.S. Coast Guard and ABS Americas approval for installation on American flagged tankers. Controls Unlimited remains the authorized repair facilities of Denison Hydraulics (marine), Scana Skarpenord Cargo Master tank gauging and hydraulic control systems, and Hermetic portable gauging tapes by Tanksystems.

## Singmarine Subsidiary Gets \$6 Million Contract

Aluminum Craft (88) Pte. Ltd. (Aluminum Craft), a subsidiary of Singmarine Industries Ltd., won a contract worth \$6 million for the construction of two monohull ferries. The contract is with Pengine Boat Services Pte. Ltd., one of Singapore's largest ferry operators. The two monohulls are scheduled for delivery in the fourth quarter of

## Hitachi Zosen Completes VLCC Tohzan

The *Tohzan*, a 258,792-dwt VLCC ordered by Nippon Yusen K.K., was completed at the Ariake Works of Hitachi Zosen. The vessel was christened and delivered to the owner, Wight Navigation S.A., on July 18.

The vessel was developed to attain high fuel efficiency with a slim hull configuration for a VLCC. It is equipped with a Super Stream Duct — an energy saving device developed by Hitachi Zosen — in front of the propeller, and a Reaction Rudder at the rear of the propeller. It is also fitted with a large bulbous bow below the water line and painted with self-polishing copolymer (SPC) to ensure the long-term hull fouling prevention. All measures were taken to improve the vessel's propulsion efficiency.

The vessel uses a low-speed, long-stroke, constant-pressure supercharged diesel engine. Also adopted are energy saving techniques including the Turbo Compound System (TCS), which recovers energy from exhaust gas to use for propulsion, a turbo power generator, and a shaft generator/electric motor system.

The main engine can be operated from the wheelhouse and the en-

gine control room on the A deck using a microcomputer-equipped remote control system. The cargo oil lines in the tanks, arranged to allow loading three grades of crude oil, are constructed of corrosion-resistant cast steel pipes for enhanced corrosion prevention. The vessel's self-stripping system allows short unloading periods.

The *Tohzan*, a 258,792-dwt from Hitachi Zosen, features many innovative features designed to make it run more efficiently.



Tohzan Specifications	
Length (o.a.)	1,099 ft. (335 m)
Breadth	190 ft. (58 m)
Depth	94.5 ft. (28.8 m)
Summer draft	63 ft. (19.2 m)
GT	149,896
DWT	258,792
Main engine	Hitachi Zosen B&W
Maximum continuous output	28,720 ps x 69.2 rpm
Speed	15.5 knots
Classification	NK

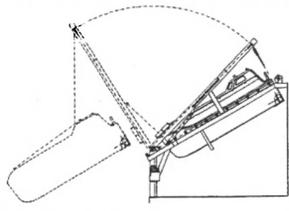
1995, and the first quarter of 1996, respectively.

### American Eagle Acquires Munson Hammerhead

The Munson Hammerhead line of aluminum workboats — which includes fire boats, police/patrol boats, rescue vessels, ferry boats, landing craft, oil response boats and oil skimmers — will now be built in the American Eagle manufacturing facility in LaConner, Wash. The long-time commercial and workboat manufacturer will continue producing custom aluminum boats such as American Eagle oil recovery and other specialty vessels. They will also continue to produce its newly developed SAFE boat line of military, dive and utility boats, as well as the entire line of Hammerhead boats.

American Eagle has pioneered numerous new vessel types such as the first aluminum oil storage barge in use by National Response Corp, and the SAFE brand of military, dive and utility boats.

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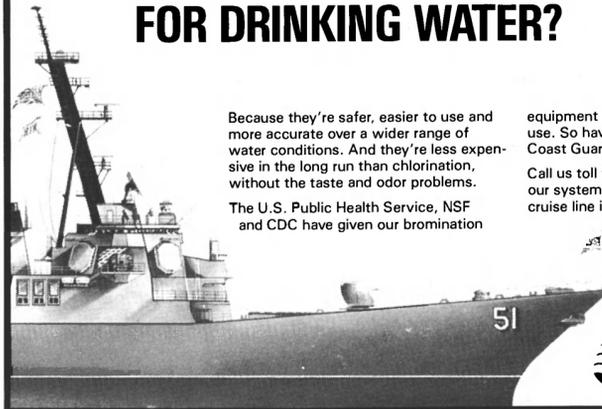
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**Broad & Cassel  
Represents Commodore In  
Cruise Ship Acquisition**

The law firm Broad and Cassel acted as legal counsel to Commodore Holdings Ltd., a Bermuda corporation, in connection with the acquisition of certain of the assets of Commodore Cruise Line from EffJohn International, B.V.

The acquisition closed in London on July 14, 1995. Commodore Holdings Ltd. acquired the assets, including two cruise ships, the *Enchanted Seas* and the *Enchanted Isle*. Partners, **James S. Cassel** and **Alan S. Lederman**, and senior associate, **Kathleen L. Deutsch**, of the firm's Miami office corporate and securities group, handled the matter on behalf of **Jeffrey I. Binder**, the chairman of Commodore Holdings Ltd. They were as-

sisted by Commodore's London counsel, **Tim Walker, Lisa Nunn** and **Chris Aujard** of Norton Rose; Bermuda counsel, **A. Robert Miller** and **Helen Forrest** of Richards, Francis & Francis and Panamanian counsel, **Dr. Alfonso Arias** of Galindo, Arias & Lopez. An affiliate of EffJohn provided a portion of the funding for the acquisition through a loan to Commodore Holdings. EffJohn's principal lender, Merita Bank, formerly

known as Union Bank of Finland, approved such financing. EffJohn International, B.V. was represented by Finnish counsel, NeptunJuridica, **Thomas Forss**, partner.

**BAV Wins \$202.9 Million  
Contract**

The U.S. Navy awarded BAV, a division of VSE Corp., a \$202.9 million contract to provide services to governments operating former U.S. Navy ships and ship systems through the Foreign Military Sales program. The contract, funded by the foreign customers, includes nine one-year options which, if exercised, could bring the total cumulative value of the contract to over \$1 billion.

The Defense Department said the contract would offer one-stop shopping for technical support and materials for the maintenance of ships and ship systems bought, leased or transferred to other countries through the FMS program. The contract would also give VSE access to foreign markets and income from abroad, while allowing it to establish relationships with foreign customers. Foreign navies, meanwhile, would receive high-quality support services from U.S. industry for systems and equipment no longer in service in the U.S. Navy, the Pentagon said.

**Sanders Wins \$26 Million  
Navy Contract**

Sanders, a Lockheed Martin company, has received an initial \$26 million contract from the Department of the Navy for the Engineering, Manufacturing and Development phase of a cooperative U.S.-U.K. logistics upgrade program for the AN/SSQ-108 Outboard system.

Under the contract, Sanders will provide Engineering Development Models to be delivered over the next two years, with additional options for low rate initial production units to be exercised over the next three years. The total value of the contract, including options, will be \$67 million.

Work will be performed at Sanders' Surveillance Systems Division in Hudson, N.H. Planned major subcontractors are Siemens Plessey of Christchurch, England; Applied Signal Technology of Sunnyvale, Calif.; and Southwest Research of San Antonio, Texas.

The Outboard system, which was produced by Sanders, provides shipborne countermeasures detection and analysis for U.S. and Royal Navy destroyers. The upgrade will allow system components to handle current and future threats with a sustainable logistical design.

**OMI Announces Executive  
Appointments**

OMI Corp. announced the appointment of **Robert Bugby** as

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"See MAXIM at International Exposition, Oct. 4-6, 1995, Washington, D.C., Booth 201."

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senior vice president, commercial, and **Richard Halluska** as senior vice president, operations.

Mr. **Bugby** will assume responsibility for all chartering activity, and sales and purchases, while providing strategic guidance for OMI's marketing programs. He joined OMI in February of this year as assistant to senior vice president and chief operating officer, **Craig H. Stevenson, Jr.** Prior to joining OMI, he was head of business development at Gotaas-Larsen Shipping Corporation.

In his new position Mr. **Halluska** will be responsible for all technical, ship management and personnel functions. Prior to his promotion to vice president in 1993, he was assistant vice president of operations.

Captain **Halluska** has extensive operational, seagoing and shorebased maritime experience. He has been at OMI for nine years, most recently as vice president of Safety, Quality and Risk Management.

### MarineSat Introduced By MCN

Maritime Cellular Network, Inc. announced a new low-cost satellite service. MarineSat will be available by the last quarter of this year. Through its Early Adopter Program, shipping companies will be eligible to receive satellite voice, data and fax service for \$1.10 per minute to anywhere within the U.S.

The footprint for MarineSat includes 600 miles from the coast of North and Central America, the Caribbean, Alaska and Hawaii.

For more information on MCN  
Circle 136 on Reader Service Card

### STN Atlas Elektronik Receives More Orders From China

STN Atlas Elektronik has received orders for the design and installation of Atlas 9730 vessel traffic systems at the ports of Guangzhou and Yantai in mainland China. Both installations are expected to begin service in mid-1996, with equipment due for delivery by this year's end. They follow recent commissioning of similar systems at Dalian, Qingdao and Shanghai.

For more information on  
STN Atlas Elektronik  
Circle 137 on Reader Service Card

### Nedlloyd Consolidates Shipment Management Offices

To strengthen its customer service and remain a cost leader, Nedlloyd Lines is consolidating its U.S. offices into six expanded regional offices. In addition, the company will establish a new service

center in Atlanta to provide faster document turn-around and improved accuracy for customers.

Support operations in Baltimore, Boston, Port Everglades, Jacksonville, Secaucus and Seattle will be reassigned to the company's regional offices in Norfolk, Charleston, Chicago, Houston, Los Angeles and San Francisco.

The Rotterdam, Netherlands-based company is an international

shipping and logistics management company which carries more than 850,000 TEU of goods on 52 container vessels.

### GSA Awards Supply Contract For Sea Force RIBs

Willard Marine of Anaheim, Calif., was awarded contract GS-07F-

77360 by the U.S. General Services Administration (GSA), which places the Sea Force line of RIBs on the Federal Supply Schedule. The Sea Force RIBs on schedule range from 16 ft. (4.9 m) up to 24 ft. (7.3 m), and include outboard models and inboard diesel powered models with outdrive or waterjet propulsion.

For more information from Willard  
Circle 138 on Reader Service Card

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# ShipRepair & Conversion 95

OLYMPIA 2 LONDON 7-8 NOVEMBER 1995

## CONFERENCE PROGRAMME

### DAY ONE - November 7

08.30 Delegate Registration

09.00 Exhibition Opens

09.30 Conference Opens

Alan Thorpe, Conference Chairman

### TANKERS

The large tanker market

Eric Shawyer, Chairman, E A Gibson, London

Ship vetting

Martin Shaw, BP Ship Vetting Service, UK

LNG lengthening - commercial and technical

Cees Droogendijk, Deputy Director Fleet Services, Anthony Veder BV, Rotterdam and Kaspar Bosma, Managing Director, YVC Bolnes, Rotterdam

Electrical pod drive refits on product carriers

Juhani Laapio, Board Member, Nemarc Shipping, Finland and Mikko Niemi, Marketing Manager, Kvaerner Masa-Yards, Helsinki

Shipyard Safety (the owners' view)

Cris Clucas, Dorchester Maritime, Isle of Man

Shipyard Safety (shipyard requirements)

Martyn Plummer, Director, Martyn Plummer Associates, Newcastle upon Tyne

ISM CODE - THE MAINTENANCE FACTOR (DEBATE)

Introduction

Tor-Christian Mathiesen, President, Det Norske Veritas Classification, Havn

Panel Members:

Malcolm Willingale, Group Auditor, V Ships, London

Steve O'Callaghan, General Manager, Ugland/Intercean, UK

Mike Pride, Managing Director, Denholm Ship Management, Glasgow

John De Rose, Manager Marine Quality Services, Lloyd's Register of Shipping, London

Ned Larking, Manager SMC Competence Centre, Det Norske Veritas, London

(Additional owners and operators are invited to participate in this session)

SHIPREPAIRING

New Regulations affecting the repair industry

Dennis Sionbridge, Director, Dreyfus Shipping Consultants, London

Can organic anti-fouling have a sustainable future?

Don Litten, HM Inspectorate of Pollution, Bristol

Containership operator's view

Bill McConnell, Fleet Technical Manager, P&O Containers, London

Planning & Documentation

Keith Brook, Senior Development Engineer, Lloyd's Register of Shipping, London

Avoiding contractual disputes

James A Kelley, Partner, Bastianelli, Brown & Touhey, Washington

Correct coatings

Jan Aubert, Technical Support, Jotun Marine Coatings, Sandefjord

Diesel condition monitoring

John Roe, Managing Director, JCON Research, UK

18.00 THE SRC'S RECEPTION HOSTED BY AGP APPLIEDORE

### DAY TWO - November 8

09.00 Conference restarts

09.00 Exhibition opens

### FERRY REITS AND UPGRADES

Safety problems - post Estonia

Ian Dand, Director of Hydrodynamics, British Marine Technology, UK

Retrofit solutions - post Estonia

Peter Rosholm, Managing Director, Kvaerner Ships Equipment, Sweden

Keith Taylor, Managing Director, MacGregor Group, UK

US\$10m lengthening and upgrading of the Dana Maxima

Roger Burnison, Project Manager, Astilleros Santander, Spain

Ferry operators joining this session

Rolf Kjaer, Technical Director, Color Line, Norway

Carl-Otto Dahlberg, Director, Stena Rederi, Sweden

### MAINTENANCE FACTORS IN NEWBUILDING DESIGN (DEBATE)

Introduction (bulk carriers)

David Robinson, Vice President Technology, ABS Europe, London

Panel Members:

Bill McConnell, Fleet Technical Manager, P&O Containers, London

Jack Waters, Fleet Manager, Shell International, London

Jan Aubert, Technical Support, Jotun Marine Coatings, Sandefjord

(Additional panellists with current newbuilding projects have been invited to join this debate)

THE REPAIR DEBATE - "BRANDY AND CIGARS"

- A post-lunch debate with delegates, speakers, panellists and invited exhibitors in an open discussion of the industry's problems and future

16.00 Conference Ends

18.00 Exhibition Closes

Two extensive sessions of technical workshops will take place concurrently with the main programme. Details from the Secretariat.

## EXHIBITORS

ABB Industrial Systems • Thames Diesel Injection Parts

• Nicol & Andrew • Cygnus Instruments • Galatz Shipyard

• MacGregor • Ian-Conrad Bergan • A&P Applidore

• Britannia Heat Transfer • KaMeWa • LIPS

• Ship Repairers & Shipbuilders • Swansea Drydocks

• Gdansk Shiprepair Yard • TurboNet • Marine Marketing International

• Hellenic Shipyards • Shipdock Amsterdam

• China Shipbuilding Corporation • Atlantis Shipyard

• Elgin Brown & Hamer • GMD Shipyard

• Renave • Bangkok Maritime Services and Engineering

• North Rivers Marine • B&H Exchangers • Kwang Youn-Gi Engineering

• CMR • Carina Shipyard • Trinity Marine Corporation

• Keller Bryant • UniThai Shipyard & Engineering

• Astilleros Espanoles • Marine Management Systems

• Wilmot Marine Services • MAN B&W Diesel

• Astican • Malta Drydocks • Norshipco

• Nico International • G C Ridley • Patent Construction Systems

• Gryfa Shipyard • Calvey Marine

• Black Sea Shipyard • Norman Harrison Associates

• HJM Marine • Taylor Kerr • Ugland International

• SpecTec • Diesel Marine International • Lloyd's Maritime Information Services

• Metalock Industrial Services • Scamp

• Lloyd's Beal • DMI Cast Iron Welding Services

• L&S Services • Pan-United Shipyard

• Tandanor • Underwater Shipcare • Wilton-Fjermood

• Bazan • ASMAR • Alfa-Laval • Bender Shipbuilding & Repair

• Cabnave • Colombo Dockyard • Enavi Shipyard

• K S R C • Lisnave Shipyards • Bond Instrumentation & Process Control

• Albwardy Marine Engineering • Sun Marine

• Schichau Sebeckwerft • Unitor

• Tyne Dock Engineering • Navimar Strem

• Starweld • Viktor Lenac • Blohm+Voss

• ElectroCatalytic • Arno Dunkerque • Southwest Marine

• Stag Marine • San Francisco Drydock

• Ugland Intercean Management • Hong Kong United Dockyards

• Astilleros Braswell • Festbank Ship Repair & Boiler Company

• Novorossiysk Shiprepair Yard • Onomichi Dockyard

• Scheldepoort Repairyard • Tsunishi Shipbuilding Co

• Vancouver Shipyard • Yiu Lian Dockyard

• Global Diving Services • AMI Exchangers

• Inshore Marine Services • Bethship • Dubai Drydocks

• Finnish Foreign Trade Association • Railko

• Marine Worldwide Services • Lloyd Werft • Bremer Vulkan

• TradeWinds • SUD Moteurs SA • Marseille

• Cariden Marine & Industrial Agencies • Paul Hammelman Maschinenfabrik

• Nauta Shiprepair Yard • Dry Air Technology

• Harland & Wolff • Conoship International

• Dorbyl Marine • BASREC • Malaysia Shipyard & Engineering

• Cork Dockyard • Dunston Shipyards

• Niehuis & Van den Berg • Dusty Miller

• King Fahd Shiprepair Yard • Forgas Engineering

• Mil Davie • Rapid Marine Services • Sobrena

• Van Brink Shipyard • Stage Blast • Siren • Nordok

• Singapore Technologies, Shipbuilding & Engineering

• Geman-Net Shipyard • Tsakos Shipyard • Ship Services

• Atlantic Marine • Dakar Marine • Dyer Underwater Contractors

• Neoton Shipyard • Turbogon

• Turkish Shipbuilders Association • Cascade General

• J M Heat Exchangers • Harris Fye Marine • Wartsila Diesel

• BMEC • SSA • Sigma Coatings • Shanghai Machinery Import & Export

• Turbo Technik • Halifax Shipyard

• Irving Group • Cheong Eng Engineering

• Verolme • Botlek • Vlaardingen Oost • Fincantieri Palermo Shipyard

• Kherson Shipyard • Elefisi Shipyard

• Cammell Laird • Stone Manganese Marine

• P B Asher Diesel Engineers • Nederlek Shiprepair

• Intralink Service (Europe) • New Sulzer Diesel

• DAV Engineering & Marine • Stephenson Engineering

• Molonaval • PSM Instrumentation • Lloyd's of London Press

• Rosyth Royal Dockyard • Standard Piston Ring

• Posford Duviervier • Ugland Intercean Quality Systems

• UB Shipping

FOR CONFERENCE REGISTRATION OR EXHIBITION INFORMATION PLEASE CONTACT  
THE SHIPREPAIR & CONVERSION SECRETARIAT: Fax: +44 1923 777206 Tel: +44 1923 776363

Circle 22 on Reader Service Card

### Seating Company Targets Riverboat Casinos For New Product

Stidd Systems Inc. recently shipped four of its Series 500 Admiral helm chairs equipped with five-star bases to Bender Shipbuilding for the pilothouses of two new casino boats.

The Starbase is a mobile, pedestal, five-star base designed specifically for ease of movement around the pilothouses of large flatwater vessels, where boat motions are minimal. The Starbase provides eight inches of gas spring counter-balanced vertical height adjustment, eight inches of fore/aft travel, and 360 degrees of rotations with detents at 45 degree intervals. With all these adjustments, the Starbase

provides a broad 38-in. stance, supporting a fully reclined occupant without danger of tipping.

For more information  
Circle 114 on Reader Service Card

### Unique Process Creates Anti-Slip Floor

The W.S. Molnar Co., using a patented process, manufactures an

anti-slip safety plate that is not a coated-on grit surface. A grit-free super alloy metal surface is applied (molten) to a metallic plate surface, resulting in a Martenitic (hard alloy) product with a hardness of up to 62 on the Rockwell "C" Scale. The patented application matrix reportedly retains its high traction properties even after heavy use. It exceeds OSHA/UL recommended and proposed standards for "slip resistance" in dry, wet or oily conditions, and is UL-approved and USDA/FDA accepted. It is fireproof, toxic fume free, and easily galvanized. It is intended for all plant and marine applications.

For more information  
Circle 113 on Reader Service Card

### Pocket-sized Digital Gas Monitor Available

Portagas and Portavox from Wylam Hill are dedicated, personal, easy-use gas monitors for operation in potentially hazardous environments.

Portavox provides constant personal oxygen depletion monitoring. Using an advanced galvanic electrochemical sensor, Portavox is pre-set to alarm at a safe 18 to 19 percent (lower) limit oxygen content and 23 percent (upper) limit.

Portagas provides constant personal flammable gas monitoring. The Pallister sensor has been designed to be poison-resistant for longevity, and is pre-set to respond at 20 percent of the lower explosive limit.

For more information from Wylam Hill  
Circle 128 on Reader Service Card

### Loading System Safety Enhanced With Midland System

Midland Manufacturing Corp.'s Model B-3595 overfill control panel can be used onboard or at a remote loading station to monitor liquid loading of barges or stationary tanks. The control panel can be used either independently or in conjunction with Midland's B-3150 alarm to provide visible and audible alarms for high level/overfill conditions.

Both products are certified as intrinsically safe by Factory Mutual to comply with U.S. Coast Guard regulations.

### Patented Gauge Measures 14-ft. Depths With Only 7-ft. Clearance

Midland has received a patent for its Model B-625 full depth gauge with telescopic rod, a unit which provides liquid level readings for tanks up to 14-ft. deep, while requiring only 7 ft. of overhead clearance and a single penetration of the tank.

For more information from  
Midland Manufacturing  
Circle 129 on Reader Service Card

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### Nacional Line Plans Major East Coast Expansion

Companhia Maritima Nacional (Nacional Line) announced a major enhancement of its ocean service between the U.S. East Coast and South America. The carrier, which operates two weekly liner services from North America, has entered into a space charter agreement with Chilean Line, which will add capacity for breakbulk, heavy lift, non-containerable, and reefer cargo, as well as containers for Nacional Line customers.

By the end of the year, Nacional, a Brazilian-flag carrier, expects to add its own three ships to this joint venture with Chilean Line Inc., which is a long-time venture partner in other Libra trades. As the Libra group brings new vessels into its other trades, tonnage will be made available for the U.S. service.

In addition, Nacional is slated to receive three 2,300-TEU ships of the Libra Group's six newbuildings commencing in 1997, part of a previously announced \$330 million shipbuilding program.

### York/Devonport Mgmt. Team Wins Multi-Million Dollar Order



A joint York Intl./DML team, led by DML, will supply four Royal Navy Trafalgar Class nuclear submarines, like this one at Devonport Royal Dockyard, Plymouth, England, with new heat management equipment.

A joint York International Corp./Devonport Management Limited (DML) team, led by DML, has been awarded a contract valued in excess of \$31.2 million by the British Ministry of Defence to supply four Royal Navy Trafalgar class nuclear submarines with new heat management equipment, including non-CFC water chillers and associated chilled and cooling water distribution systems.

Three new, custom-designed York chillers will be installed on each submarine. The chillers have been developed by York Marine Systems as part of a U.S. Navy program which sets new standards for ultra compact, lightweight and efficient water chillers for naval cooling applications.

The chillers operate on non-ozone depleting HFC-134a refrigerant, and each chiller employs a York/Frick twin-screw compressor with a semi-hermetic motor.

For more information from York  
Circle 130 on Reader Service Card

### USCG Yard Certified By ABS

ABS Quality Evaluations has certified the quality management system of the U.S. Coast Guard yard in Baltimore. Registration covers "design, construction and repair of ships, ship systems, ship components, ordnance, electronics, industrial products and related services."

For more on ABS Quality Evaluations  
Circle 132 on Reader Service Card

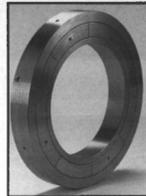
### SKF Debuts New Range Of Hydraulic Nuts And Rings

SKF offers a complete range of heavy duty marine hydraulic nuts and rings, which complement the oil injection method of fitting propellers, rudder stocks and pintles. The new range of hydraulic nuts and rings are suitable for shaft diameters from 245 mm upwards, with

varying hydraulic efforts.

The nuts and rings are supplied with a low maintenance seal which uses a PTFE/bronze sliding element backed up with a hydraulic (non-sliding) rubber O-ring seal.

For more information from SKF  
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Circle 206 on Reader Service Card

## BIW Sale Invites Industry Speculation

General Dynamics to purchase Maine yard for \$300 million

by Bridget A. Murphy, assistant editor

On August 17, 1995, General Dynamics and Bath Iron Works (BIW) announced a "definitive agreement" for BIW to become a subsidiary of General Dynamics, for a price of \$300 million.

According to General Dynamics, owners of the Trident and Seawolf-producing Electric Boat Division (Groton, Conn.), the transaction has been approved by the board of directors at both General Dynamics and BIW. Some industry experts view the sale of the Maine yard — which produces Arleigh Burke class destroyers — as a consolidation of the defense industry, and speculation is that General Dynamics will seek to expand its defense-related holdings even further. Commenting on this speculation, General Dynamics' Corporate Director of Public Affairs, **Norine**

**Lyons**, said: "We have said that we're open to offers," although she refused to discuss details.

Although BIW's 1995 revenues have been estimated to be \$800 million, the sale of BIW for \$300 million is a significant drop compared with the \$580 million sale price it commanded from New York investment group Gibbons, Goodwin & Van Amerongen in 1986. General Dynamics will not assume any of the yard's debt.

Although no official word has been given, the general feeling is that while a facility upgrade may be in order for the new General Dynamics' subsidiary, no attempt will be made to attract commercial orders. "They (Bath Iron Works officials) have said publicly that they don't see much there. We tend to agree," said Ms. Lyons.

While the company's current intent is not to pursue commercial work, this will not necessarily increase other major U.S. shipyards' chances of landing commercial bids. "I don't believe that this will have a significant impact on the other yards winning more commercial bids," said **Tom Bowler**, president of the American Shipbuilding Association (ASA). "Avondale and Newport News have surprised armchair critics by being able to compete and win international contracts. I believe that Avondale, Newport News, as well as NASSCO, will continue to compete for commercial contracts."

In evaluating the takeover's potential effect on the industry as a whole, Mr. Bowler's outlook was encouraging. "The sale is certainly a positive move for the industry. It will make Bath Iron Works' finan-

cial condition much stronger. Perhaps more important, Bath now has an owner that is deeply familiar with the defense industry, and also has experience in the shipbuilding industry."

He also predicted the sale will not significantly affect both yards' conducting "business as usual." Mr. **Bowler** said, "I don't see any immediate effect. My understanding is that Bath Iron Works and Electric Boat will remain as separate operating entities...There appears to be no plan of a mass merging of the shipyards. Both have significantly different product lines, both producing complicated ships in their own design."

Perhaps the rationale for the sale of Bath to General Dynamics was most concisely summed up by Ms. Lyons, "We have the financial capability to improve the competitiveness of the yard." And General Dynamics' strategy for attracting further Pentagon spending? "Affordability, building the best at the best prices," added the General Dynamics representative.

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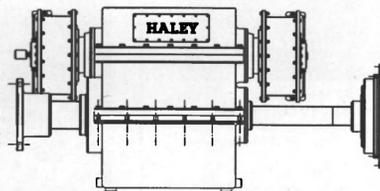
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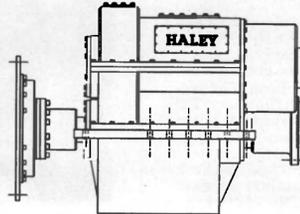
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Maritime Reporter/Engineering News

# Seattle Fish Expo '95

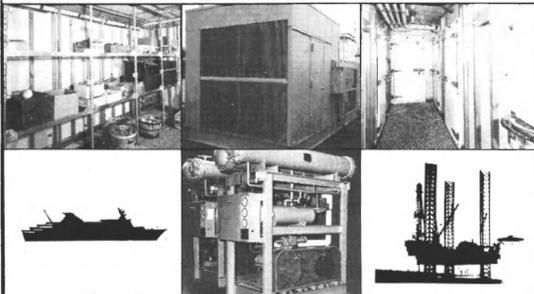


Fish Expo '95 is scheduled to take place at the Washington State Convention and Trade Center in Seattle, Wash., from September 27-30. Fish Expo is reportedly the world's largest commercial fishing trade show, and according to conference organizers, more than 24,000 commercial marine professionals, such as workboat operators, equipment suppliers, fish processors, and others, are expected to be in attendance. Buyers and sellers of boats, gear, equipment and services will be present at the conference to purchase and network.

Seattle's Fish Expo '94 attracted 24,309 industry representatives, from 55 countries and 46 U.S. states and provinces. According to John Duran, the show's sales manager, the increased activity could be the result of improved fishing conditions in Alaska: "We're seeing the result of high spirits at the dock...the expectation of higher prices for salmon and halibut has helped get the industry excited and ready for Fish Expo Seattle."

Educational seminars will parallel the exhibition offerings. Topics to be discussed include: the U.S.-Canada Salmon Treaty; anti-commercial fishing initiatives and net bans; HACCP training; marketing salmon and other fishing resources on the Internet; the National Weather Service; and using fishing vessel designs for workboats. In addition, hands-on workshops in suturing, CPR, and first aid will be offered for a \$15 fee. For more information on Seattle Fish Expo '95, contact Diversified Expositions, P.O. Box 7437, Portland, Maine 04112-7437, tel: (207) 772-3005; fax: (207) 772-5059.

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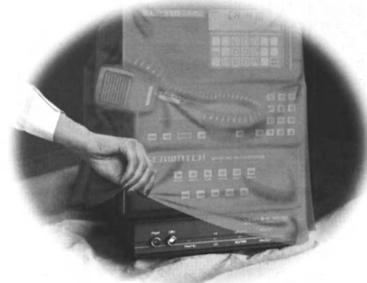


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September, 1995

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## ELECTRONICS UPDATE

### The Impact Of The New IMO ECDIS Standard

The much anticipated passing of an International Maritime Organization (IMO) standard for Electronic Chart Display Information Systems (ECDIS), expected by November

1995, will impact the ECDIS industry in three ways. First, by its very existence, the standard will serve to legitimize electronic charting. Second, the IMO endorsement will in-

crease demand for ECDIS data and systems by SOLAS class shipowners and government agencies. Third — and perhaps most important — the passing of this standard will

usher in a new age of government and private sector cooperation for achieving common goals.

In contrast with the impact on the industry as a whole, there will be little impact on the actual configuration of existing ECDIS databases and the systems already produced by manufacturers. ECDIS technology is not new; it debuted in 1986 with the North Sea Project and has been undergoing change gradually. These changes have been in accordance with the IMO standard as it is written now, so all that has really been missing is the final IMO stamp of approval.

Most companies who have been actively involved in the development of ECDIS over the past decade are already in compliance with the standard. There is just one obstacle: complete worldwide data in the form of a vectorized ECDIS database is not yet available, and most government agencies are unable, for different reasons, to develop an ECDIS database on their own to meet the anticipated demand.

Over the past decade, there has been extensive testing with ECDIS, and existing ECDIS data have been used mostly for this purpose (although a handful of shipowners interested in the latest technology have already purchased systems). But the complexity and uncertainty of the standard's passing have delayed the completion of a world database of ECDIS charts for SOLAS class ships. C-MAP has in its ECDIS portfolio 3,000 charts, of which 50 already have some level of endorsement from a Hydrographic Office (HO). Soon, as a result of the new IMO standard, demand for certified charts will accelerate. Yet, the task of certifying a world database in a short time is quite possible.

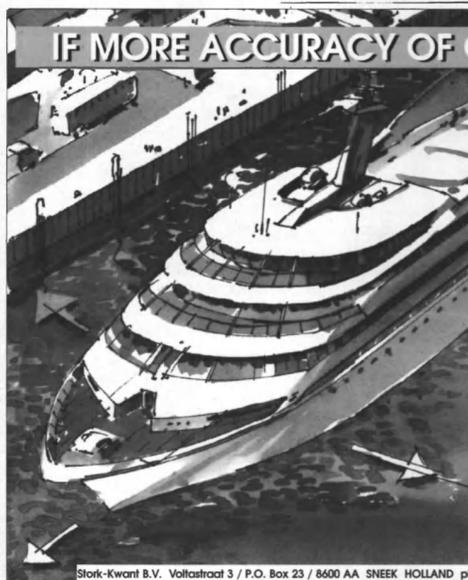
Government and private sectors working cooperatively to produce the ECDIS data would eliminate the major obstacle now impeding a swift use of the new IMO ECDIS standard on a global basis. Companies could supplement the government's production and distribution capabilities, while the HOs could conduct the validation and authorization of all data provided. The mixing of private with government sectors — while seemingly non-traditional — has already worked.

In Italy, C-MAP has been producing electronic charts, over the past year, in cooperation with the local HO. C-MAP provides the data, and the HO provides the final quality checking. These data have already been released around the world on an experimental basis.

Another similar situation is developing in the U.S., where C-MAP has delivered quality control software, DX-90 editor, plus test data, to NOAA for its review and testing.

A third example is NDI, the private sector electronic chart partner to the Canadian Hydrographic Ser-

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vice. NDI has actually been the first case of such a cooperation, and has set a new model that is being watched by many HOs around the world. As an indication of the global nature of navigation, it is worth noting that C-MAP and NDI have recently entered into a strategic alliance which encompasses all aspects of the market, including: production and distribution of electronic charts, cooperation with hydrographic offices, sharing of technology, and the standardization of electronic chart usage. As part of this agreement, C-MAP has acquired an equity position in NDI. The Canadian Hydrographic Service has fully supported this agreement and has reaffirmed its partnership with NDI. As **G.R. Douglas**, Canada's Dominion Hydrographer, said: "Although it is strictly a business arrangement between two companies, we consider it to be a very positive move towards the integration of electronic chart services and the cooperation between the Government Hydrographic Offices and the Industry."

There are several ways a government agency could take advantage of the support available from the private sector. For example, C-MAP and NDI could provide a complete supply of data for certification, or just the hardware and software tools for data production and quality checking. With these options, HOs could choose the level of support they required, and all countries might easily and quickly participate in the development of a worldwide ECDIS database.

A perceived obstacle which has been written about lately is the need to have the world's waterways re-surveyed, and the lack of resources available to do so. This, as it pertains to the effective introduction of ECDIS for use by SOLAS class ships, should not be a big obstacle. Most travel lane data required for safe travel by SOLAS class ships are accurate enough as they are today or could be quickly re-surveyed for the purpose. If there is a particular area which is deemed unsafe or, for some reason, cannot be re-surveyed, it could also be designated on the electronic chart as a "no data" area or "unsafe" zone. The capacity to designate a particular area as an "unsafe" zone is truly an important safety feature of an ECDIS quality chart, and it should be freely used and duly respected.

Once a worldwide ECDIS database is completed and endorsed by HOs, the next step making ECDIS mandatory on all SOLAS class ships. Only then could ECDIS be used most successfully to increase the safety of the world's waterways.

When ECDIS becomes required technology, the charting function of the information system could potentially advance to a more mature format through the transformation of electronic charts into something more than an electronic version of

paper charts: a safety system which would clearly define operational space, navigational rules and procedural instructions; and that would prompt the captain with an alarm if a violation of the rules occurred. This form of ECDIS would change

navigation forever by reducing it to a set of predefined procedures, leaving little room for the subjective judgment of the captain. But by performing this function, ECDIS would help increase the safety of the world's waterways and could

potentially reduce pollution from maritime incidents.

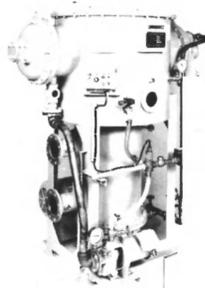
*The preceding article was supplied by Dr. Fosco Bianchetti, president and CEO of C-MAP, which he founded in 1986.*

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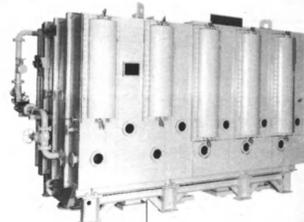
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ting, diagnostics, waypoint, and configuration capability.

### APPLICATIONS

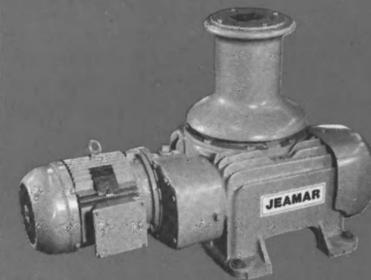
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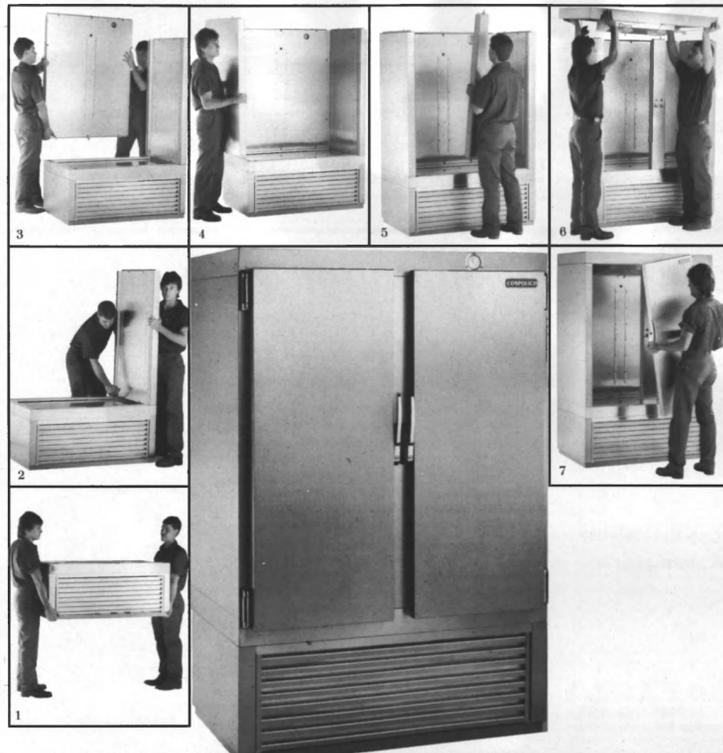
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## Welding Shield Designed To Speed Work In Confined Spaces

The lens of the Optrel Solarmatic Comfort shield darkens only when welding, helping to save time and avoid inconvenience when the welder needs to inspect the work at hand.

The latest welding shield from Racal Health and Safety has been designed to help eliminate a problem associated with welding in confined spaces onboard ships or on offshore structures. The lens of the Optrel Solarmatic Comfort shield darkens only when welding, helping to save the time and avoid inconvenience associated with inspecting the work at hand.

The Optrel solar-powered electronic cartridge used in the Racal system prevents eye damage by darkening almost instantaneously to the required shade number, according to the welding process in use. The Solarmatic Comfort welding shield is lightweight, with a number of other features, including fully adjustable headband; a non-irritable, washable sweat band; and a mask shape which deflects fumes and protects against welding splatter.

For more information  
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## American Vulkan, Ships Aid Intl. Sign Agreement

American Vulkan Corp. of Winter Haven, Fla., and Ship's Aid Intl. Ltd. of Dartmouth, Nova Scotia, have signed a manufacturer's representation agreement making Ships Aid Intl. an authorized sales and service representative for Vulkan couplings, parts and service in the Canadian provinces of Newfoundland, New Brunswick, Prince Edward Island, Nova Scotia, Quebec and Ontario. The Vulkan family of couplings covers the full range of torque and torsional stiffness requirements.

## Cosat Offers New Service

Cosat Maritime Services offers a new service it says can provide up to 27 percent in savings in shore-to-ship satellite calls. With the new Network 1 service, users may use existing switched access office telephone lines or furnish a dedicated line to be used exclusively for Inmarsat calls. An existing line can be converted, or a new one can be added for this purpose. The Network 1 service is available throughout North America and can be used for Inmarsat-A and -B (including high-speed data), or Inmarsat-M calls in the Atlantic Ocean East, Atlantic Ocean West, Indian Ocean and Pacific Ocean regions.

For more information from Cosat  
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## Abanaki Introduces New Oil Skimmer

Touting it as the "oil skimmer that fits anywhere," Abanaki Corp. introduced an oil skimmer called the Mighty Mini, which is a miniature version of the company's popular Tote-It oil skimmer. The Mighty Mini weighs only seven pounds, and is designed to minimize water pick up, and virtually eliminate water in the oil output. The unit comes in four different belt lengths.

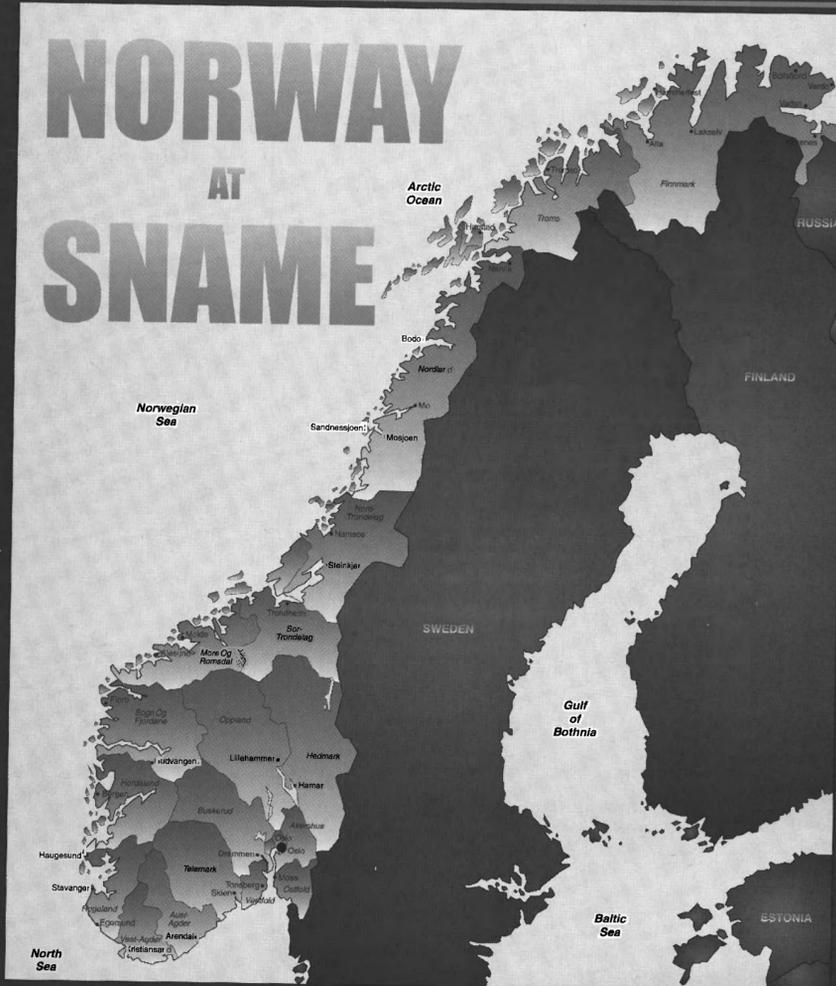
For free literature on the Mighty Mini  
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Maritime Reporter/Engineering News

The Norwegian Trade Council & Maritime Reporter Present

# NORWAY AT SNAME

# 1995



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## A MARITIME REPORTER SUPPLEMENT

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## Norwegian Ships' Equipment: Heading West For An Expanding Market

by Egil Holland, Norwegian Trade Council

Norway has had strong connections to the sea. With its long coastline, deep fjords and inaccessible high mountains, at least from

the seaside, the Norwegians had to adjust to the sea in order to survive. They developed their vessels for transport of goods and passengers, and streamlined

their fishing boats for the rough conditions on the fishing banks.

Norway has always been an important shipping nation at sea, trading all

over the world.

For the last two centuries, Norway has been one of the world's leading shipping nations. The international shipping crisis of the 1970s and 1980s seriously affected all our industry relating to the sea. The positive effect of it was the extensive and also necessary restructuring of the entire sector. Further, the suppliers had to transfer their attention and marketing efforts to export markets. More effort was devoted to following market possibilities wherever an interesting project popped up.

Norwegian ships and fisheries equipment suppliers have, historically, always been dependent upon the shipping industry in Norway. On the other hand, Norwegian shipyards and owners have also been supported by the suppliers. The ongoing development of new vessels in, for example, offshore, gas and bulk trades, have demanded new and improved equipment. Equipment has been developed, manufactured and tested in the extensive environment onboard the vessels, with the assistance of the yards and the owners.

Further, the ship operators, charterers and cargo owners have reported back their experience with the equipment, assisting the equipment producers to supply top-quality, technologically-advanced products and services to the international maritime market.

The suppliers are a demanding market where the customer's requirements are met in the best possible way. One should also be aware that the intense local rivalry in Norway and tough competitive conditions in the home market have assisted the suppliers in their worldwide export efforts.

The direct communication between the owners, yards and the Norwegian equipment manufacturers has resulted in optimized systems which should give a positive effect on the product life cycle cost, and given relevant reference lists on deliveries to virtually all ship types.

Norwegian equipment manufacturers are respected throughout the world as suppliers of innovative, technologically advanced and high-quality products. They are even offered at a competitive price, with on-time delivery, good finish and to the specification agreed upon.

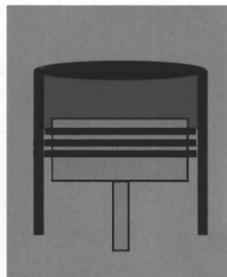
Products are easily accessible for service — supported by a service organization and spare parts throughout the ship's life cycle.

### Norwegian Suppliers & The U.S. Market

The presentation and follow-up of Norwegian equipment on the U.S. market is a major project in 1995, and the natural question some may ask is: Why should the Norwegian equipment manufacturers follow this market?

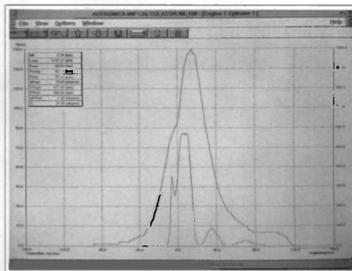
The answer is multi-faceted, but the impetus to Norwegian supplier's interest in this market started with the U.S. authorities' decision to upgrade the shipbuilding activity, followed by the Maritech and MarAd (such as Title XI)

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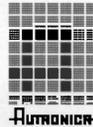
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## NORWAY AT SNAME: A MARITIME REPORTER SUPPLEMENT

programs, which makes the U.S. a valuable, expanding market.

Further, U.S. owners have started building ships outside the U.S. territory, in countries where the Norwegian suppliers have been present for many years. The owners are the end-users and also the main decision makers for important equipment aboard.

Organized through the Norwegian Trade Council (NTC), several activities regarding the U.S. market have been the focus for 1995. NTC is the catalyst in the process and the task is to assist the Norwegian equipment suppliers make a market platform.

The tour of the U.S. shipyards in March was very important in several respects; to present Norwegian equipment and to build relationships with yard personnel. The Norwegian delegation had a magnificent time and were met with enthusiasm, interest and hospitality from all the yards.

The visits were arranged to allow each supplier to present its company, products and services to the technical staff of each yard. Obviously the U.S. yards have great ambitions in building commercial vessels after building mostly naval vessels for many years. Their resultant requirements for equipment can fully be met by Norwegian suppliers.

U.S. yards were major players at Nor-Shipping '95 in Oslo, a fact which shows the level of ambition at U.S. yards.

To underline its interest in the U.S. market, several Norwegian equipment suppliers will be present at the SNAME show in Washington, D.C. to promote their products and activities. The Norwegian Trade Council coordinates a joint stand for the exhibition. It will also host a hospitality suite where people can retreat for a relaxing social or business talk in quiet surroundings.

The SNAME exhibition is important in order to further develop the relations between all parties.

You are invited to stop by and see the NTC joint stand at SNAME. We will be there to serve you.

### Aanderaa Instruments

Aanderaa Instruments, Bergen, is a manufacturer of oceanographic and meteorological equipment.

Among the company's featured products is the Automatic Weather Station 2700, a rugged, self-contained station suited for use in remote places without electricity supply. Data can be recorded on-site or transmitted in real-time. The standard unit is fitted with sensors for wind speed, gust and direction, air temperature and pressure, relative humidity, sunshine duration, net radiation and rainfall.

The company recently introduced a new visibility sensor. Sensors for measuring visibility are often large, costly and consume a lot of power, but the Mira Visibility Sensor is designed to fulfill the demand for a small, low-power unit.

The new Mira sensor is a compact,

low cost unit with low power consumption, intended for indicating reduced visibility. At sea, visibility may frequently be limited by fog, haze and mist. Large industrial harbors may also experience reduced visibility because of dust and smoke. The sensor is designed to detect all of these factors. In addition, it will indicate reduced visibility caused by snow.

The Mira is easily installed on the sensor arm of the Automatic Weather Station 2700, for complete information about local weather conditions. Other expansion options include current, wave and water level measurements.

For more information on  
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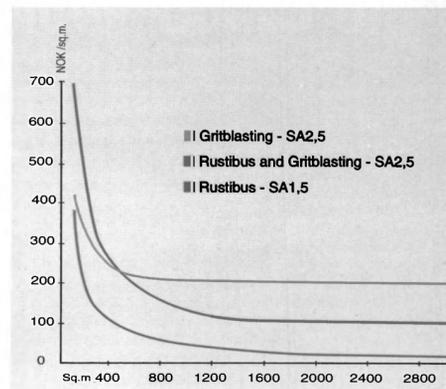
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In fact, Autronica has been chosen to supply its BS-100 DYFI® Fire Detection System and the new AutoMaster 5000 Color Graphic Presentation, Alarm Management and Control System to two Royal Caribbean Cruise Line (RCL) newbuilds being constructed at Chantiers de l'Atlantique, St. Nazaire,

France. The system, which Autronica sees as a major innovation in fire safety systems, gives immediate information about the spread and development of smoke and fire, escape routes, fire door locations and more — all the information needed to manage a fire effectively for minimum damage, and to help en-

sure a catastrophe does not occur.

The Autronica team's more than 30 years of experience puts it at the leading edge of new technological developments; the company knows its market and can ensure total customer satisfaction in the years ahead.

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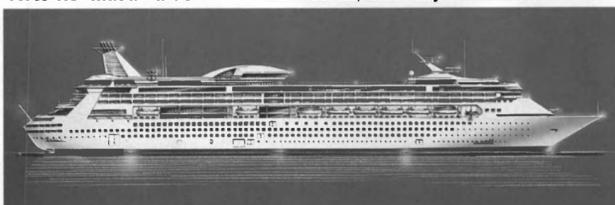
equipment reflecting the confidence and trust shipowners, shipyards and engine manufacturers place in the company's products.

Autronica has maintained orders despite the hard times that hit the shipping and shipbuilding industries. This has enabled the company to strengthen its position by investing in itself through research and development. Autronica has high expectations for the coming upsurge in the shipping and shipbuilding markets.

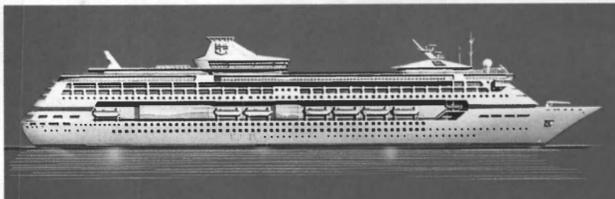
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## Discover the C-MAP world

C-MAP are major suppliers of digital nautical charts, a crucial element in the improvement of safety of navigation at sea.

The C-MAP digital chart library which includes over 3000 digital copies of original paper charts is being continually expanded. The CM93 data format fully conforms to IMO's S57/DX90 specification and as authorised digital charts data become available it will be possible for these to be incorporated in C-MAP's database.

A number of major marine electronics manufacturers have selected C-MAP CM93 digital charts for their ECDIS systems. If you are planning to invest in safety and efficiency by installing an ECDIS system, contact your system supplier or call us to check that your system can use C-MAP's unique database.



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### Brunvoll

Brunvoll's mission is to maintain an organization which is completely responsive to its customers' specific needs; to design, develop, manufacture and deliver thruster systems for maneuvering and propulsion of ships as required by its customers.

From this mission, the company defines three areas of focus:

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- Complete drive system packages — diesel, electric or hydraulic.
- Thruster control systems for normal duty, or to suit various manufacturers' dynamic positioning systems.

The company builds and develops specialized and comprehensive expertise in propeller, prime mover, control and servo technology; develops a complete and integrated range of thruster product modules which provide multiple application alternatives for the customer's specific duty; attains flexibility and responsiveness in meeting customer requirements; and provides worldwide the spares and total support required for all Brunvoll thruster systems. For more information on Brunvoll, please see the Marine Propulsion Technologies supplement provided with this issue.

For more information on Brunvoll  
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### Hernis Scan Systems

Hernis Scan Systems AS, the Norway-based specialist manufacturer of Closed Circuit Television (CCTV) systems for ships and offshore applications, has received orders for shipboard CCTV systems from the Petroleum Geo-Service newbuilding *Ramform*. *Ramform* is a new-generation seismic vessel with the capability to tow up to 12 seismic cables. The vessel will be 262 ft. (80 m) long.

CCTV is used to surveil the seismic cables and winches, for "firewatch" in the engine and thruster room, for mooring on bridge wing and for navigation in narrow waters.

Hernis is fully owned by Molyx Holdings PLC, an electronics firm listed on the London Stock Exchange, with a sales office in the U.K. and covering other markets through appointed agents.

Hernis was founded in 1982 with the

Maritime Reporter/Engineering News

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specific purpose of manufacturing CCTV systems from materials and components suitable for marine applications. The company staff has extensive marine experience, and regularly advises and supports shipyards and shipowners. Hervis CCTV systems are now in operation on ships—ferries to cruise ships, naval vessels to tankers—for monitoring a variety of spaces, including: engine rooms; accommodation and public areas; cargo handling and moorings; docksides and gangways; access ways; vehicle decks and ferries; pump and equipment rooms; and for underwater mating of shuttle tankers.

Hervis manufactures to the ISO 9001 standard, and has delivered systems to shipowners in Belgium, Canada, Finland, France, Germany, Japan, Korea, the Netherlands, Singapore and the U.S.

For more information on Hervis Scan Systems  
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### Maritime Pusnes

Pusnes, a member of the Maritime Group of companies, was founded in 1875, and manufactures deck machinery and mooring systems for ships and offshore facilities. Together with Nippon Pusnes, which was founded in 1976 and is located in Tokyo, it is the world's largest supplier of deck machinery.

Pusnes products, designed in Norway and produced in Norway and Japan, include mooring and anchor-handling systems, bow-loading equipment, loading systems, and emergency towing systems. Windlasses, anchor winches, capstans, fairleads, guide rollers, power packs, closed-circuit TV systems, disc brakes, control systems and mooring houses are provided. In addition, services offered worldwide include round-the-clock preventive maintenance and service, commissioning, retrofit and upgrading, and personnel training.

Pusnes of Norway and Nippon Pusnes cover the world's shipbuilding markets. So far, Pusnes has supplied deck machinery to more than 800 vessels above 40,000 dwt.

For more information  
Circle 89 on Reader Service Card

### Permea Maritime Protection

Permea Maritime Protection manufactures systems for inert gas and nitrogen generation, and controlled atmosphere (CA) systems for maritime applications. Since 1991 the company has been a member of the multinational Air Products Group.

**Inert Gas Systems.** Since 1970, Permea Maritime Protection has supplied more than 250 combustion inert gas systems to oil tankers, combination vessels, product tankers and barges around the world. Trademarked Maritime Protection® inert gas systems have five standard configurations:

- Flue gas system: uses existing boiler flue gas
- Inert gas generator
- Flue gas systems with small topping up generator
- Inert gas generator with cooler and dryer, for LNG/LPG carriers
- Flexinert, a fuel-efficient combination of a flue gas system and an inert gas generator

**Prism Nitrogen Systems.** The Prism systems generate nitrogen gas on board at typically less than half the cost of merchant nitrogen. The systems are based on the proprietary Prism Alpha membrane gas separators, and have already been installed in more than 100 ships, mostly chemical tankers and LNG

carriers. The nitrogen produced by Prism systems is non-contaminating and dry, and is used mostly for inert purging and blanketing of tanks and piping systems.

**Prism Controlled Atmosphere Systems.** Prism CA systems are purpose-

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Unitor's sales and technical executives are trained to support shipowners and managers in solving their everyday operational problems. Detailed technical backup can be provided both at port level and directly to your office's as required.

More than one million individual deliveries are made each year to vessels throughout the world by Unitor port service personnel. Products such as welding and refrigeration gases, fire rescue and safety equipment, marine chemicals, parts and spares, welding equipment are just part of Unitor's capability.

Repair & maintenance remains at the heart of the smooth and efficient running of any vessel. Unitor's Repair & Maintenance concept is designed to offer the maximum of efficiency through products, service, crew education and support.

Unitor's onboard service is an important aspect of modern ship maintenance. We supplement the regular crew's need for more specialist expertise in refrigeration, chemicals and fire, rescue and safety.

Circle 363 on Reader Service Card

## NORWAY AT SNAME: A MARITIME REPORTER SUPPLEMENT

built varieties of Prism nitrogen systems, designed to convert conventional reefer vessels into controlled atmosphere stores. The result significantly extends the storage life of a perishable cargo. To date, 25 systems have been built, all as containerized transportable units.

For more information  
Circle 90 on Reader Service Card

### Scana Skarpenord

Scana Skarpenord, Langesund, Norway, has expert experience in removing worry from the operation of chemical tankers. The company's 35 years of maritime experience has enabled it to introduce an outstanding tank monitor-

ing system. Cargomaster provides an all-in-one solution to the user's specific needs, providing accurate and reliable tank monitoring for both large and small ships.

Scana Skarpenord's Cargomaster system helps take the stress out of watchkeeping, enabling the user to comply with safety regulations and meet the

charterer's requirements with full confidence. Everything the watchkeeper needs to know is instantly available in a user-friendly system that provides a clear overview. The wealth of precision data on hand or on screen virtually eliminates the possibility of error. This enhances operational safety, improves efficiency, and relieves an otherwise heavy burden on the ship's staff.

The unique Scana Skarpenord solid state sensors combines extreme accuracy with the ability to function in all kinds of cargo. They withstand even the most vigorous tank washings. These sensors are well-proven, with several years of successful operation on board tankers.

Cargomaster can be delivered with either pressure or radar beam type sensors, or both. Depending on the tank shape and type of cargo, Scana Skarpenord can advise the customer on the optimal type of sensor in an unbiased manner, simply because the company offers both.

Cargomaster gives the crew fingertip control of all essential operating parameters:

- Level
- Temperature
- Pressure
- Cargo density
- Trim
- Calculation of volume and weight
- List
- Loading rates
- Discharge rates
- Draft
- Hull stress/stability

The intelligent operator unit incorporates the system computer, high-resolution monitor, trackball, display unit and keyboard. The company's state-of-the-art hardware and software ensures long-term reliability. A compact IP65 intrinsically safe interface unit embodies I/O cards for high-capacity instrumentation interfacing.

For more information on  
Scana Skarpenord  
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**HERNIS**

### Scandinavian Micro Systems

Scandinavian Micro Systems (SMS), a major supplier of sophisticated video graphics information systems and design services to the international passenger ship market, is confident the recent surge in cruise ship newbuilding will substantially boost its business.

"With the increasing number of cruise ships on order, we expect to double our ScanDisplay installations over the next two years. In addition, we will introduce our new ScanDisplay systems for ferries and fast ferry systems this fall," says SMS Managing Director **Oddbjørn Steinsland**. The company already has installed its ScanDisplay Passenger Information Systems on more than 20 of the most prestigious cruise vessels in the world, including *Crystal Symphony*, *Legend of the Seas*, and soon, *Veendam*.

In addition, the company supplies ScanRepeaters—digital gyro repeaters—and other auxiliary navigation instruments for all types of vessels, with more than 7,000 of such repeaters currently installed worldwide. Mr. **Steinsland** is also optimistic about further sales growth here as the company breaks into

## NAVIGATION AT SNAME: A MARITIME REPORTER SUPPLEMENT

Scandinavian Micro Systems' range of ScanDisplay products includes a large electronic Wall Map, Voyage and Shipboard Channels on the ship's TV system, and Interactive Cruise Information Centers.

All ScanDisplay onboard products are connected directly to the ship's navigation system. Manual input and control is carried out from the bridge and the ship's broadcast room. This enables the navigation officers and to add navigation details and safety information, and the hotel staff to announce daily programs and run promotions over the onboard television network.

An integral part of the Voyage Channel product is the graphic and video-based presentation of ports of call for each port visited by the ship. These presentations are shown automatically or can be called up individually by each passenger on the Interactive Cruise Information Center.

For onshore application, the Port-Planner is a software planning tool for the cruise line's itinerary planners. The ScanDisplay range of products are designed for use onboard cruise ships, ferries and large pleasure craft.

For more information on Scandinavian Micro Systems  
Circle 92 on Reader Service Card

### Sterkoder Verft

Kristiansund has been known for its shipbuilding skills since the 1800s. As a major exporter of timber and fish, Kristiansund always had connections with the world's most important trading centers. Sterkoder Verft embodies that tradition in the vessels it builds.

"Aktieselskabet Stærkoder" was established in 1916 as a continuation of Bjørnehougens Værft, founded in 1824. A separate foundry and engineering workshop were built at the yard, and the company produced diesel engines, which were given the name "Stærkodder."

In the 1930s the yard was reorganized and named Sterkoder Mek Verksted AS. At the time, repair and maintenance work were the yard's main activities. Today, the company is a medium-sized shipyard with high professional standards, and an organization well-equipped to deal with the construction of specialized vessels.

The yard's advanced computer-aided design (CAD) department, along with its planning, purchasing and production departments, is upgraded and modernized on a continuous basis. Sterkoder's specialized workshops are engaged in the prefabrication of pipes and equipment as well as in the assembly of structure sections.

Indoor production of large sections of structures and surface treatment in a separate workshop under controlled climatic conditions are important sectors of the yard's strategy for delivering competitive products of high quality.

Strict inspection routines throughout the building process, as well as testing, are important elements in the production of reliable vessels. Document-

tary records of results and capacities are reviewed in detail to ensure that operations of the vessels will be based on a sound technical background.

An efficient plant with advanced production systems, together with Sterkoder's efficient workforce, is the company's best guarantee of quality

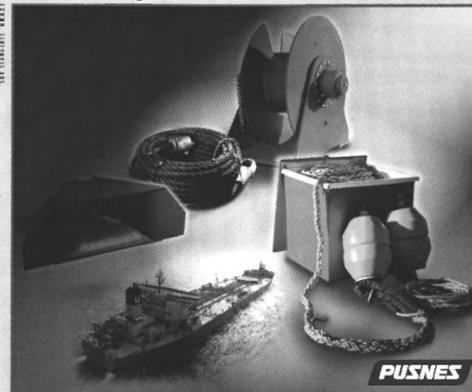
from design stage through completed vessel. Sterkoder vessels are built to provide good work places for their crews and sound investments for their owners.

For more information on Sterkoder Verft  
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### Team Quality

Norwegian Team Quality is a consortium of Norwegian companies dedicated to cooperating, and, through that cooperation, achieving excellence in serving their various markets. The group only includes Norwegian-owned com-

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## NORWAY AT SNAME: A MARITIME REPORTER SUPPLEMENT

panies with long experience in the marine industry, encompasses five sites in southern Norway, involves 10 Scandinavian sub-suppliers, and uses 27 agents and representatives worldwide.

The members of Team Quality include GF Marine AS, Jensen & Rhoden, Jets Vacuum AS, Moland and Teknotherm. Member companies have a mutual obligation to represent each other to provide support and service covering the total package. Team Quality offers the most advanced and modern technology, from an experienced team; the best available quality from the companies' own production facilities, and from other manufacturers of high repute; competitive prices and conditions; comprehensive documentation for operation and maintenance; instruction courses for users; and worldwide sales and service. Specific areas include:

**Ventilation and Air-Conditioning:** central units, cabin units/nozzles, pipes

and fittings, fans, dampers and more;

**Refrigeration:** compressors, condensers, heat exchangers, inert gas drying, CO<sub>2</sub> firefighting, fish freezing systems, and RSW/RFW cooling;

**Vacuum Drainage Systems:** vacuum toilets, vacuum interface valves, and sewage treatment plants;

**Automation:** bridge remote control systems for main engines, main engine monitoring, safety and alarm systems, power management systems, automatic pump controls, voyage recorders, control panels and consoles;

**Control Equipment:** electric/pneumatic controllers, transmitters, transducers, flow motors, viscosity meters;

**Remote Control Systems:** plants, actuators, power packs, solenoid valve cabinets, and design and supervision services.

In short, this group of companies offers a great many products and services, as well as the extra quality assur-

ance provided by the knowledge that it is in each Team Quality member's interest to ensure the quality of the products provided by the other members.

For more information on Team Quality  
Circle 94 on Reader Service Card

### Unitor

Unitor has one of the most diverse range of offerings of any company in the world, let alone Norway. From management and logistics services to corrosion control, spill containment and welding products, Unitor offers a great variety of products and services to the marine community worldwide.

Unitor offers project management for newbuilds and refits — offering a qualified marine staff to provide a high level of technical support, ensuring project completion on time and budget.

The company also offers service and engineering, as well as design and supply

of refrigeration, fire and safety systems, providing comprehensive monitoring and service backup, to ensure on-board installations are kept up and running. From initial planning of fire and safety systems to provision and installation, Unitor's range includes fixed firefighting systems, portable fire fighting appliances and survival equipment.

- Unitor offers a full range of products to ensure readily available treatments worldwide. In the area of surface preparation, cleaning and application equipment, Unitor supplies the right tools for the right job — everything from basic preparation and application equipment to advanced pumps, compressors and high-pressure cleaners.

- For on-board maintenance and repairs, Unitor provides the most comprehensive range of welding equipment and consumables. Training, supervision and technical documentation are also offered.

- Unitor gases and gas cylinders set the quality and safety standards for the marine industry. Empty cylinders can be exchanged for full ones at any of the 950 ports served by Unitor. Service, testing and inspection are included in the price.

- In the area of refrigeration equipment and spares, the company is a complete marine supplier. Unitor delivers equipment and spares worldwide and offers preventive maintenance systems to ensure compliance with increasing environmental legislation.

These are only a few of the diverse products and services offered by Unitor.

For more information on Unitor  
Circle 95 on Reader Service Card

### Westad Industri AS

Westad Industri AS is a Norwegian manufacturer of butterfly and ball valves for marine, offshore and petrochemical applications. Westad has been manufacturing valves since 1895, with a concentration on the shipbuilding market.

The production range, as well as the selection of materials and design of the valves, has been made with special consideration for extended service in corrosive media and extreme operating conditions. Most Westad valves have been high-performance butterfly valves, for installation in chemical applications and cryogenic temperature conditions required for LPG and LNG use.

Westad is also a pioneer in the development of butterfly valves of composite material. The polyurethane composition used for the valve body and the disc is reinforced with continuous carbon fibers. To obtain a full bidirectional sealing system, the liner is made from an elastomer polyurethane with an elastic surface to ensure an outstanding erosion resistance. The composite is resistant to seawater corrosion, and to most chemicals, and this new butterfly valve series has a 75 percent lower weight than equivalent steel or iron valves.

Westad has representatives in major market areas worldwide, and an established service network with stations in Australia, Singapore, Japan, Korea, the U.S. and Abu Dhabi. These stations carry a range of spare parts and have trained service engineers available at all times to render urgent assistance.

For more information on Westad Industri  
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In 1895 Daniel Westad commenced production of valves in the small village of Geithus in Norway.

The guarantee of continuity is quality, and still today his name is synonymous with the very best in High Performance Butterfly and Ball Valves.

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Maritime Reporter/Engineering News

### **Patriot Marine Delivers Fireboat To Kingston, N.Y.**

The Kingston, N.Y., fire department recently took delivery of a 27-ft. (8.2-m) vessel, built by Patriot Marine of Waretown, N.J. The vessel, which is powered by two 225-hp Mercury outboards, can reportedly reach a top speed of 50 mph. A bow-mounted deck gun can supply 500

gpm or several 1.75-in. hand lines. The bow is equipped with a 43-in. bow door that lowers into the water for rescue or diver support.

The vessel will be used to respond to emergencies between Poughkeepsie and Catskill on the upper Hudson river in New York.



### **C. Plath Offers Next-Generation Navigation Technology**

C. Plath, a subsidiary of Litton Industries, has manufactured navigational equipment since 1837. C. Plath is based in Germany, and has a sales division in Annapolis, Md.

The company offers several products to the marine industry, such as gyrocompasses, microprocessor-controlled conventional and adaptive autopilots, digital electromagnetic speed logs, automatic chart tables, rate-of-turn indicators, compass monitoring and heading reference systems, and electric mainsteering systems.

Its latest technological introductions include a fiber optic gyrocompass (FOG), automatic chart tables Naviplot I and II, and a universal speed log with watertrack (EN-Log) and bottom track (GPS-NMEA 0183).

C. Plath targets its products and services at the commercial ship and passenger vessel sectors, including the opening fast ferry market. The company's development of the FOG, reportedly the first all-electronic gyrocompass for merchant marine applications, was aided by a research grant from the German Federal Ministry of Science and Technology.

The device consists of an inertial measuring unit made up of three fiber optic gyroscopes and two inclinometers arranged in a strapdown configuration, and reportedly has high dynamic accuracy and reliability due to a short settling time and the lack of moving parts. This product was engineered by Litef, a sister company of C. Plath. The company reports that three characteristics drive its development of innovative products: quality; performance; and reliability. C. Plath has also been able to adjust to an adapting shipbuilding market, and in the last decade, has observed market leanings towards Integrated Bridge Systems and One Man Bridge Operation (OMBO). The company also works with various suppliers of Integrated Navigation Systems, such as NACOS, Vector and Databridge 2000.

For more information on C. Plath  
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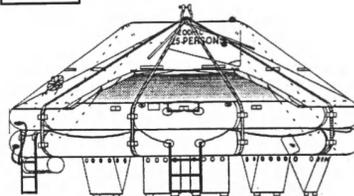
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# 1995 SNAME ANNUAL MEETING & INTERNATIONAL MARITIME EXPOSITION

This year, SNAME's Annual Meeting and International Maritime Exposition will be held in Washington, D.C., at the Washington Hilton and Towers, from October 4-7. The theme of the '95 event, as announced by the Society of Naval Architects and Marine Engineers, will be: "Technologies and Strategies for World Class Competitiveness in Ship Design, Shipbuilding and Ship Operations." The technical portion of the program will combine panel discussions and presentations of papers on the subject theme. The conference portion of the exhibition will showcase the most innovative and up-to-date maritime technology, equipment and services, and has attracted hundreds of international maritime companies. Among the exhibitors are: marine equipment manufacturers, suppliers and distributors; shipyards; naval design and marine engineering firms; marine consultancies; manufacturers of electronic

equipment; and many other maritime interests.

The four-day event will also feature a course in preliminary and feasibility design of ships, a Student Congress, the President's Reception, and traditional events such as the President's Luncheon, Annual Banquet, and Dinner Dance. The 1995 SNAME show is a superb opportunity to view the latest in technology, debate the issues affecting the industry, and expand one's circle of influential maritime professionals. Nineteen sessions comprise the technical portion of the meeting; each designed to aid in assessing issues related to requirements for global competitiveness, discuss a variety of government initiatives, and evaluate concepts and strategies for dealing with changes in the shipbuilding industry. The papers to be presented, and the presenters, are arranged as follows, by scheduled day of presentation.

## Scheduled Sessions For Thursday, October 5

*Can Technology Revitalize Our Shipbuilding Industry?*  
John M. Stewart, Arthur J. Haskell

*The Future of Shipbuilding, Navy Acquisition and the Global Market*  
Duane D. "Buzz" Fitzgerald, Paul Robinson, Gene Pentimonti

*Second Tier Shipyards' Approach to Becoming Internationally Competitive*  
John Dane, Brinson Miles, Boysie Bollinger

*Using Intelligent Simulation Tools to Optimize Performance in the Collaborative Virtual Shipbuilding Enterprise*  
Vivek Samant, Spencer French, Howard Bunch

*Naval Ships and Simulation Based*

## Design

James S. Boudreaux

*A Review of Technology, Implementation, and Strategies for Further Improvement in U.S. Shipbuilding*  
Thomas Lamb, A. Allan, J. Clark, G.R. Snaith

*Competitive Manning for the International U.S.-Flag Fleet*  
Paul T. Weber, Henry S. Marcus

*A Repair Management System for Fatigue Cracks in Ships*  
Robert G. Bea, Kai-tung Ma

*A Computational Method for Analysis of Container Vessels*  
Sverre Valsgard, Tor E. Svensen, Harald Thorkildsen

*Design of Oceanographic Surface Moorings for Harsh-Weather Environments*  
Mark A. Grosenbaugh, Spyros A. Mavrakos

## Scheduled Sessions For Friday, October 6

*Naval Affordability: Right Heading, Wrong Course*  
Thomas M. Rivers, Thomas R. Schiller

*Commercialization, Standardization, and Acquisition Reform*  
Thomas P. Mackey, Aaron G. Bresnahan, John Gorton, Andrew M. Kendrick

*The President's Shipbuilding Initiative*  
J. Byrne, James C. Card, Don Phillips, John Graykowski, Robert W. Schaffran

*The Open-Top Containership — A U.S. Experience*  
Peter Fischer, Philip Alman

*New Ships from Old: An Innovative Approach to Fleet Enhancement*  
Hugh S. Rynn, Eugene A. Van Rybach, Hans G. Nilsen

*Resistance and Propulsion in Ice*

## Using System Identification Techniques

Robert A. Dick, Andrew D. Prior, T.H. Peirce

*Tanker Escort: Requirements, Assessment and Validation*  
Sridhar Jagannathan, David L. Gray, Thomas Mathai, Johan H. deJong

## Scheduled Sessions For Saturday, October 7

*Double Hull Tanker Research — Further Studies*  
Jerome Sikora, Robert W. Michaelson, Donald P. Roseman, Raymond H. Juers, William M. Melton

*Simulation of 3-D Sloshing and Structural Response in Ship's Tanks Taking Account of Fluid-Structure Interaction*  
S.H. Lee, J.Y. Kim, K.J. Lee, J.M. Kang, D.J. Yum, Y.S. Seol, S. Rashed, A. Kawahara

## SNAME EXHIBITOR PROFILES

### Advanced Marine Enterprises, Inc.

Advanced Marine Enterprises, Inc. (AME) is a naval architecture and marine engineering firm that provides support in ship acquisition

management, production support, human systems integration, and ship survivability and protection. AME's ship design and engineering services for surface ships, submarines, ship systems and components include work in R&D, testing and evaluation, new ship designs, mod-

ernizations of existing ships and conversions of ships to new missions. AME also develops shiphandling and navigation simulators for use in personnel training. The company's engineering stations provide 3-D modeling of complex systems, including their transfer

from existing CAE/CAD systems, and real-time rendering of photorealistic textured models.

For more information on  
Advanced Marine Enterprises, Inc.  
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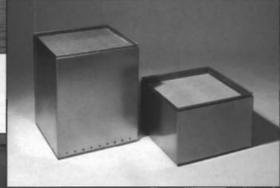
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### Diesel Engine and Gas Turbine NO<sub>x</sub> Emission Control by Selective Catalytic Reduction (SCR Process)

Haldor Topsoe A/S has specialized in the design and supply of complete SCR DENOX systems for reduction of NO<sub>x</sub> (up to 95 - 98%) in the exhaust gas from stationary as well as marine four-stroke and two-stroke reciprocating engines (burning HFO, LFO or Nat. Gas) and gas turbines.

The design of the SCR DENOX systems is based on the Topsoe proprietary catalyst series DNX, featuring among others: - modular monolithic structure - high NO<sub>x</sub> removal activity - low SO<sub>2</sub> oxidation - low pressure drop - low weight - high mechanical stability against heavy exhaust pulsations and engine vibrations.

The reduction media used for the Topsoe SCR DENOX systems can be either anhydrous ammonia, ammonia water or urea dissolved in water.

Haldor Topsoe A/S also possesses catalyst and know-how for removal of CO and HC from diesel engine and gas turbine exhaust gases.

**References:** More than 20 SCR DENOX installations (hereof 6 marine installations) in successful operation all over the world.

**HALDOR TOPSØE A/S** 

Equipment Division · Nymollevvej 55 · DK-2800 Lyngby · Denmark · Telephone +45 45 27 20 00 · Telefax +45 45 27 29 99

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### Alimak Elevator Co.

Alimak's personnel, service, and freight elevators, as well as mast climbing platforms are used on board ships, for shipbuilding and repair in yards and drydocks, and on offshore rigs. Standard capacities from 650 lbs. to 20,000 lbs., as well as in-house engineered specials, are available. Built on the modular system, with dependable rack and pinion drive and overspeed brakes, the elevators feature a selection of control systems and galvanized components to withstand corrosive elements. Alimak elevators comply with ASME, ANSI and ABS standards. Alimak AB, the parent company and chief manufacturer, has been awarded ISO 9001 Certification for Quality Assurance and Management.

For more information on  
Alimak Elevator Co.  
Circle 11 on Reader Service Card

### Allied Marine Services, Inc.

Allied Marine Services, Inc. (AMS) is a high technology firm offering quality marine equipment to naval and commercial customers throughout the U.S. AMS provides marketing and through-life support for various marine equipment, including complete propulsion systems (diesel engines 610 - 5,500 Kw, reduction gears, couplings, clutches, line shaft bearings), equipment control and monitoring systems, fire and smoke detection and suppression equipment, environmental systems (incinerators, oil water separators, oil content monitors), and hull and deck machinery (air compressors, winches, windlasses, watertight doors, tank vent check valves). AMS operates facilities in Alexandria, St. Louis, Houston and Seattle, and provides 24-hour on-line inventory access from all premises.

For more information on  
Allied Marine Services, Inc.  
Circle 40 on Reader Service Card

### Appleton Marine, Inc.

Appleton Marine supplies marine deck machinery for the military and commercial shipbuilding markets. Products include: cranes; single point davits; mooring winches; anchor windlasses; and capstans. Recent orders received by Appleton Marine include: supplying equipment for U.S. Coast Guard WLB buoy tenders; providing two complete deck machinery packages to Newport News Shipbuilding for installation on Sealift conversion vessels; providing equipment for the

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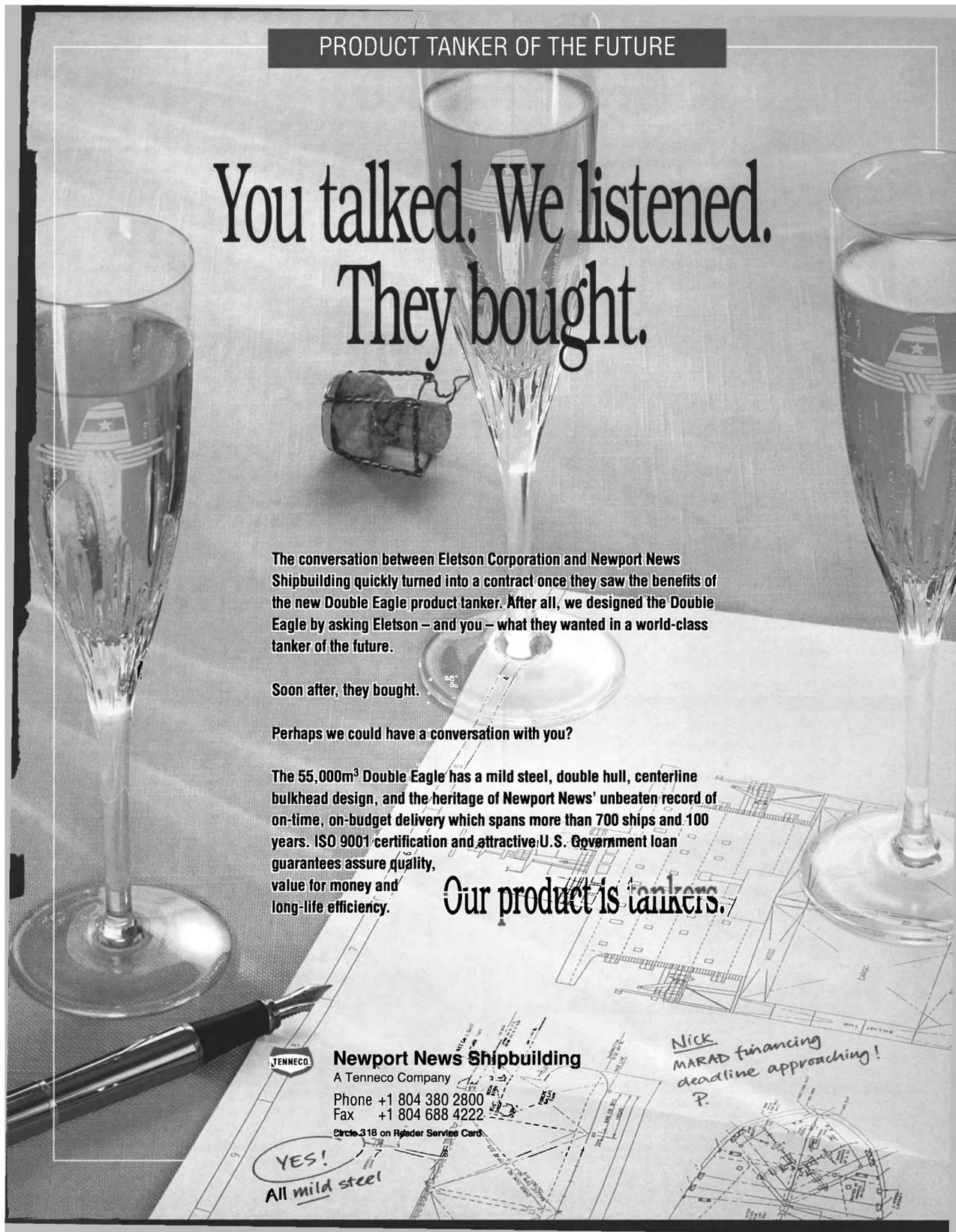
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## SNAME EXHIBITOR PROFILES

conversion and newbuild Sealift programs at NASSCO and Avondale; the manufacture of a towing crane for a Trinity oceanographic research vessel; and manufacturing 12 diesel-powered SLWT winches for the U.S. Navy.

For more information  
Circle 12 on Reader Service Card

### Cascade General

Cascade General, a full service shipyard located in Portland, Ore., has been selected to be the sole contractor, operator and manager of the Port of Portland. The yard also recently completed repair work on Alaskan cruise ship *Star Princess* in record time. Other ships currently undergoing repair at Cascade include U.S. Navy oiler *Andrew J. Higgins*, and tanker *Sea River Benicia*. Additionally, three Holland America cruise ships are scheduled to be repaired at the yard in the fall. The yard offers three drydocks, 15 deep water berths, 16 cranes (22 to 134 ton capacities), and a state-of-the-art ballast water treatment plant.

For more information  
Circle 42 on Reader Service Card

### Cedervall & Söner AB

Cedervall & Söner AB manufactures propeller shaft seals. According to the company, approximately 6,000 vessels throughout the world are fitted with the latest generation of its shaft seal. Cedervall said that

its shafts offer excellent operating economy as well as technical reliability and service. Reportedly, experience has demonstrated that peripheral speed and large diameters have no effect on the sealing ability of the company's product. Cedervall split shaft seals comply with the requirements of the classification societies that permit shaft removal at intervals of 10 to 15 years. Bearings for stern tube as well as intermediate shafts are available in any size.

For more information  
Circle 20 on Reader Service Card

### Davit International

Davit International manufactures davits, winches and cranes for launch and recovery of freefall lifeboats, enclosed lifeboats, rescue boats, and liferafts. All equipment is produced in accordance with SOLAS 1983 regulations, with certificates of approval from ABS, BV, DNV, LRS, USCG, and other regulatory bodies as required. The company has manufacturing facilities in the U.S., Germany, and Indonesia.

For more information on Davit Intl.  
Circle 8 on Reader Service Card

### Del Gavio Marine Hydraulics, Inc.

Del Gavio Marine Hydraulics, Inc. is a complete hydraulic and

electrical service company. Services include all aspects of hydraulic system design and installation, as well as repair of winches, accommodation ladders, anchor windlasses, hatch covers, and steering gears. Also included are watertight door systems, remote valve systems, pneumatic systems, SOLAS emergency steering systems, and IMO emergency towing systems.

The company performs electrical system troubleshooting, design, and installations for many shipboard applications. Complete UL-certified AC and DC motor overhaul and rewinding services are performed, including explosion-proof certification.

For more information on  
Del Gavio  
Circle 10 on Reader Service Card

### Drew Ameroid Marine

Drew Ameroid Marine, a division of Ashland Chemical Co., will feature its MAR-TEC line of specialty equipment for shipboard fuel and lube oil sampling and testing, automated monitoring and control, and ultrasonic cleaning at the company's SNAME '95 exhibit.

The MAR-TEC test equipment is used in conjunction with Drew Marine's PACE fuel evaluation system to prescribe cost-effective fuel additives for diagnosed problems.

For more information on  
Drew Ameroid Marine  
Circle 13 on Reader Service Card

### Elliott Manufacturing

B.W. Elliott Manufacturing Co., Inc., of Binghamton, N.Y., is a manufacturer of power transmission products. The company supplies flexible shafting to various industries, and has entered the marine marketplace as a manufacturer/supplier of Remote Operating Gear (ROG) systems. Elliott has provided reduction swivel-gear joints for the throttle-control systems on SSN-class submarines, non-magnetic Remote Mechanical Valve Actuators (RMVA) for the MHC-51 class minehunters, and all material to China Shipbuilding for the PFG-2 Program. The company's new Uniflex product line reportedly produces more torque than any other mechanical valve operating system, including dual-linear systems. Elliott has also developed a line of vapor-tight, remote valve operators for the commercial shipping industry, designed to comply with U.S. Coast Guard vapor recovery regulation #46CFR Part 39.

For more information on  
Elliott Manufacturing  
Circle 43 on Reader Service Card

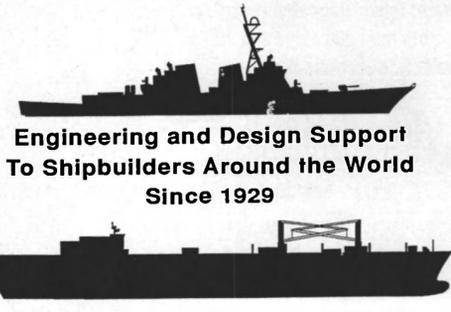
### Eltech International Corp.

Eltech International Corp. offers water treatment solutions for a variety of applications, including retrofitting waste systems of cruise

Continued on page 61

## Gibbs & Cox, Inc.

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Maritime Reporter/Engineering News

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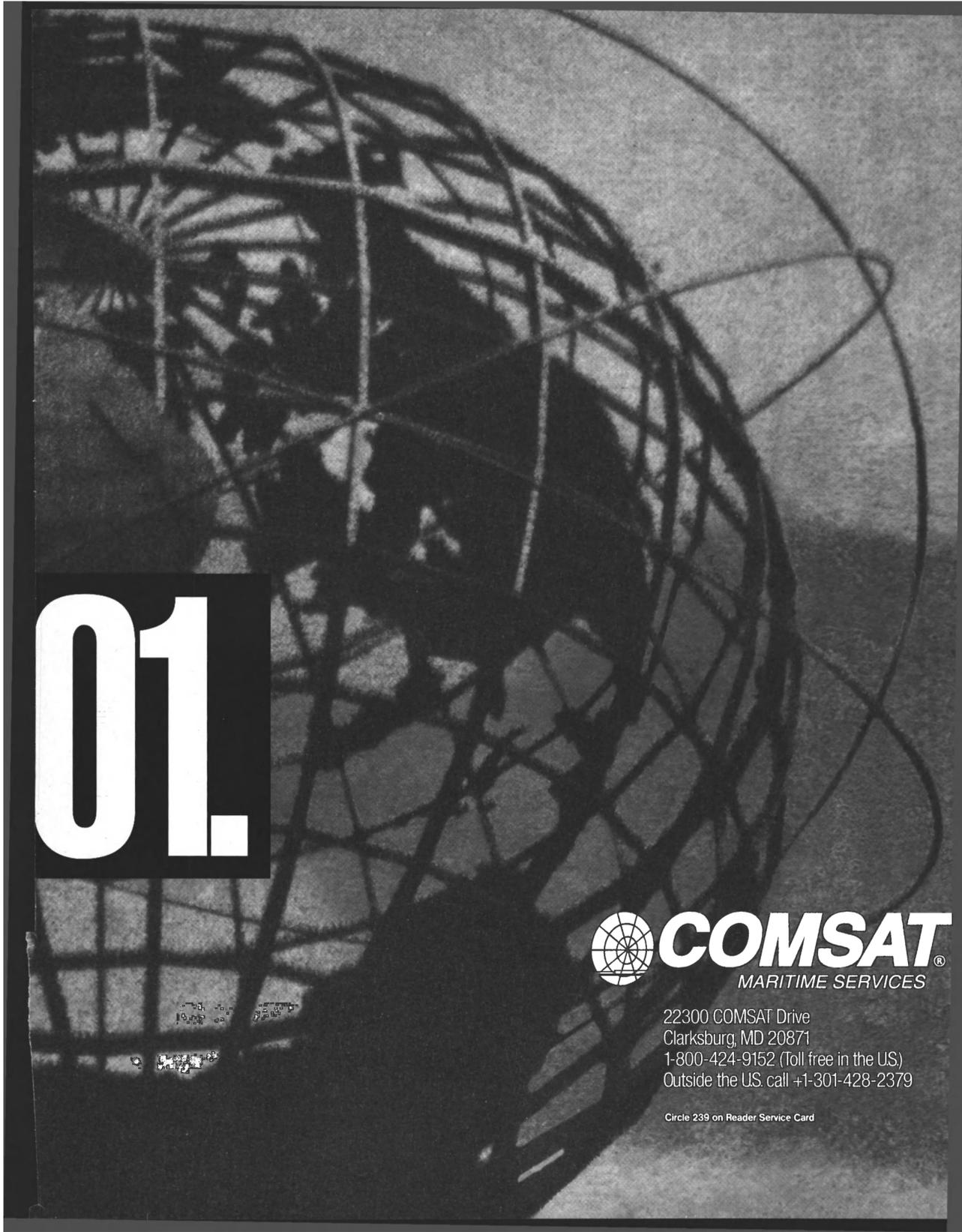
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A MESSAGE FOR THOSE WHO MAY NOT UNDERSTAND RADAR LEVEL GAUGING TECHNOLOGY

# TRUE OR FALSE?

**R**adar-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.

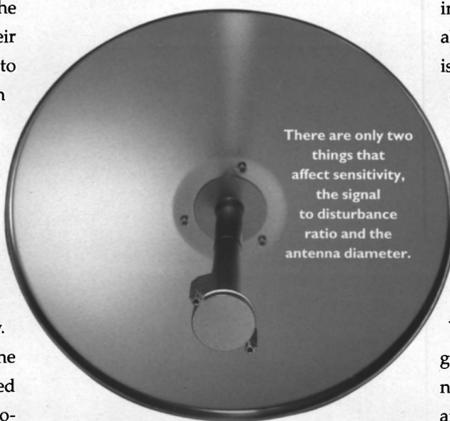
#### INTRINSICALLY SAFE OR FLAMEPROOF.

**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.

#### CAN YOU BELIEVE US?

You can easily see that radar-based level gauging is a very complex technology. It's not one where you can take short cuts and still have reliability. We invented it and we've worked hard over the years to ensure that Saab TankRadar is the safest and most reliable level gauging system available today.



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## SNAME EXHIBITOR PROFILES

Continued from page 56

ships and supplying potable drinking water disinfection units in remote villages. Omnipure, a marine sewage treatment, disinfects sewage prior to its being pumped overboard by using the electrolytical process that converts salt water to sodium hypochlorite. The systems does not require a lengthy retention period before the sewage is discarded. These systems are designed for merchant ships, cruise ships, ferries, navy ships, and offshore oil exploration and production platforms.

For more information on Eltech International Corp.  
Circle 9 on Reader Service Card

### Engineered Data Products, Inc.

Engineered Data Products, Inc. (EDP) designs and manufactures computer support equipment, including shipboard computer furniture that features EDP's patented Viewport concept, which comprises a tinted, tempered, .75 in.-thick view screen that provides a proper ergonomic viewing angle.

Entire computers are designed to rest within the Viewport desk, providing more space for the operator. Viewport desks are approved for shipboard use by NAVSSES, and the company manufactures conversion kits in order to allow operators to convert standard flip-up typewriter desks to the Viewport concept.

For more information on Engineered Data Products, Inc.  
Circle 3 on Reader Service Card

### Fassmer & Company

Fassmer & Co. has developed a new range of totally enclosed and semi-enclosed lifeboats. The new range is designed to offer considerable weight and cost savings, without compromising the performance and quality of the vessels. Totally enclosed lifeboats are available in sizes that support from 27 to 78 passengers. Semi-enclosed lifeboats and tender boats range from passenger capacities of 85 to 150.

For more information on Fassmer & Co.  
Circle 23 on Reader Service Card

### GasTOPS Ltd.

GasTOPS is a high-technology, mechanical engineering company offering expertise in advanced controls engineering, instrumentation systems, equipment condition monitoring and diagnostics systems. The company offers products such as: MERMAID, a computer simulation tool that predicts the steady state and dynamic performance of marine propulsion systems; MAIN-STAY, a general purpose system for

maintenance management; and MetalSCAN, a sensor that detects metallic debris in oil lines to provide an advanced warning of potential machinery bearing and gear damage.

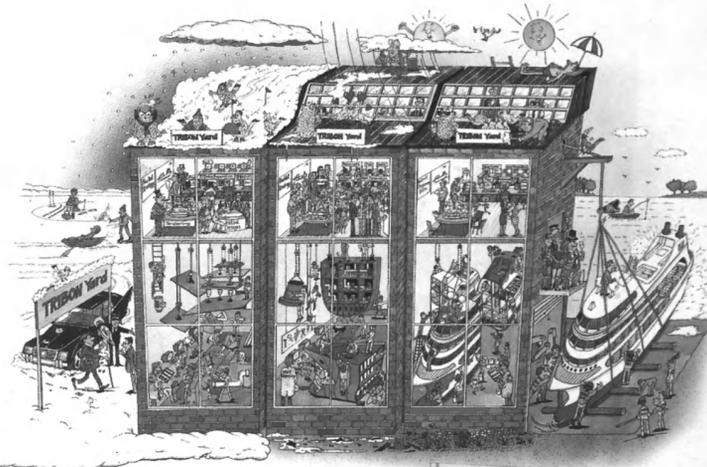
For more information on GasTOPS Ltd.  
Circle 49 on Reader Service Card

### GE Marine & Industrial Engines

GE Marine & Industrial Engines' aeroderivative gas turbines are power plants for a variety of marine and industrial applications. The LM gas turbines reportedly com-

bine high power-to-weight ratios, compact design, and ease of operation and maintenance. Turbine power levels range from 6,000 to 70,000 shaft hp. GE reports that more than 360 ships worldwide, including the latest Aegis cruisers and Sealift ships, rely on the LM tur-

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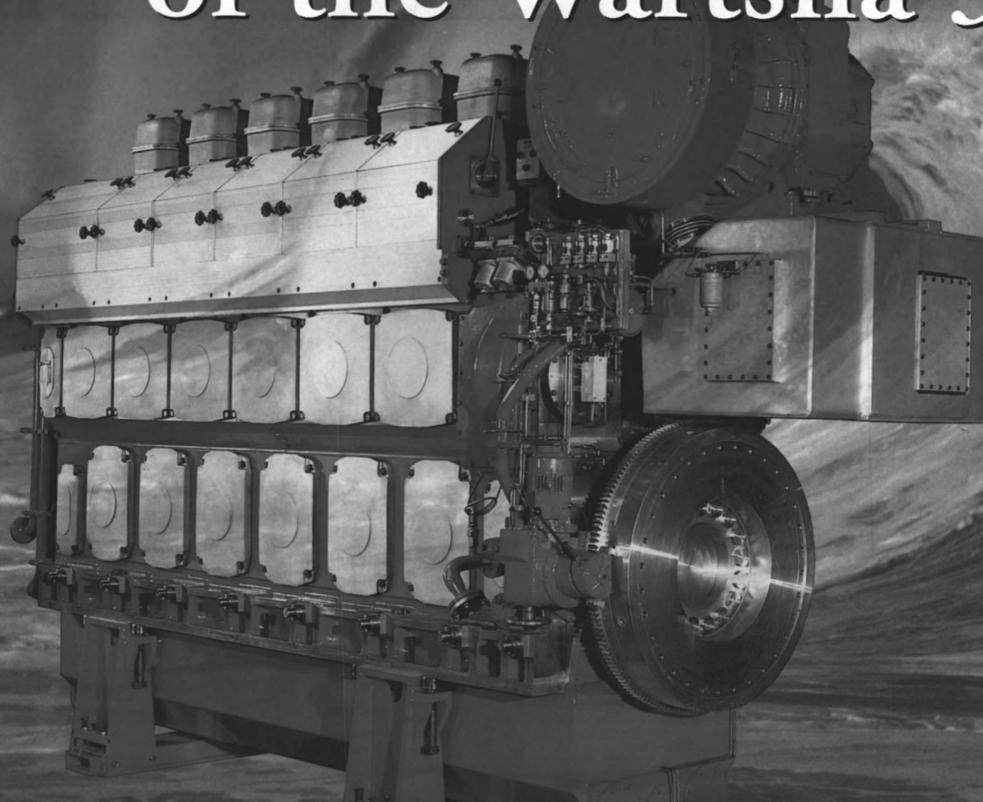


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# The clean power of the Wärtsilä 38

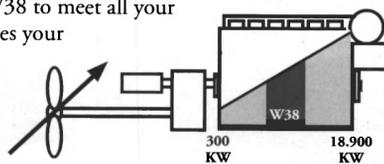


The Wärtsilä 38 is a medium speed (600 rpm), 4-stroke diesel engine, used in a wide variety of vessel types. It is a reliable high-performance engine. Its size is minimised, making it the shortest and lowest in the 400 mm bore class.

These are key features for increasing your payload and decreasing your engine room space. Thanks to an advanced fuel system, the engine has been optimized to achieve both minimum emissions and minimum fuel consumption. You will find the W38 to meet all your economical requirements. And because of its fewer and cleaner exhaust gases your environment will profit too.

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## SNAME EXHIBITOR PROFILES

bines for propulsion. Last year, the company introduced the 37,000-shp LM2500+, which provides 25 percent more power than GE's LM2500, while maintaining equal standards of reliability and availability.

For more information  
Circle 22 on Reader Service Card

### Gems Sensor Division

Gems Sensor Division manufactures standard and custom-built marine grade liquid level and flow products designed to meet many application requirements. The company's products include: Dipstick visual indicators; SureSite visual indicators; level and flow switches; high-level alarm systems; receivers; and mud probes. All of Gems Sensor's products are certified by the U.S. Coast Guard and feature float technology.

For more information on  
Gems Sensor Division  
Circle 5 on Reader Service Card

### Headhunter Inc.

Headhunter Inc., Fort Lauderdale, Fla., designs a line of products associated with marine sewage control. The company manufactures marine toilets, dubbed Royal Flush, that utilize .75 gal/flush, and boast a five-year warranty. Other products include: Royal Fox Type II MSD's for onboard sewage treatment; Auto-Chlor marine hypochlorite generators that create biocides for sewage treatment; and Tank Sentry fluid level monitors for water, oil, or sewage; a pressure storage tank for water systems made entirely of composites; and a full flow three-way valve made of schedule 80 CPVC. All Headhunter products share a design criteria — no moving parts contact with the fluids. This feature minimizes failures and routine maintenance, which maximizes reliability.

For more information on  
Headhunter Inc.  
Circle 31 on Reader Service Card

### Hiller Investments Inc.

The Hiller group of companies offers specialization in marine fire protection and safety equipment and services. Hiller is factory-authorized by major equipment manufacturers to design, install and service all types of detection and suppression systems. Inspection and installation services are available 24 hours a day. Offshore crews are available for dispatch worldwide. Products include: halon alternatives; intelligent fire alarm systems; smoke sampling system upgrades; and deck coverings. Hiller has offices in Alabama, Florida, Louisiana, Texas, and Virginia.

For more information on  
Hiller Investments Inc.  
Circle 19 on Reader Service Card

### Holset Engineering Co.

Holset Engineering Company manufactures resilient couplings, dampers, and provides damper service for marine propulsion and auxiliary drives. It also specializes in

retrofitting large turbochargers to low- and medium-speed diesels. Torsional analysis and field measurement services are also provided by this ISO 9001-certified company.

For more information on Holset  
Circle 47 on Reader Service Card

### Infrasonik, Inc.

Infrasonik is a leader in the development of industrial applications for low frequency sound. In marine applications, the company reduces

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or eliminates the need for sootblowing by using a low-frequency sound source which keeps heat transfer surfaces of boilers, waste recovery systems, and exhaust gas systems continually clean. This reduces the amount of soot flakes on deck, as well as the need for

waterwashing and sootblowing, while preventing tube erosion. The company's latest application concentrates on enhancing combustion in garbage incinerators on cruise vessels.

For more information on Infrasonik, Inc. Circle 48 on Reader Service Card

### Ingalls Shipbuilding

Ingalls Shipbuilding division of Litton Industries, Pascagoula, Miss., specializes in the design, construction, fleet support and modernization of advanced surface combatant ships.

In its 800-acre facility, the yard uses modular production techniques, supported by CAD/CAM systems. Currently, Ingalls has two Wasp class ships under construction, and is also building Arleigh Burke (DDG 51) class Aegis guided missile destroyers, with 14 vessels contracted, and six already delivered.

Additionally, Ingalls is converting USS *Inchon*, delivered by the yard originally in 1970, from its amphibious mission (LPH 12) for duty as a mine countermeasures command and support ship (MCS 12). The yard is the designer and builder of the Navy's two newest classes of amphibious assault ships, LHAs and LHDs. The yard has also been granted an export license to market diesel-electric submarines in a teaming arrangement with Howaldtswerke-Deutsche Werft (HDW) of Kiel, Germany.

For more information on Ingalls Shipbuilding Circle 36 on Reader Service Card

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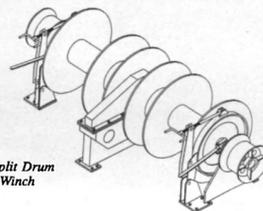
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### In-Place Machining Co.

In-Place Machining Co. (IPM) specializes in the repair and refinishing of diesel engine crankpins and main journals without removing the crankshaft from the engine. In addition, IPM does line boring of engine main bearing pockets, and is capable of performing machining, Metalstitch repair, and certified welding of all types during voyages, or while vessels are in port. According to IPM, its Metalstitch Division is the only authorized representative of Metalock International in the U.S. Some of the company's recent repairs include: line boring Deutz, Pielstick, GMT, and Fairbanks-Morse engines; coupling and journal refurbishment of Stork and Wartsila engines; and crankpin and main journal repairs on MAN, Daihatsu, B&W, MaK, and Mitsubishi engines.

For more information on In-Place Machining Circle 35 on Reader Service Card

### International Metalizing Corporation

According to company reports, International Metalizing Corporation can electric arc spray apply any metal that can be put in wire form at rates and costs comparable with airless spray applied coatings, and offers a metalizing solution for corrosion and abrasion problems. The company uses stainless steel in tank linings to eliminate repeated epoxy applications. Aluminum or hasteloy is applied to high abrasion areas, zinc is applied to high corrosion areas, and copper application is used to deter zebra mussels and other aquatic nuisances. The EPA has granted International Metalizing approval to spray pure copper on steel, aluminum, concrete, and fi-

Maritime Reporter/Engineering News

## SNAME EXHIBITOR PROFILES

berglass, as non-toxic permanent anti-fouling.

For more information on  
International Metalizing Corporation  
Circle 6 on Reader Service Card

### IPH Marine Automation

IPH Marine Automation, a division of Druck Incorporated, will launch its MAS 2600 tank level gauge/indicator system at SNAME. MAS 2600 features advanced, non-corrodable titanium pressure transducers, special fixtures for easy tank mounting, and a rugged 4-20 mA transmitter which can be open-deck mounted. The transmitter is scaleable to adapt to a wide range of tank sizes and overpressure/shock requirements. Druck Incorporated also plans to display its portable, high accuracy pressure and temperature calibrators, controllers and indicators at SNAME this year. These instruments have wide applicability in the marine industry.

For more information on  
IPH Marine Automation  
Circle 7 on Reader Service Card

### Joiner Systems Inc.

Joiner Systems Inc., of Lachine, Quebec, specializes in designing, engineering and manufacturing

high quality accommodation systems for commercial and naval ships. The company also manufactures expansion joints and dampers for environmental and industrial use. Its line of marine products include: bulkhead systems; ceiling systems; doors; hatches, scuttles, and manholes; fire-rated enclosures and containers; sound attenuation enclosures; floating and raised floors; and metal and wood furniture.

For more information on  
Joiner Systems Inc.  
Circle 2 on Reader Service Card

### Kockum Sonics Inc.

Kockum Sonics Inc. will exhibit its signaling, lighting and level gauging cargo control system at this year's SNAME show.

Also on exhibit will be its boiler cleaning system, Insonex, an infrared generational system for marine boilers and economizers. So far in 1995, the company has received orders from Stolt Parcel Tankers and Marinette Marine, and has supplied marine lights for minesweepers and Hibernia supply vessels in eastern Canada, and filled orders for three Insonex systems for Korean ships.

For more information  
Circle 18 on Reader Service Card

### Kvaerner Masa Marine Inc.

Kvaerner Masa Marine (KMM) is a marine consulting engineering company with offices in Annapolis, Md., and Vancouver, B.C.

The company's services cover a full range of marine design and engineering, concept optimization and feasibility studies, construction supervision, project management and research. KMM is affiliated with the Kvaerner Group, builder of commercial vessels, and KMM integrates this production experience with its design expertise to ensure reliable predictions of vital parameters such as construction costs, weight, powering, and cargo capacity. Recent KMM projects have included, among others, the development and design of passenger ferries, high speed cargo vessels, icebreaking vessels, tankers, floating power plants, and shipyard technology transfers.

For more information  
Circle 37 on Reader Service Card

### Mackay Communications

Mackay Communications, Inc. provides a complete product line of Inmarsat-approved satellite equipment, including A, B, C and M for marine and mobile applications. The

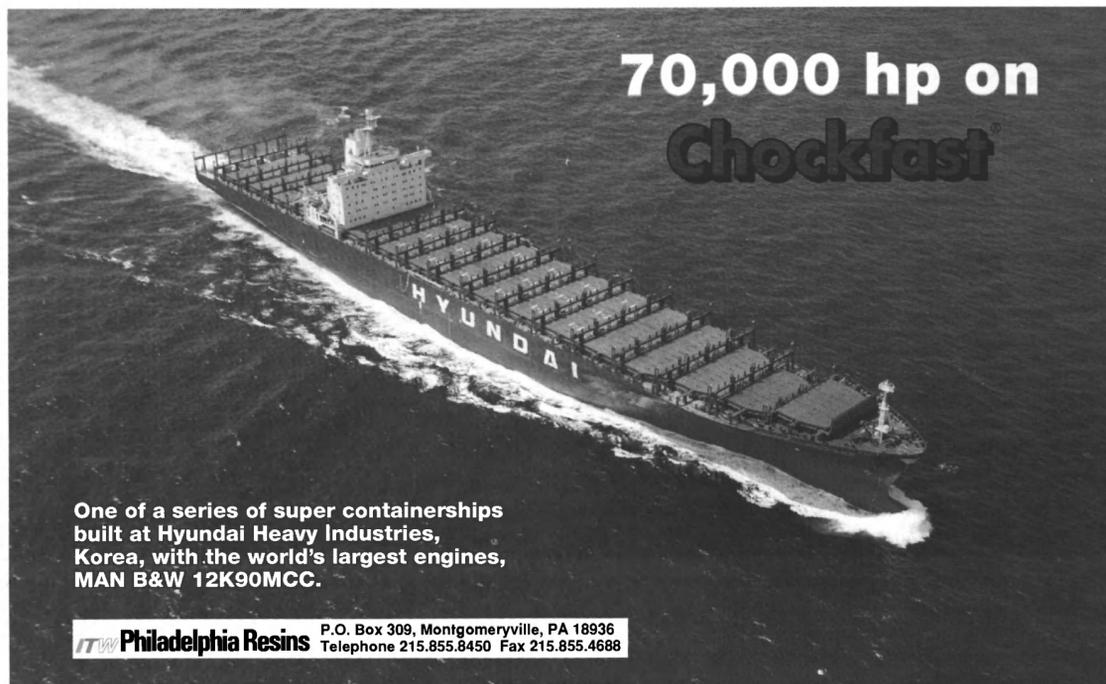
A & B systems are upgradeable to provide full Inmarsat high speed data service, and are ideally suited for sending bulk data and video conferencing. Other products supplied include GMDSS consoles designed to meet all relevant international regulations and a complete line of radar equipment.

For more information  
Circle 38 on Reader Service Card

### MAN B&W Diesel, Inc.

MAN B&W Diesel, a subsidiary of MAN Aktiengesellschaft, Munich, Germany, is a manufacturer and designer of two-stroke and four-stroke diesel engines and turbochargers. The company has facilities in Germany and Denmark, and 125 service centers at locations worldwide. The latest four-stroke engine development of the medium speed family, the 32/40, now spans the power range from 2,200 to 7,920 kW. It uses dual camshafts, making allowances for varying intake charges to maximize fuel economy while minimizing exhaust emissions. MAN B&W propulsion systems are packaged with Alpha reduction gearboxes, CP propellers, and the Alphatronic remote control system.

For more information on MAN B&W  
Circle 14 on Reader Service Card



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## SNAME EXHIBITOR PROFILES

### Mapeco Products

Mapeco Products, a division of Walz & Krenzer, Inc., located in Locust Valley, N.Y., supplies keyless shaft couplings to U.S. shipyards. Primary benefits of the company's product include the elimination of stress concentrations caused by keyways, ease of shafting and coupling interchangeability, and time savings during installation and removal. The couplings use hydraulic pressure to mount onto straight shaft ends. Finite element analysis and custom computer pro-

grams are used to design the couplings. The company has supplied keyless couplings for the T-AGS 45 oceanographic ship, the LSV-21 research submarine, and the T-AKR 301 Sealift vessel.

For more information on Mapeco Products  
Circle 15 on Reader Service Card

### MEBA Engineering School

The MEBA Engineering School was established to provide the contracted companies of

District 1 - Marine Engineers Beneficial Association with qualified marine engineers. Today, the school provides both desk and engineering officers of the U.S. Merchant Marine the continuing education necessary to keep American flag vessels safe and competitive in the oceans of the world. Courses offered include: Ship's Management; Tankship Safety; LNG Tankship; Deck and Engine License Upgrading; Diesel Engineering; Machine Shop; Welding; Ship's Medicine; Analog Electronics; Digital Electronics; Electrical Troubleshooting; Computer Technology; Computer Applications; GMDSS; Water Survival; and Firefighting.

For more information on MEBA Engineering School  
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Circle 265 on Reader Service Card

### New Wave Systems, Inc.

New Wave Systems, Inc., of Jamestown, R.I., manufactures a full line of Nautilus ship design and construction computer software. Its IBM PC-based programs can be used for hull design and fairing, construction templates, damaged stability calculations, structural analysis and performance predictions. The company will highlight its new Windows-based ProSurf hull design and fairing software at SNAME. Features include: full NURB B-spline hull surface definition; automatic surface fitting of offsets and section shapes; dynamic fairing and shape control commands; bi-directional transfer of geometric data; full undo capability; and relational geometry control.

For more information on New Wave Systems, Inc.  
Circle 1 on Reader Service Card

### Newport News Shipbuilding

Newport News Shipbuilding (NNS) designs, builds, overhauls and repairs a variety of ships for the commercial and military markets. It has constructed Nimitz class aircraft carriers, Virginia class guided missile cruisers, and Los Angeles class attack submarines. In 1994, the yard signed a contract with Eletson Corp. of Greece to build two double hull Double Eagle product tankers, with options for two more, making history by winning the first foreign order in a U.S. yard in 37 years. The yard is also the lead design yard for Seawolf class attack submarines. NNS currently has construction contracts for five U.S. Navy vessels, and recently began overhauling aircraft carrier USS Dwight D. Eisenhower.

For more information on Newport News Shipbuilding  
Circle 21 on Reader Service Card

### Ocean Power & Equipment Co., Inc.

Ocean Power & Equipment Co., Inc. will be exhibiting on behalf of the following manufacturers at the upcoming SNAME show: Alfa

## SNAME EXHIBITOR PROFILES

Laval; Cape Line; Daros; Eltech International; Fassmer; Jets; Skandaverken; Sperre; World Water Systems, as well as spare parts manufacturers from the U.K. and Japan. The products that will be represented by Ocean Power range from fuel oil and lube separators, to cylinder liners and covers, to marine sewage treatment systems, to lifeboats, to spare engine parts to water- and air-cooled compressors, and more.

For more information on  
Circle 24 on Reader Service Card

### Radio-Holland USA

Radio-Holland supplies, installs, and services electronic equipment for the marine industry, including GMDSS communication packages, integrated navigation systems, and control and monitoring systems. Activities include the sale and installation of turnkey packages for newbuilding and retrofit vessels. The company is the distributor of S.P. Radio's range of communication equipment — whose buyers include Sea-Land, Royal Caribbean Cruise Line, Carnival Cruise Line, and Holland America Line — as well as Kelvin Hughes' products, such as color ARPA/radars and integrated bridge navigation systems. Praxis Automation is Radio Holland's main line for automation equipment. At Radio-Holland's SNAME GMDSS station, ARPA, night vision cameras and SATCOM will be displayed.

For more information on  
Radio-Holland USA  
Circle 28 on Reader Service Card

### RR Klattenberg Marine Agency

RR Klattenberg Marine Agency's activities include the representation of many international ship repair yards, such as Astano, Curacao, Elefsis, YVC Bolnes Shipyards, and Wenchong Shipyard, which is reputed to have China's largest drydock at 984 ft. by 203.4 by ft. (300 m by 62 m). The company also supplies engine room equipment including spares and service for diesel engines, turbochargers, purifiers, pumps, reduction gears, and air charge aircoolers.

For more information  
Circle 45 on Reader Service Card

### Scana Skarpenord A/S

Scana Skarpenord A/S, Langesund, Norway, manufactures and supplies Cargomaster, an all-in-one system for level gauging, temperature monitoring, and inert gas pressure. The company also manufactures valve remote control systems for the shipbuilding and offshore industry, several models of which are designed to include cargo handling and monitoring. Scana Skarpenord has a worldwide net-

work of agents in 25 countries, with service stations in the Netherlands, Singapore, the U.S., and China. The company has been certified by DNV according to ISO 9001.

For more information on  
Circle 29 on Reader Service Card

### Scientific Marine Services

Scientific Marine Services (SMS) provides marine instrumentation and monitoring systems for ships, barges, floating offshore equipment and offshore structures. The com-

pany is currently completing installation of its 12th tanker Hull Structural Monitoring System. Other typical installations include motion monitoring systems for barge transportation projects, mooring line load monitoring systems for terminals, and motion and load monitoring

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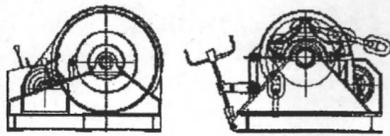
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## SNAME EXHIBITOR PROFILES

systems for offshore construction projects. SMS provides trial and testing services, including powering, maneuvering, seakeeping and vibration trials.

For more information  
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### SIFCO Selective Plating

SIFCO Selective Plating specializes in selective electrofinishing for OEM and repair/rebuild applications. At SNAME, the company will exhibit its equipment and supplies for on-board component repair.

According to SIFCO, its technology reduces equipment downtime, eliminates expensive disassembly and shipping of components, provides a permanent, cost-effective repair, and reduces the need for post-plating machining operations.

The electroplating system can be taken aboard ship for in-place repairs of large, hard-to-move components like propeller shafts, bearing seats and turbine casings. Components of the hydraulic, propulsion, electrical, power generation, and structural systems of ships can also be maintained using the process.

For more information  
Circle 34 on Reader Service Card

### Nautical Technology Corp.

NTC will demonstrate the latest ver-

sion of NTC Ship Manager software modules, which it says significantly improve productivity and profitability of ship operations at both ship and fleet levels. The standard system includes programs for management of Machinery Maintenance and Repair; Inventories; Purchasing; Crewing; Crew Payroll; and Intersite Data Communication (via satellite, cellular and landline links).

For more information on NTC  
Circle 83 on Reader Service Card

### Sperre Industri A/S

Sperre Industri A/S manufactures a line of air and water-cooled air compressors, used in diesel engine starting air, instrument air, and control air applications. The company meets starting air requirements for all ship types and sizes with its series of two-cylinder compressors. The designs are reportedly flexible, enabling constant operation at various ship temperatures. Sperre Industri representatives have stated that the company will look for new opportunities as the U.S. yards return to the commercial market.

For more information  
Circle 27 on Reader Service Card

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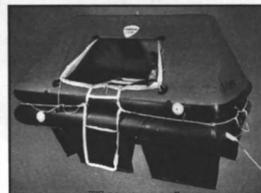
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Circle 365 on Reader Service Card

### Sperry Marine

Sperry specializes in advanced development, manufacture and support of marine products. At SNAME, Sperry will feature its RASCAR radar and its Integrated Bridge System. Sperry also manufactures moving mass and ring laser gyrocompasses, oceangoing and river radars — including the APN-59(X), an airborne weather and ground mapping radar — adaptive digital autopilots, doppler speed logs, electronic surveillance measure systems, ship stabilization systems, and communication systems. Service priorities are to minimize Mean Time To Repair (MTTR) and increase successful First Time Fix rates.

For more information  
Circle 44 on Reader Service Card

### Spurs Marine Manufacturing

Spurs Marine Manufacturing makes line and net cutters to prevent oil seal damage from intrusion into the seal and bearing areas. Whether encountering long lines, drift netting, floating two lines, or dock lines, the ABS-approved Spurs prop-mounted large and medium vessel line and net cutter is designed to cut away debris before

## SNAME EXHIBITOR PROFILES

entanglement occurs. This minimizes diving charges, bearing and seal damage and idle drydock time. The product will be exhibited at the SNAME show.

For more information  
Circle 16 on Reader Service Card

### Tenford/Cunningham Marine/Marserv

Tenford/Cunningham Marine/Marserv deals in hydraulic systems, engineering services, and repairs worldwide. The company distributes hydraulic equipment, including steering equipment such as rotary piston steering gears. The company's emergency steering systems meet SOLAS requirements. Marine services include damage surveys, supervision of construction and repair, contract administration, claims analysis and preparation, estimation, project planning and

scheduling, specification preparation, safety instruction for shipowner/operators, shipyards, marine contractors and other clients.

For more information on  
Circle 41 on Reader Service Card

### Tranter, inc.

Tranter, inc. manufactures Supercharger plate and frame heat exchangers with designated marine features for Navy ships, commercial containerships, towboats, tankers, barges and dredges. According to the company's reports, its Supercharger units are replacing failing shell and tube electronic coolers with copper-nickel tubes on assorted types of ships. Titanium plates in the exchangers have proven resistant to both corrosion and erosion by saltwater, and offer reduced space and weight specifications, as well as ease of repair and maintenance. The

company offers models up to 16,000 gpm, and maximum design pressure ratings for the frame configurations vary from 150 to 350 psig.

For more information on Tranter, inc.  
Circle 17 on Reader Service Card

### TS Tanksystem SA

TS Tanksystem SA, Bulle, Switzerland, manufactures portable gauging and sampling systems. The company will exhibit its UTI-2000 at this year's SNAME show. The UTI-2000 features a quartz temperature sensor with several notable characteristics: it does not require recalibration; is a reportedly small and light gastight unit; is highly accurate and easy to change due to the absence of wires; and is traceable to officially recognized measurement standards. A complete line of samplers fulfills the most stringent requirements regarding vapor emissions and quality of

sample. Tanksystem is an ISO 9002 company, and has its own service and distribution center, Hermetic Inc., in Houston, which also does tape verification according to API 3.1.A.

For more information on TS Tanksystem  
Circle 30 on Reader Service Card

### Vimex A/S

Vimex A/S is specialized in supplying the international marine industry with spare parts and turn-key installations. The company's main products include: Vimex Independent High Level and Overflow Alarm Systems for tankers and barges; and Vimex Gas Detection Systems (GDS) for sampling and detection of hydrocarbon gas concentrations in pump rooms, void spaces, and ballast tanks.

For more information on Vimex A/S  
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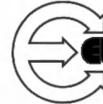
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## SNAME EXHIBITOR PROFILES

### Westad Industri AS

Westad Industri AS of Norway, a subsidiary of U.S.-based Crane Co., manufactures butterfly and ball valves for marine, offshore and petrochemical applications. The production range as well as the selec-

tion of materials and design of the valves were made with consideration for extended service in corrosive media and extreme operating conditions. The majority of Westad's valves are designed for chemical applications and for cryogenic temperature conditions required for

LPG and LNG applications. This ISO 9001-certified company uses reinforced polyurethane in the design of concentric butterfly valves, providing for corrosion resistance and a 75 percent lower weight.

For more information  
Circle 39 on Reader Service Card

### World Water Systems, Inc.

World Water Systems, Inc. (WWS), located in Irvine, Calif., is a manufacturer and worldwide supplier of water treatment equipment. WWS's primary objective is to provide superior quality equipment that meets or exceeds requirements. At SNAME, the company will exhibit its Heli-Sep oily water separator. The U.S. Coast Guard-approved separator is designed to meet the needs of vessels in removing the oil from bilge water, and adheres to international standards, per IMO Resolution MEPC.60(33). The Heli-Sep also has wide industrial applications in areas where requirements for separating two immiscible fluids arise. The WWS product line also includes reverse osmosis desalinators, custom-designed industrial separators, waste water recyclers, and self-cleaning filters.

For more information on  
World Water Systems, Inc.  
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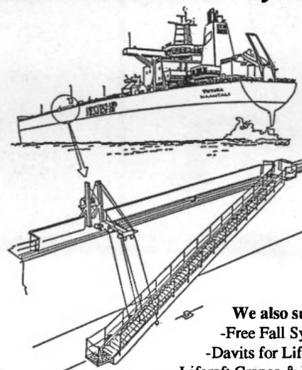
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Circle 371 on Reader Service Card

### MGI International Marine Solutions Inc.

MGI International Marine Safety Solutions Inc. manufactures marine safety equipment, distributes related products, and provides professional consulting services, including product development and training. The company professes that its goal is to prevent loss of life at sea by making marine safety an investment, not a cost. Included in its line of products is the MGI Life Raft Rack System (LRS) and Fuel Rack System (FRS). Another recent innovation is the MGI Evacuation Bridge, a lightweight, retractable bridging system for ship-to-ship transfer. MGI offices are located in Bridgewater, Nova Scotia, and Ottawa, Ontario, servicing the Atlantic, central Canada, and the U.S.

For more information on MGI  
Circle 50 on Reader Service Card

### Autoship Systems Corporation

Autoship Systems Corporation is a supplier of PC-based design software for the shipbuilding industry. Autoship applications cover all aspects of design from initial design to production, including all advanced features for hull modeling and hydrostatics. The company's programs include: a hull and superstructure design program, Autoship; a hydrostatics and stability analysis of design and approval process, Autohydro; an internal structure design program, Autobuild; an on-board load and stability monitor used to maximize safe payloads, Autoload; and an integrated suite of CAM programs including cutting, milling and nesting, AutoNC. A new version of Autoload to be released this fall is capable of 3-D cargo management,

Maritime Reporter/Engineering News

## NAME EXHIBITOR PROFILES

cluding hydrostatics analyses, and listing, identifying, and graphic coding of non-standard cargo. The company also plans to release updated versions of Autoship and Autohydro in upcoming months.

For more information on Autoship Systems Corporation  
Circle 51 on Reader Service Card

### Nelson Firestop Products

Nelson Firestop Products, Tulsa, Okla., manufactures a line of products designed for fire prevention in maritime applications. Products include thermal liners for non-watertight fire and smoke BHDS and decks, an adhesive, one-component silicone sealant; a water-based fire protective coating; mini-transits for restricted bulkhead areas and equipment entries; a rectangular mechanical seal; and replacement modules for MCT or MPS systems with EMI/EMI hardening. All Nelson equipment is either USN or QPL certified, or is currently pending such certification.

For more information on Nelson Firestop Products  
Circle 52 on Reader Service Card

### Inexa

Inexa is a company group committed to the shipbuilding industry. Inexa Profil is a market leader in the design and production of steel profiles for ship hull construction, and has developed the patented Jumbo Bulb Flat, which is reportedly the largest bulb flat available, in sizes from 400 to 650 mm. This new profile design extends the rust-proof benefits of the bulb flat to the lower side sections of large vessels, such as VLCCs and large bulk carriers. Inexa Panel manufactures marine accommodations systems, complete with walls, ceilings, and floating floors for both cabins, corridors and public areas. The TNF modular system is a wall panel system designed for use in cargo ship deckhouses, offshore platforms, and cruise ships. Inexa supports its products with CAD capability, Just-In-Time deliveries, and customer-specified packing.

For more information on Inexa  
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### Hopeman Brothers, Inc.

Hopeman Brothers, Inc. is a turn-key joiner company, specializing in the design, manufacture, and installation of marine interiors. The company provides ship checks, space planning, and drafting; and manufactures custom furniture, bulkheading, ceilings, doors, deck coverings and insulation. Hopeman Brothers can perform modifications at sea, in foreign ports, or at one of several U.S. shipyards with Hopeman company installation

September, 1995

forces. The company adheres to USN habitability requirements, and can provide NAVSEA references upon request.

For more information on Hopeman Brothers, Inc.  
Circle 53 on Reader Service Card

### Gardy McGrath International, Inc.

Gardy McGrath International, Inc., a full service video production facility headquartered in Reston,

Va., completed production on the fifth in a series of videos featuring the new FastShip design — a semi-planing 770-ft. (235.6 m) monohull, slated for speeds of up to 40 knots. The effort featured detailed coverage of computer simulation tests



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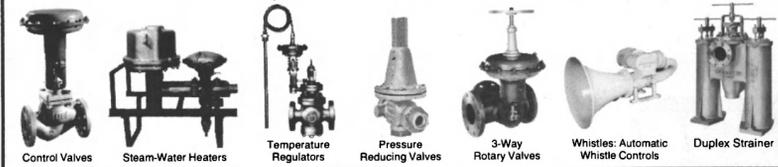
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## SNAME EXHIBITOR PROFILES

from the ship modeling facilities at MIT, as well as modeling tests at the SSPA in Sweden. FastShip designers Thornycroft, Giles and Co. utilized Gurdy McGrath's 3-D animation capability to produce broadcast quality computer graphic video sce-

enarios that demonstrate the unique qualities of FastShip. All of the FastShip video presentations will be on display at SNAME '95.

For more information on Gurdy McGrath International, Inc. Circle 54 on Reader Service Card

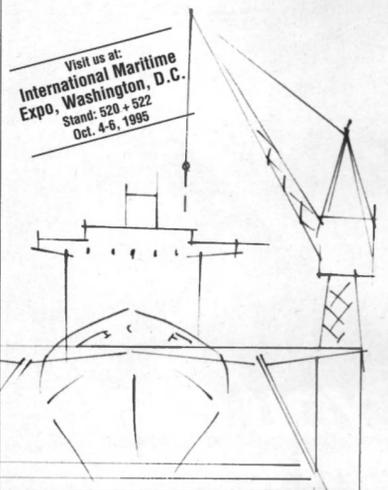
### Electronic Marine Systems

Electronic Marine Systems, Inc. (EMS) manufactures, distributes, and maintains marine electronic equipment on an international level. Clients of the company include Hess

Oil, Exxon Oil, and the U.S. Coast Guard. Products, DVTP approve where applicable, include: DGP navigation systems; patented grounding prevention technology on-deck liquid cargo management systems; high level sensors with no moving parts; real time data communications and vessel tracking systems; vessel voyage, target, and voice recorders; automated dependent surveillance systems; and marine shipboard machinery automation systems.

For more information on EMS Circle 55 on Reader Service Card

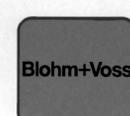
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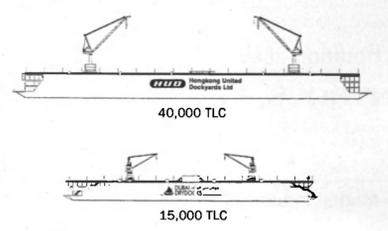
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### Caterpillar Inc.

Caterpillar Inc.'s Engine Division recently shipped the 1,000th model of its 3600 engine family. Cat 3600 engines are available in a variety of marine propulsion and marine generator set applications for fast ferries, bulk cargo carriers, tugs and towboats, icebreakers, and fishing boats. The company has announced that along with Empresa Nacional Bazan Motores, it will jointly develop, produce, and sell a higher power, lightweight version of the Caterpillar 3612 and 3616 engines. These lightweight engines will have 20 percent more power, yet will weigh 20 percent less than current 3600s. Target applications of these engines include naval vessels and high-speed commercial craft.

For more information on Caterpillar Inc. Circle 60 on Reader Service Card

### Cruise Ships To Feature Anti-Burn Shower Valves

Holland America Cruise Lines has chosen FM Mattson shower valves for three ships — the *Ryndam*, the *Massdam*, and the *Veendam* — to improve upon the already high level of comfort, said **Pieter C. Rijkaart**, director of new building for Holland America Line Westours Inc. "We are concerned with the comfort, safety and convenience of our guests, and a big part of the product that we offer is luxury, so these valves fit our needs perfectly," Mr. Rijkaart said. FM Mattson is reportedly Sweden's largest and oldest valve manufacturer. The valve combines the new thermostat and pressure balance controls to maintain a stable shower temperature of +/- 1 degree C under extreme and rapid changes of both pressure and temperature. The anti-scald device also has the safety feature of automatically shutting down if either the hot or cold water supply is interrupted. Additionally, better temperature control can also help prevent the growth of harmful bacteria in marine shower systems, which basically means that the water can be kept hot enough to prevent such growth in pipes and tanks. FM Mattson has selected the Snamix Corp. (Lewiston, Maine) to market and distribute the valves.

## Kvichak Delivers Five Vessels To Russian Port City Of Petropavlovsk

An international contract for Kvichak Marine Industries has resulted in the delivery of five vessels to the Russian port city of Petropavlovsk. The all-aluminum craft include a 42-ft. (12.8-m) combination fishing boat and four 16-ft. (4.9-m) utility skiffs. Designed specifically for its multi-fishery role in the Russian far east, the 42-ft. vessel was classed by DNV and will be used to seine for salmon, potfish for crab, jig for cod, longline for halibut and Scottish seine for bottom fish. Fishermen in the Petropavlovsk area have traditionally used large steel boats that have plied the offshore waters. Now, though, they are working to develop their inshore fleet, with the new Kvichak boats the first of what they hope will be a strong, growing group.

"Our years of experience building reliable fishing vessels for Alaska

made us an ideal choice for the Russians," said **Keith Whittemore**, Kvichak vice president. "We design and build the very kinds of vessels they needed, and we understand the fisheries they're trying to develop."

The all-aluminum combination fishing vessel is 42-ft. long, overall, with a 15-ft. (4.6-m) beam and a 3-ft. (.9-m) draft. The vessel is powered by a 290-hp Caterpillar 3208T diesel, driving a four-bladed, 24-in. (60-cm) stainless steel propeller through a Twin Disc 507 marine gearbox.

Auxiliary equipment includes a 25-kW MER genset, an RSW system by Integrated Marine Systems, Flomax circulation pumps and complete electrical and hydraulic systems, with two-station power steering and a Hynautic engine control package. Electronics were supplied by Harris Electric.



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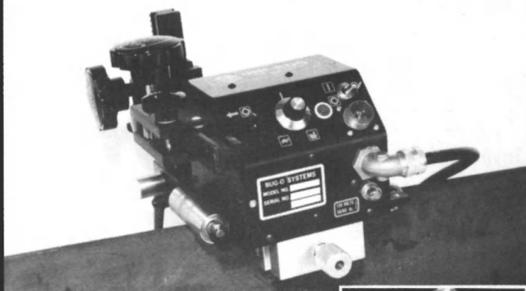
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73

**TT-Line To Receive New Fast Ferry From Ferries Australia**

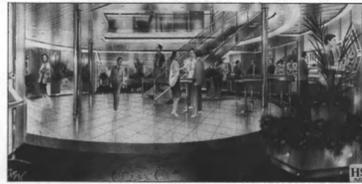
Ferries Australia, a joint venture between two of Australia's leading shipbuilders, has confirmed the sale of an 269-ft. (82-m) fast ferry to the German shipping operator, TT-Line.

The ferry, implementing an "Auto Express" design, can carry 600 pas-

sengers and 175 automobiles, and it is intended to operate on the heavily traveled route between the north German ports of Rostock/Warnemunde and Trelleborg, Sweden. "The sale is a great achievement for Ferries Australia and we look forward to working with TT-Line on this exciting project," said Managing Director of Ferries Australia, **Chris Norman**.

TT-Line was reportedly im-

pressed with the recently completed *Auto Express 79*, a slightly smaller version of the ship they just bought. "After an extensive review of the market, we believe that TT-Line chose our design because it offers an outstanding combination of capacity and perfor-





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**Bollinger Acquires McDermott Assets**

The new fast ferry will be able to travel at a fully laden service speed of 36 knots, drawing power from four MTU diesel engines. To ensure passenger comfort, the ferry will also be fitted with a fully computerized T-Foil stabilizing system. Construction is currently underway and is due for delivery to Europe in mid-1996.

**Bollinger Shipyards Acquires McDermott Assets**

According to press reports released on August 9 by McDermott International, Inc., New Orleans, La., Bollinger Shipyards, Inc., of Lockport, La., has purchased certain assets of McDermott Shipyard used for ship repair. The sale included the transfer of ownership of three drydocks, a machine shop, and other facilities located in Amelia, La. Under the agreement, Bollinger will operate the acquired assets at the Amelia location.

McDermott has retained ownership of the remainder of the shipyard, and will operate it to support fuel and cargo barge construction, power generation barge construction, large vessel conversions, and with the planned expansion to its new-construction facilities, construction of new ships being marketed worldwide. The yard currently has 16 inland fuel barges under construction, with an option to build another eight barges. It recently delivered eight inland fuel and propane barges, as well as the *American Queen*, the largest passenger vessel built in the U.S. in almost 40 years.

Bollinger Shipyards owns and operates 20 drydocks in six shipyards in the New Orleans and southern Louisiana area. The company manufactures marine equipment for energy, military, and general marine interests. McDermott Shipyard is operated by McDermott Shipbuilding, Inc., part of McDermott International, Inc., an energy services company, whose services include the manufacture of environmental equipment, steam-generating equipment and products for the U.S. government. The company also provides engineering and construction for industrial, utility, and hydrocarbon processing facilities.

For more information on Bollinger  
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For more information on McDermott  
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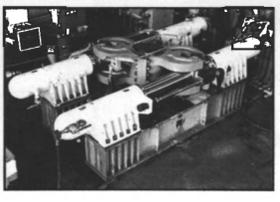
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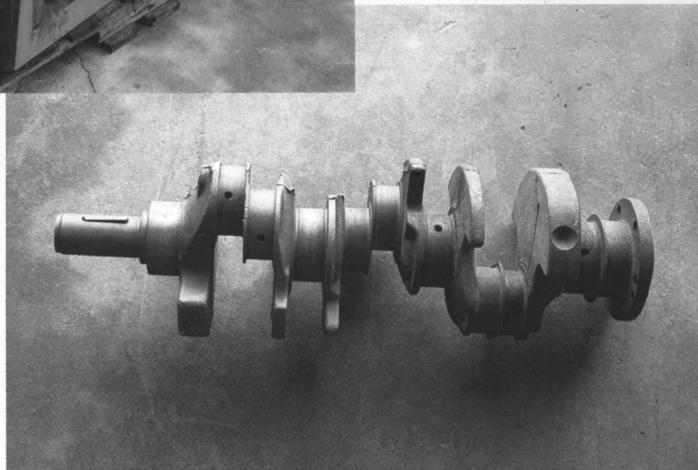
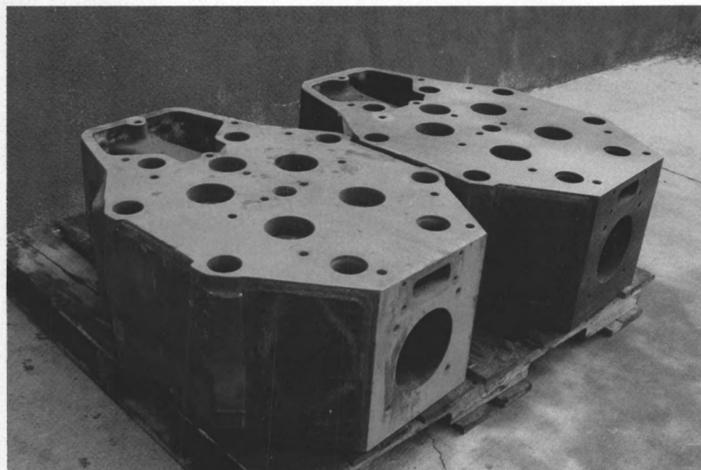


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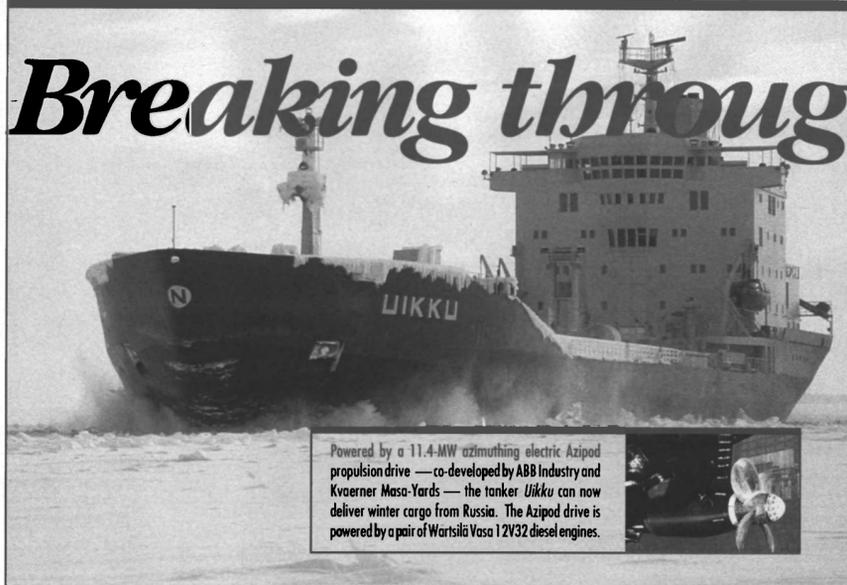
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# Breaking through!



Powered by a 11.4-MW azimuthing electric Azipod propulsion drive — co-developed by ABB Industry and Kvaerner Masa-Yards — the tanker *Liikku* can now deliver winter cargo from Russia. The Azipod drive is powered by a pair of Wärtsilä Vasa 12V32 diesel engines.



ments — SAJ-Draft & Trim/List—reportedly the only draft system on the market that measures a ship's draft by only one bottom penetration. The unique sensors made by SAJ all have high sensitivity, infinite resolution and reliability. All vital units are intelligent and microprocessor-controlled for high reliability. The system includes real dynamic trim and heeling sensors, for measuring the dynamic trim and heeling both at sea and in port. The SAJ-Draft & Trim/List system is designed to improve a ship's bunker economy and safety.

The system is also designed for maximum flexibility to meet an owner's needs, available as: SAJ-Trim; SAJ-Trim/List; SAJ-Draft/Trim; or SAJ-Draft & Trim/List.

## Aquamaster Strengthened by Alliance

Aquamaster-Rauma, a manufacturer of azimuthing thrusters, azimuthing thrusters with contra-rotating propellers (CRP) and deck machinery, recently joined forces with KaMeWa in a competitive joint venture in the global propulsion market. The cooperation is expected to strengthen both participants in several ways. The major benefit will be a technological information exchange. Future access to, and collaboration with, KaMeWa's research lab will strengthen Aquamaster-Rauma's ability to further develop vessel concepts such as the Safety Tanker and the Escort Tug, both of which have already been successfully launched. Also, the companies' sales and services networks are complementary.

*The Finnish maritime industry— long respected for its maritime innovations— continues to deliver next-generation technology.*

### KMY LNG Tank Production Quality-Certified

Kvaerner Masa-Yards' LNG Tank Production Unit, based at the Turku New Shipyard, was recently awarded a Quality Assurance Certificate for Hull Construction (Parts 1 and 2). It joined a select group of shipyards that have received this accolade, and is the only LNG tank production facility to have done so. The facility was developed to build 131-ft. (40-m) diameter, high-specification Kvaerner Moss type aluminum alloy spheres, able to carry 33,750 cu. m. of LNG at -163 degrees Celsius. Four 135,000 cu. m. LNG carriers for Abu Dhabi National Oil Co. are currently under construction in Turku.

This summer, KMY's Helsinki yard delivered the M/S *Imagination*, the fifth superliner ordered from the yard by Carnival Corp. Delivered in early June, the 70,367-gt, 2,600-passenger vessel features 1,020 cabins, all of which were prefabricated and delivered by Kvaerner Masa-Yards' Piikkio Works.

The vessel embodies a wide

range of Finnish technology, as well as the country's strong ties to the passenger vessel market. The *Imagination* features a diesel-electric AC-AC power plant consisting of six diesel generators and two cycloconverter-controlled electrical propulsion motors. The vessel's power package includes: main engines - Wärtsilä-Sulzer; propulsion motors - ABB Marine; propellers - KaMeWa. The total power output is 42,240 kW (57,430 hp).

More recently, KMY was tapped to build a \$75 million Floating Storage Unit (FSU) for Norsk Hydro, for use in the Njord field.

### "Green" RoRos Under Build At Finnyards

Combi-carriers *Robin Hood* and *Nils Dacke*, ordered by TT-Line from Finnyards, feature numerous technical advances designed to make the vessels more economical and environmentally friendly — for instance, an innovative cargo handling system for three cargo decks, and a diesel-electric propulsion system. (For more detailed information on these vessels, see "European Update"

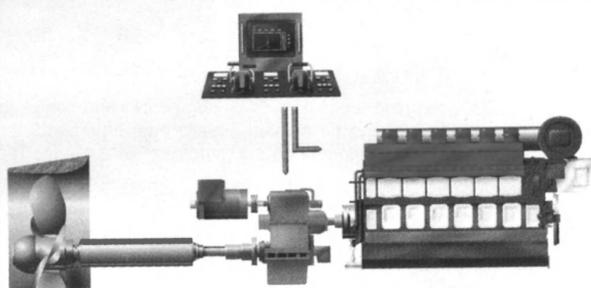
on page 20 of this issue.)

### SAJ Introduces New Measuring Systems

A new series of measuring systems was introduced by SAJ instru-

(Continued on page 78)

## Wärtsilä Power Packaged



Wärtsilä offers the Propac concept in shipbuilding, meaning that the entire propulsion train, from the main engine and the control unit right through to the propeller, is designed and built as a single, integrated propulsion system.

## Kvaerner Masa-Yards Inc. - the experienced builder of successful ships



Kvaerner Masa-Yards is a Finnish ship-building company with long traditions of producing successful high-quality ships.

The company is part of the international industrial Kvaerner Group.

Kvaerner Masa-Yards operates two new-building yards, in Turku and Helsinki, and a cabin module

factory in Piikkiö. Kvaerner Masa Marine Inc. is a consulting engineering and marketing company in Vancouver B.C., Canada and Annapolis, MD, USA. Kvaerner Masa-Yards employs 4700 people.

The Technology Unit handles R&D, engineering and after-sales services, and includes the Arctic Research Centre (MARC).

Kvaerner Masa-Yards build cruise liners and passenger ferries, icebreakers and ice-going tonnage and all types of special technology vessels, such as gas carriers, tankers, cable layers, dredgers, crane ships and research vessels.

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## **Kvaerner Masa-Yards**

Circle 285 on Reader Service Card

## Breaking through — A review of the Finnish Maritime Industry

(Continued on page 78)

### Evac Outfits Polish, Greek Ships

Two large passenger ferries for Polish and Greek owners — built at Norwegian west coast shipyards — feature sanitation systems designed and supplied by Evac Marine. The *Aretousa* is a 1,500-passenger RoRo for Greece's Minon Lines, and will feature 183 Evac Aniara bulkhead mounted toilets and 45 Aniara deck mounted units, plus three ejectors in the collecting units. The other newbuilding is dubbed *Polonia*, built at Langsten Slip & Batbyggery for carrying 1,000 passengers between Swinoujscie, Poland, and Ystad, Sweden. This vessel features 262 Evac 90 Aniara

bulkhead mounted toilets and 28 Evac 90 Aniara deck mounted units.

### Deltamarin & Disney

Deltamarin has spent years working on safer types of vessels, exemplified by the RoRo passenger ship concept developed for TT-Line. The company, which extols the virtues of diesel-electric power, recently applied that propulsion mode to a design for a tanker. The company is also part of the high-profile Disney cruise ship order, as Disney commissioned Deltamarin to design a new cruiser concept which embodies the entertainment company's world view.

For additional information on the companies in this story, please circle the appropriate number on the Reader Service Card in this issue.

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### Kvaerner Masa Launches Surface Treatment Facility

Last June, a new surface treatment facility for sandblasting and painting ship hulls was completed at Kvaerner Masa in Turku, Finland. With high vessel production numbers, Kvaerner needed an efficient surface treatment system that would minimize downtime. The yard produces ships' hulls in as many as 100 sections, each of which is then individually sent to the finishing section of the yard for sandblasting and painting. The key pieces of equipment in the finishing process are the pumps which transport the materials from the pump room to the spray booth. Kvaerner switched from hand-mixing two-component paint to Hydra-Cat pumping and proportioning systems 10 years ago due to safety concerns, in order to greatly reduce cleanup effort necessary, and to eliminate the chance of human error occurring during the hand-mixing process. The new surface treatment facility integrates paint storage and the spray booth in a single facility to conserve space. When hull sections come in, they are blasted with steel media and the surface is then vacuumed. The steel media is re-circulated and separated from the dust, which is transferred to dust collection containers outside the complex. Next, the hull sections are sprayed with thick-film epoxy. Ten epoxy transfer pumps and three color transfer pumps move the finishes into the six two-component paint pumps in the painting booth. The equipment exactly controls and mixes the two components for results designed to pass ship inspections. The equipment was furnished for Kvaerner by Graco, Inc.

For more information on Graco, Inc.  
Circle 176 on Reader Service Card

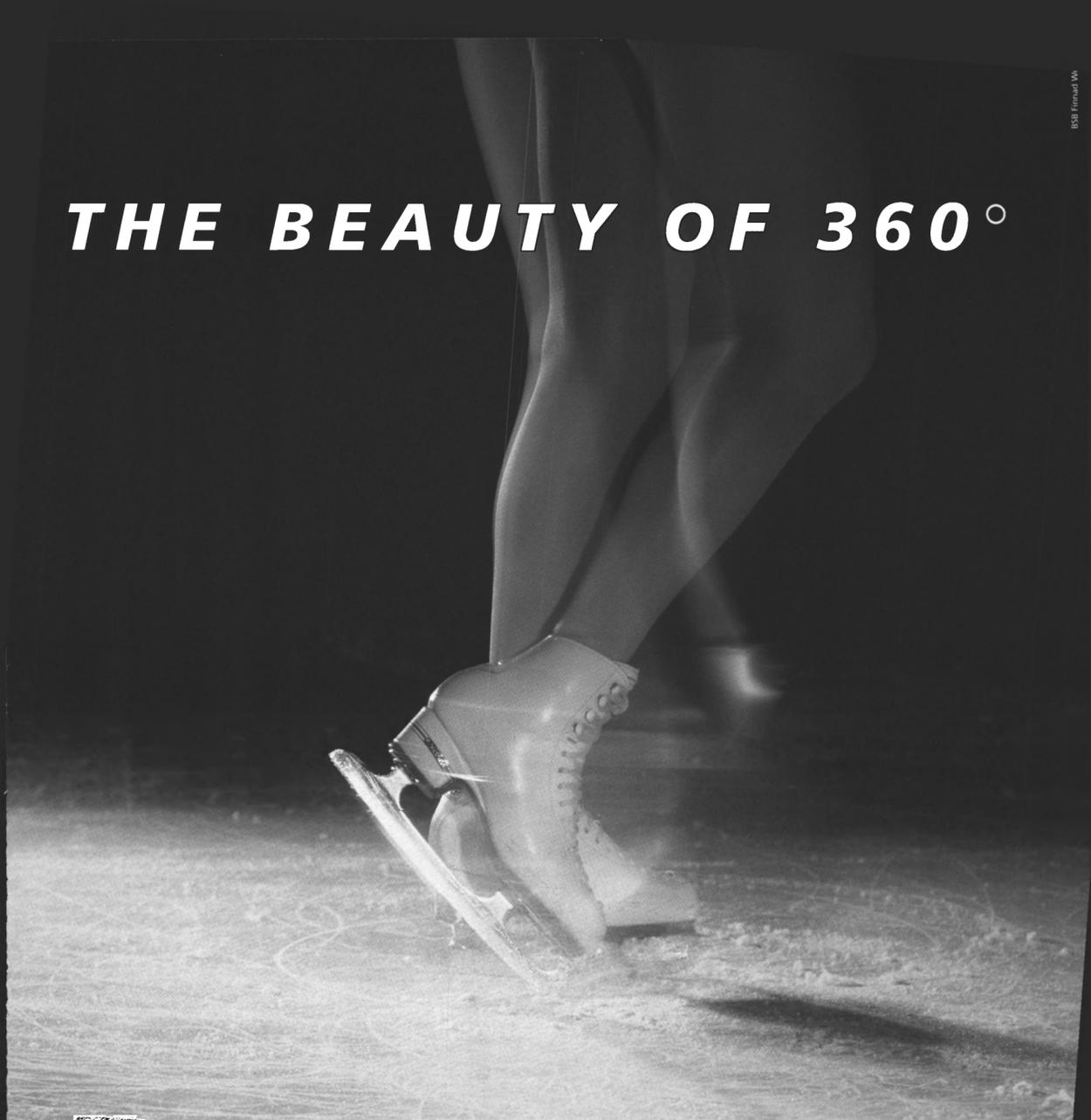
### Wavepower Device Installed

The Osprey is a wave energy device which was successfully installed off the north coast of Scotland on August 9. Noble Denton Europe Ltd., independent marine, engineering and meteorological consultants to the offshore industries, provided marine and engineering consultancy, and were appointed to manage the towing and installation. Osprey 1 (Ocean Swell Powered Renewable Energy) is a wave energy device development that has been supported by various government entities and prominent industrial organizations. Applied Research & Technology Ltd. of Inverness designed the device, working closely with major engineering consultants, including Noble Denton Europe.

Maritime Reporter/Engineering News

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## Panamax Bulk Carrier Market Looks Optimistic

The market for Panamax (50,000 to 80,000 dwt) bulk carriers, increasingly the dry bulk market's global workhorses, looks optimistic through the year 2000 (with a few provisions), according to a new report from Drewry Shipping Consultants.

In addressing the demand for these types of vessels, the report cites the continuing expansion of steam coal traffic, with annual average growth rates of seven to eight percent predicted, targeted mostly on Asian markets.

With the buyers of steam coal being, principally, power utilities and other industrial users, the throughput and storage logistics tend to favor Panamax size due to the fact that delivery is either to a coastal plant or to a specialized coal center such as the ones prominent

in Japan.

The Drewry study also finds that many of the key long haul grain routes are now Panamax-focused, while most emerging grain import regions at least have plans for terminals and storage facilities able to deal with Panamax shipments. Grain is a volatile trading commodity, and while Panamax Bulk Carriers: Market Prospects and Profitability, 1995-2000 takes a conservative view on seaborne grain trade growth overall, the tonnage attributed to Panamax ships is anticipated to grow at an annual average rate of 3.8 percent through 2000. The report also claims that the possibility of a sudden, temporary upswing always exists. However, the report finds that the supply side casts a slight shadow.

The order backlog has become

more formidable with the firmness of the freight market virtually eradicating scrapping ideas.

This, according to Drewry, will have an adverse impact in 1996 and may well lead to more depressed freight market conditions in 1997. The expectation thereafter is for demand requirements to increase while the fleet stabilizes. Even with these concerns for 1996 and 1997, the report predicts the potential for significant contributions to capital expenses.

The 50,000 to 80,000-dwt sector of the bulk carrier fleet has risen from under 2.1 million dwt at the start of 1965 to more than 59.6 million dwt as of January 1995.

It was in the late 1950s that the Panamax bulk carrier appeared in the world dry bulk trading fleet as a consequence of the sharp rise in

seaborne iron ore demand. In mid-1960s, almost 90 percent Panamax vessels were classified specialized ore carriers.

Today, the majority of Panamax are general-purpose bulk carriers with cargo-specialized carriers (including combined carriers) now accounting for little more than 10 percent of the fleet in this sector dwt terms.

Currently, the Panamax bulk carrier fleet is thought to be carrying 355 to 365 million tons of dry bulk traffic annually, with about 1.1 million tons attributed to coal business.

Grain traffic ranges from around 85 to 95 million tons a year, while current iron ore liftings are at about 50 million tons.

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## Global Associates Brings Cantrell Onboard

As of July 1, 1995, Walter H. Cantrell assumed the position of executive director of Technology and Systems at Global Associates, Ltd., an engineering and management support services company located in Falls Church, Va. Mr. Cantrell, recently retired from the position of Commander in the Space and Naval Warfare Systems Command, will help Global's clients decide which processes and technologies will serve their needs in a streamlined manner, by applying his 30 years of experience in ocean technologies.

## Sonsub Makes Executive Appointments

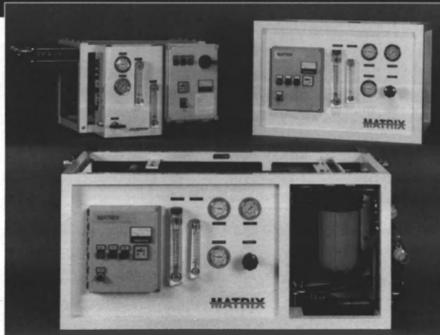
Sonsub Inc. has appointed Michael Price to the position of general manager of Projects and Engineering. He will be responsible for overseeing the company's growing number of subsea production systems and remote systems engineering projects in North and South America, as well as responding to demand for Sonsub's remote systems intervention for ultra-deepwater projects. Mr. Price will fill the vacancy created by Dana Beebe's promotion to a position in Sonsub International Management, Inc. Peter Rash has been selected to head the company's newly established office in Melbourne, Australia. Most recently, Mr. Rash has been responsible for developing Sonsub's Diverless Pipeline Repair System, which has been awarded a number of patents.

Sonsub develops solutions for subsea and hazardous environments, and has a number of specialties, including: remotely operated vehicles; cable and pipeline burial; and environmental teleremediation.

For more information on Sonsub Inc.  
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### Teamship Agency Opens Tampa Office

New Orleans-based Riomar Agencies, Inc. has announced the opening of a branch office in Tampa, Fla. **John A. Butler** will serve as port manager of this office, and will also supervise activities in the ports of Manatee, Fort Pierce and Port Canaveral. The Tampa office is the eighth in the Gulf area. Riomar also provides services through affiliates in Mexico and Colombia, and is specifically affiliated with Mexican shipping agency A.G. Consignataria Del Golfo, S.A. de C.V. (Golmar).

### Brown Appointed President Of SUNY Maritime

The State University of New York Board of Trustees has appointed **Radm. David C. Brown**, USMS, to the presidency of Maritime College at Fort Schuyler in New York.



Radm. David C. Brown

**Brown** will succeed **F.H. Miller**, Rear Admiral, USN (Ret.), who has served as president for the past 13 years. **Radm. Brown** resigned as president of Great Lakes Maritime Academy, a position he has held since 1992, in order to accept the presidential position at Fort Schuyler. His 29-year Navy career included positions such as director of a Presidential Advisory Committee at the National Communications System, director of training at the Naval Education and Training Center in Newport, R.I., and professor of maritime strategy and policy at the Naval War College. Upon his appointment, **Radm. Brown** expressed his view that "a large part of the job will be pursuing goals already set by my predecessor and to continue to provide the education that the maritime industry has relied upon, particularly in New York, where it is a \$14 billion industry."

### Checchi To Serve As VP Of Matson Intermodal

**Michael R. Checchi** has been appointed vice president of Matson Intermodal System, Inc. (MIS) in San Francisco. MIS is a subsidiary of Matson Navigation Co., which is parented by Alexander & Baldwin, Inc. **Mr. Checchi's** responsibilities include managing MIS' intermodal rail and truck arrangements, inland inventory systems, and company-wide sales efforts. He will also play a key role in overseeing all administrative duties for the company. Prior to joining Matson, **Mr. Checchi** served at American President Lines (APL) in various capacities, including as director of logistics and director of planning for the company's Land Transport Services, and as manager of financial planning, reporting and accounting, as

September, 1995

well as manager of third party international sales at APL's Intermodal Company.

### GL Establishes Argentinian Office, Canadian Committee

On August 15, 1995, Germany-based international ship classification society Germanischer Lloyd (GL) inaugurated new offices in

Buenos Aires, Argentina.

GL has also established a Canadian Committee — a prerequisite for the society in order to fully perform statutory functions delegated by the Canadian Maritime Administration. The members of the committee are as follows: **Michael J. Hubbard**, Director General, Marine Regulatory Directorate, Transport Canada; **H.M.D. MacNeil**, Vice Admiral (Ret.), Member of the Transport Safety Board of Canada;

**Michael G. Ayre**, vice president of marketing and sales, MIL Davie Inc., Levis, Quebec; **Helfried Beutner**, managing director, Rigel Schiffahrts GmbH, Bremen, Germany; **Harmut Hormann**, director, Ship Safety Division, GL, Hamburg; and **Hugues Mazhari**, Principal Surveyor and Secretary to the Committee, Germanischer Lloyd Canada Ltd.

For more information on GL Circle 146 on Reader Service Card

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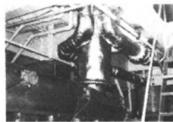
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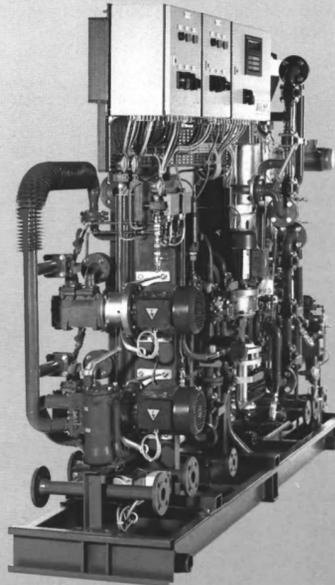


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## COATINGS UPDATE

### The development of a hydrophobic/icephobic coating

The icing of superstructure surfaces can incur serious adverse effects on the operation of a marine vessel. These include reduction of stability and maneuverability; loss or reduction in the function of deck machinery and equipment; and the impairment of safe access to weather deck areas. The challenge, as demonstrated in a recent research program, was to develop an ice control system which was efficient and did not expose crew members to hazardous conditions.

A program was initiated to develop procedures for the quantitative measurement of ice accretion rates and ice adhesion to a long-life hydrophobic/icephobic coating. This coating can be applied to currently painted superstructure surfaces as a means of inhibiting or reducing the formation, accretion and adhesion of atmospheric and spray-generated topside icing. The program also incorporated additional testing of the developed coating system on various marine superstructure surfaces. The basic coating selected for the program was a VOC-compliant silicone alkyd enamel which complies with the requirements of U.S. Navy Spec MIL-E-24635B.

#### The Conclusion

Following extensive studies regarding: water contact (wetting) angle studies; ice accretion; ice adhesion; exterior exposure; as well as field, sea and vessel trials, several conclusions were drawn.

The studies found that the addition of the fluoropolymer (FP) additive at a 15 percent volume level to a coating significantly increases the water contact angle. Additionally, it was discovered that incorporation during the manufacturing of the coating will yield the highest water contact angle.

There was some evidence that indicates that almost twice as much water spray drains from the FP-modified coating surface during ice formation. One could speculate that, on a surface vessel using this coating and operating in a cold weather region, a longer period of time would be required before ice formation might impair the safe operation and function of the vessel.

The removal of ice from accreted surfaces is greatly facilitated from surfaces which are coated with the FP modified coating. This will lower the time required to reduce the formed ice to safer manageable levels, and will keep crew work hours at a minimum in a hazardous operation. The ice removal tests conducted on this program were performed on planar surfaces. In some less sophisticated experiments it was determined that total ice removal from a non-planar FP-coated surface could be accomplished with two to three strikes with a 2 x 4.

#### Cruise Line Relocates Headquarters

Celebrity Cruises has announced the relocation of its Miami headquarters to expanded offices. Effective August 1, the cruise line's new address will be 5201 Blue Lagoon Drive, Miami, FL, 33126.

#### Freight And Customhouse Brokerage Firm Relocates

J.E. Lowden & Co., international freight forwarder and customs brokerage firm, has relocated its San Francisco office, effective August 26, to 275 Battery St., Suite 400, San Francisco, CA, 94111-3331. The company is a member of the



The USS Peterson (DD-946) was involved in field tests to develop a coating to inhibit and reduce the formation, accretion and adhesion of topside icing.

Experiments performed using buoys were also instructive in coating development field tests. These experiments were instructive. As ice accretes to a buoy surface, the weight of the buoy increases and further descends into the water, reducing visibility. The time required to remove the ice was reduced by 60 to 70 percent on buoys which were coated with a FP modified coating.

The modified coating degrades more slowly and was found to be easier to clean than the currently used standard system. This should permit a longer period of time between re-application of the coating, helping to reduce maintenance costs. All the coatings listed in Navy specification MIL-E-24635B are VOC-compliant with a maximum level of 2.8 lbs./gal. The FP-modified silicone alkyd coating is also compliant with a maximum VOC of 2.8 lbs./gal.

Based on the data presented in this program, the U.S. Navy has accepted the FP-modified silicone alkyd product for limited use on a case

basis under modified MIL-E-24635B.

The first large scale application is scheduled for the USS Independence (CV-62), which will have portions of its side shell coated with the FP-modified silicone alkyd coating. The objective is to determine to what extent there is service life enhancement.

For more information on the tests and results  
Circle 152 on Reader Service Card

The preceding was excerpted from a paper authored by Donald B. Dahm, director of research, Niles Chemical Paint Co.; James A. Rauth, president of JAR Associates; and Donald M. Williams, product manager, additives, Troy Corp. A portion of the study was funded by Carderock Division, Naval Surface Warfare Center, Annapolis, Md., under contract N6153-93-M2292. Niles Chemical Paint participated in the preparation of the coatings and the coated test panels.

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#### American Marine Appoints Executive

Joy L. Stevenson has been appointed marketing executive of American Marine's Singapore-based headquarters. American Marine is the builder of Grand Banks diesel cruisers and Fastbay express cruisers.

#### Seacor Appoints Wood New VP

Seacor Marine Inc., a subsidiary of Seacor Holdings, Inc., has announced that Alvin E. Wood will serve the company as vice president

of business development and special projects. Mr. Wood will continue as vice president of National Response Corporation (NRC), a wholly-owned subsidiary of Seacor, which provides environmental oil spill response services. He has been credited by the company as being instrumental in developing the concept of converting NRC's existing vessels for multipurpose offshore supply/oil spill response use. Seacor and its subsidiaries operate a fleet of marine vessels primarily dedicated to supporting offshore oil and gas exploration and development in the Gulf of Mexico, Mexico, the North Sea, and offshore West Africa.

For more information on Seacor Marine, Inc.  
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### Naming Ceremony Held For APL Containerships, Shell Tankers

Daewoo Heavy Industries held a naming ceremony at its Okpo Shipyard for the first two of three 4,800-TEU containerships for American President Lines (APL).

The new post-Panamax vessels — *APL Korea* and *APL Singapore*

— are each powered by a 66,358-hp B&W 11K 90MC-C engine, providing them with a top speed of 24.6 knots at full load.

Daewoo also held a naming ceremony at the Okpo Shipyard for the last of five 300,000-dwt double hull VLCCs ordered by Shell International Trading and Shipping Co. (STASCO) of Great Britain.

The *Megara* is powered by a 7RTA8T type, 36,000-hp engine.

### KCS's TRIBON Bought By Japanese Yard

Mitsui Engineering & Shipbuilding of Japan has purchased the TRIBON shipbuilding system for its shipyard in Chiba. Other recent orders for the system include two Romanian shipyards—Constantza Shipyard and 2 Jai Manglia Shipyard — as well as the Ocean Ship-

yard in the Ukraine.

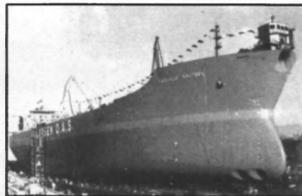
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For more information on TRIBON from KCS  
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### Wheeler Associates, Upwind Investments Announce New Cooperation

Marine industry consultants Wheeler Assoc. of New York and Upwind Investments of Miami announced they will work closely on their marine industry commercial development activities and company representation. The companies also announced that Upwind Investments has recently agreed to represent S.I.G.B.R. Drydock of Fort de France, Martinique, and P.T. PAL shipbuilders of Jakarta, Indonesia.

For more information from Wheeler Assoc.  
Circle 167 on Reader Service Card

### FPSO Approved By DTI As Custody Transfer System

The FPSO *Usage Gorm*, which is fitted with the complete CargoRadar Tank Level Gauging Systems from Ian-Conrad Bergan, Inc. has been approved by U.K. regulatory agency DTI as a custody transfer system.

"The approval by DTI is a first for the industry," said Knut Bergan, vice president.

For more information about using the Bergan CargoRadar on FPSOs  
Circle 166 on Reader Service Card

### Leica Wins Contract For DGPS System In China

Leica Navigation and Positioning Division won a contract from the Chinese Maritime Safety Administration for multiple marine differential GPS (DGPS) beacon systems.

The contract calls for new DGPS beacon sites to be established at Tianjin, Dalian and Qingdao, plus an upgrade to the existing DGPS station at Qinhuangdao.

For more information from Leica,  
Circle 165 on Reader Service Card

### Harland & Wolff Appoints New Non-Executive Director

Harland & Wolff Holdings plc announced that George Rose, senior shop steward, is to become a non-executive director on the Harland & Wolff Group Board.

**ere Selects Racal Bridge Systems  
New Chemical Carriers**



The Racal-Decca BridgeMaster 340 ARPA radar.

Broere Shipping of the Netherlands awarded a contract to Racal-Decca Marine for the supply of its MIRANS bridge system for two new chemical tankers. The first of the new 4,500-ton ships is being built in the Verolme shipyard in the Netherlands, and will begin operating in January. The new ships join Broere Shipping's existing fleet of 13 chemical tankers.

Both new vessels will be fitted with a Racal-Decca MIRANS 4600 bridge system, consisting of two 16-in. interswitched BridgeMaster ARPA radars, a live situation report module with external alarm to Lloyd's LNC Nav 1 standard, and a ChartMaster electronic chart console with digitizer and auxiliary work station.

**5,000th BridgeMaster Sold**

Racal-Decca also announced the sale of the 5,000th BridgeMaster radar following an order from the Northern Shipping Co. of Archangelsk for two BridgeMasters, a color ARPA and color 12-in. radar with autotrack, for one of a series of new ships being built at the Vyborg Shipyard. This order brings the total number of BridgeMasters ordered by Northern Shipping to well over 30 — all through Transas Marine, the Racal-Decca Marine distributor in Russia.

For more information on Racal-Decca  
Circle 107 on Reader Service Card

**New Subsea Bolt Tensioning System Offered**

The new Hypur-Mate Aqua-Jack is a subsea bolt tensioning system which features a unique split reaction nut design, allowing rapid tool removal and attachment to long bolts, even with damaged threads.

The unit features a long piston stroke — 30 mm maximum piston stroke for tools AJ-2 to AJ-8; 20 mm for tool AJ1. The Aqua-Jack design also ensures that maximum tool strokes can be used without overstroking the piston.

The compact design of Aqua-Jack reportedly allows easier access into restricted applications and low head clearances. A unique floating piston design allows tilt in any direction without loss of load, thus eliminating piston seizure and aiding tool retraction.

For more information on the Aqua-Jack  
Circle 108 on Reader Service Card

**South Seas Names New Agents In North America**

To complement the company's entry into intermodalism, South Seas Steamship Co. appointed agents in the U.S. Midwest and East Coast, as well as in Vancouver, B.C. Representing South Seas in the Midwest is Kuecker Steamship Services in Chicago; Hoegh Lines Agencies Inc. is the representative in the New York/tri-state area; and Westward Shipping Inc. was chosen in Vancouver.

**AMSC Introduces New Service**

American Mobile Satellite Corp. (AMSC) unveiled a new satellite communication service called Skycell satellite dispatch service, reportedly America's first seamless continent-wide voice dispatch service. Skycell provides fully digital point-to-multipoint broadcast communications capability throughout North America.

For more information from AMSC  
Circle 164 on Reader Service Card

**LR Signs First Survey Agreement With Argentina**

Lloyd's Register (LR) and Prefectura Naval Argentina (PNA) signed an agreement for LR to carry out statutory surveys on Argentinian-flag ships on behalf of the PNA. This is the first time PNA has delegated authority to any classification society for carrying out statutory surveys on its behalf.

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For more information and program details please contact:

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COMMUNICATIONS UPDATE

## Clearing The Air: Wideband mobile designed to handle growing airwave capacity

Wideband Mobile is a broadband satellite service developed by Comsat World Systems for military use. In 1994, Comsat received authority from the Federal Communications Commission to perform a six-month test with the U.S. Navy for the service. More recently, Comsat received an extension of its experimental authorization and is expanding the testing of Wideband Mobile service into other sea-based industries.

This new maritime communications service uses C- and Ku-band frequencies on Intelsat satellites in geosynchronous orbit. These frequencies, traditionally used for fixed satellite services, have at least 500 MHz of radio spectrum available and can accommodate communications requirements beginning at a rate of 64 kbps, and ranging up to rates of 2.048 Mbps or even higher. This amount of bandwidth can be used to transmit hundreds of simultaneous phone calls or to transmit data, facsimile and broadcast video of such quality that doctors on land can remotely make medical recommendations to physicians at sea.

Wideband Mobile service promises to complement and extend current maritime communications services, known as narrow-band services, which allow ships at sea to transmit at a maximum of 64 kbps.

The availability of Wideband Mobile can be, in large part, attributed to technological advances in both satellite services and stabilization

technology, as the big challenge was stabilization of the larger C-band antennas aboard ocean vessels. Smaller antennas have become increasingly efficient and reduced "platform" costs have made it possible to economically stabilize two- to three-meter C- and Ku-band antennas aboard ships.

The U.S. Navy was the first to test Comsat's Wideband Mobile service, and successful tests included the Project Challenge Athena II. The test involved several Intelsat satellites and beam configurations to provide digital, C-band, private line service to the USS *George Washington*, an aircraft carrier sailing in the Atlantic Ocean. The high data rates of 1.544 Mbps service permit a host of applications, ranging from intelligence communications, to multiple-line telephone and data service, to telemedicine — the electronic transfer of X-rays for consultation. For the test, several channels were set aside for personal calls for sailors. To use the service, they purchased pre-paid Sprint phone cards, which allowed them to call anywhere in the U.S. for about \$50 per minute.

Based on the success of the project, the Navy is considering installation of a C-band mobile system on an aircraft carrier in the Pacific Ocean Region.

### Commercial Applications

While developing the high-speed

ship-to-shore wideband services, Comsat World Systems realized the potential in other maritime environments and has actively pursued further development in these areas. While the Navy worked with Comsat on its Wideband Mobile tests, executives from the cruise line and commercial shipping industries watched closely.

From the perspective of commercial ship operators, Wideband Mobile service could dramatically increase communications capabilities while maintaining, or even decreasing, overall costs. Applications requiring multiple voice channels, wideband data transmissions, video conferencing, and broadcast-quality transmission of live special events are now feasible.

In the cruise industry, Wideband Mobile will be positioned to provide ships' administrators with a wide range of communications options. Both the crew and passengers will have liberal access to added phone, fax and data transmission services, and television reception of special events can be a reality. Several cruise lines are testing the service, mainly to provide more outside lines for passengers.

For more information from Comsat  
Circle 193 on Reader Service Card

The preceding was submitted by Paul Stern, service development manager, Comsat World Systems.

### C-Map U.K. Subsidiary Appoints Managing Director

C-Map, an Italian designer and manufacturer of electronic charts, has appointed Paul Sumpner to the position of managing director of its U.K. subsidiary. Mr. Sumpner's role will be to oversee the U.K. sales and service department in Poole and to work closely with U.K.-based OEM companies, including Autohelm, Apelco, Cetrek, and Simrad Shipmate, providing support for existing C-Map-based chart plotters. Prior to joining the company, Mr. Sumpner was employed as product manager at Simrad Stow Ltd.

### Rosecrans To Serve As Commanding Officer At USCG Marine Safety Center

On July 31, 1995, Captain Michael M. Rosecrans, U.S. Coast Guard (USCG), relieved Captain Thomas H. Walsh as commanding officer of the Coast Guard Marine Safety Center (MSC) in Washington, D.C., after 23 years of service. Capt. Rosecrans' most recent tour was as executive officer of the Marine Safety Office in Norfolk, Va.

The MSC's primary mission is to provide technical support services in the review and approval of plans for the design, construction, alteration and repair of commercial vessels subject to U.S. and international inspection laws and regulations. The center is responsible for coordinating its efforts with field inspection offices, and works with other partners in safety, namely the American Bureau of Shipping and other classification societies. The MSC has a salvage team that is available around the clock to provide quick analyses of vessel structures and stability during a casualty such as a grounding or collision.

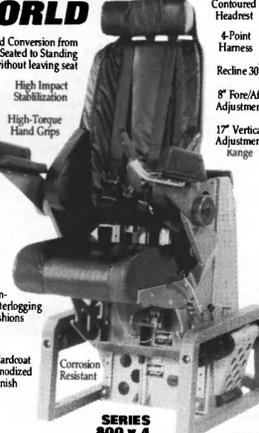
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USCG 47MLB-13 Stidd Seats aboard  
photo by Don Herney



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høj International AS, manu-  
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tankers, has appointed  
**Willy Jørn Larsen** to  
the position of manag-  
ing director. Mr.  
**Larsen**, formerly the  
company's sales direc-  
tor, will oversee the  
continued develop-  
ment and expansion of  
ompany's range of electric drive  
well cargo pumps and booster  
ps.



**R Appoints Executives**

ACR Electronics, manufacturer of  
ety and survival technologies, has  
appointed **Dennis  
London** to the position  
of manager of Euro-  
pean sales. Previously,  
Mr. **London**  
served as managing  
director of a promi-  
nent marine products  
manufacturer, and  
has more than 20  
years of sales experi-  
ence in the marine  
industry. He will be  
based in the U.K. **Pat  
Kohler** has been ap-  
pointed sales and ser-  
vice manager for the  
company. Previously  
serving as North  
American sales man-  
ager, Ms. **Kohler's**  
ew responsibilities include supervising  
a five-member sales and service  
administrative staff, and carrying out  
sales fulfillment.



Dennis London



Pat Kohler

**Denison Names  
Tucker National  
Manager**

Denison Hydraul-  
ics, Inc., of Marys-  
ville, Ohio, appointed  
**James P. Tucker** to  
the position of na-  
tional accounts man-  
ager. Mr. **Tucker**,  
previously an account  
manager at Rexroth's Mobile Hydraul-  
ics Division, Wooster, Ohio, will be  
responsible for the sale of Denison  
products to large, national OEM cus-  
tomers. Denison Hydraulics is a glo-  
bal manufacturer of the hydraulic com-  
ponents and systems used in ships.



James P. Tucker

**Sperry Names  
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Specialist**

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will assume the po-  
sition of marketing  
communications spe-  
cialist at Sperry, fol-  
lowing the recent re-  
tirement of **Robert  
Stroh**. Ms. **Valdes** will be in charge  
of corporate marketing communica-  
tions, including Sperry Marine's world-  
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show participation, and producing the  
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### Johnsen Appointed President Of Waterman Steamship

International Shipholding Corporation (of New Orleans) announced that **Niels Johnsen** has been elected president of Waterman Steamship Corporation. Waterman is a principal subsidiary of ISC, an ocean and dome waterborne freight transportation company. **Johnsen**, headquartered in New York, is a president and director of ISC, as well as president of N.W. Johnsen & Co., Inc., which acts as the chartering broker for the ISC group of companies and other third party charterers. He joined ISC in 1970, and his primary focus with the conglomerate has been business development, traffic management and sales.

ISC has announced that **Charles G. Boyle, Jr.** has retired after 30 years of service. Mr. Boyle's most recent position was senior vice president, with responsibility for Waterman's LASH liner service between U.S. Gulf and Atlantic ports and south and southeast Asia.

### Chris-Marine Int'l Opens West Coast Service Facility

Chris-Marine International Ltd., responsible for the marketing of Chris-Marine AB products manufactured in Sweden, has opened its ninth service facility in the U.S. The facility, located in Tacoma, Wash., will be called Chris-Marine West Coast, Inc., and will service ships on the Pacific Rim, working closely with associated companies in Japan, Singapore and Australia. **Lennart Cronhamm**, former chief engineer, has been chosen to head the Tacoma operation. All service equipment built by Chris-Marine AB in Sweden will be made available to the U.S., the Caribbean islands, and Venezuela, by way of the Tacoma operation, as well as through another Chris-Marine facility in Jacksonville, Fla.

For more information on Chris-Marine West Coast, Inc. Circle 140 on Reader Service Card

### Marotta Announces Management Changes

Marotta Scientific Controls, Inc., Montville, N.J. — designer and manufacturer of specialty liquid and gas control components, subsystems and systems for critical military and space-related applications — announced changes in its corporate management structure. **Richard D. Lander**, formerly executive vice president and COO, will now serve as president and COO. **Robert F. Dathe**, former vice president of finance, has been promoted to senior vice president of finance and secretary. **Nelson Touissant** will join Marotta as vice president of sales and marketing.

### Former Ravenscroft CEO Forms Shipmanagement Company

Captain **David Saffe**, former president and CEO of Ravenscroft Shipping, has opened a full service shipmanagement company on Miami's waterfront. The new company, Star Shipmanagement Ltd., already provides services for a fleet of several vessels. Vessels under management include four tankers, four RoRos, car carriers, a self-unloading bulk carrier, and a cruise ship. Star Shipmanagement offers services such as purchasing, insurance, maintenance, and crewing, as well as technical advisory in the areas of Coast Guard safety and public health requirements.

### Baltimore Hydraulics Awarded ABR From Dept. Of Navy

In late March, Baltimore Hydraulics, Inc. was awarded an Agreement for Boat Repairs (ABR) from the U.S. Department of the Navy. The

company specializes in hydraulic system and component repair, and has supplied services to the Navy for many years. According to company President **Gordon Kauffman**, "Without an ABR, we've been forced to work as a subcontractor on many occasions ... We hope that this authorization will open doors, and help to solidify our position in this market." Baltimore Hydraulics offers a variety of marine services, including in-shop component rebuilding, field service and troubleshooting.

For more information on Baltimore Hydraulics  
Circle 141 on Reader Service Card

### P&O Names Managers To Pacific Trade

On July 21, **Christopher Rankin**, president of P&O Containers North America, announced managerial appointments. **Robert A. Agresti** will assume the position of vice president of Pacific Westbound Marketing. **Alan T. Hicks** will become vice president of the Asia Region, replacing Mr. Agresti. **Michael J. White** has been appointed vice president of Pacific Eastbound Marketing. **Paul Windfield** will serve as the new senior vice president of P&O's Pacific Trade Division.

### United Refrigeration Launches Marine Division

United Refrigeration, Inc., of York, Pa., has announced the opening of a marine division that will supply a full range of domestic and foreign OEM refrigeration and air conditioning parts and equipment. All refrigerants utilized by the maritime industry will be available through the new division, United Marine Refrigeration. The company will provide refrigerant reclamation and up-to-date alternative refrigerant services, as well as provide industry engineering expertise on refrigerant retrofits and newbuilding installation, and technical information on all its products. Through United Refrigeration's distribution network of more than 150 locations worldwide, United Marine Refrigeration products can be delivered to all key shipping locations.

For more information  
Circle 142 on Reader Service Card

### Baird Relocates

Baird Corporation of Bedford, Mass., has relocated to a new facility in Franklin, Mass., in order to expand production capacity, and enhance quality and efficiency. Baird and Thermo Jarrell Ash are combining their operations at the newly constructed facility in order to profit from a consolidation of production and overhead operations. The two ISO-9000 companies invested months of planning in the relocation effort in order to prevent a disruption of customer service.

September, 1995

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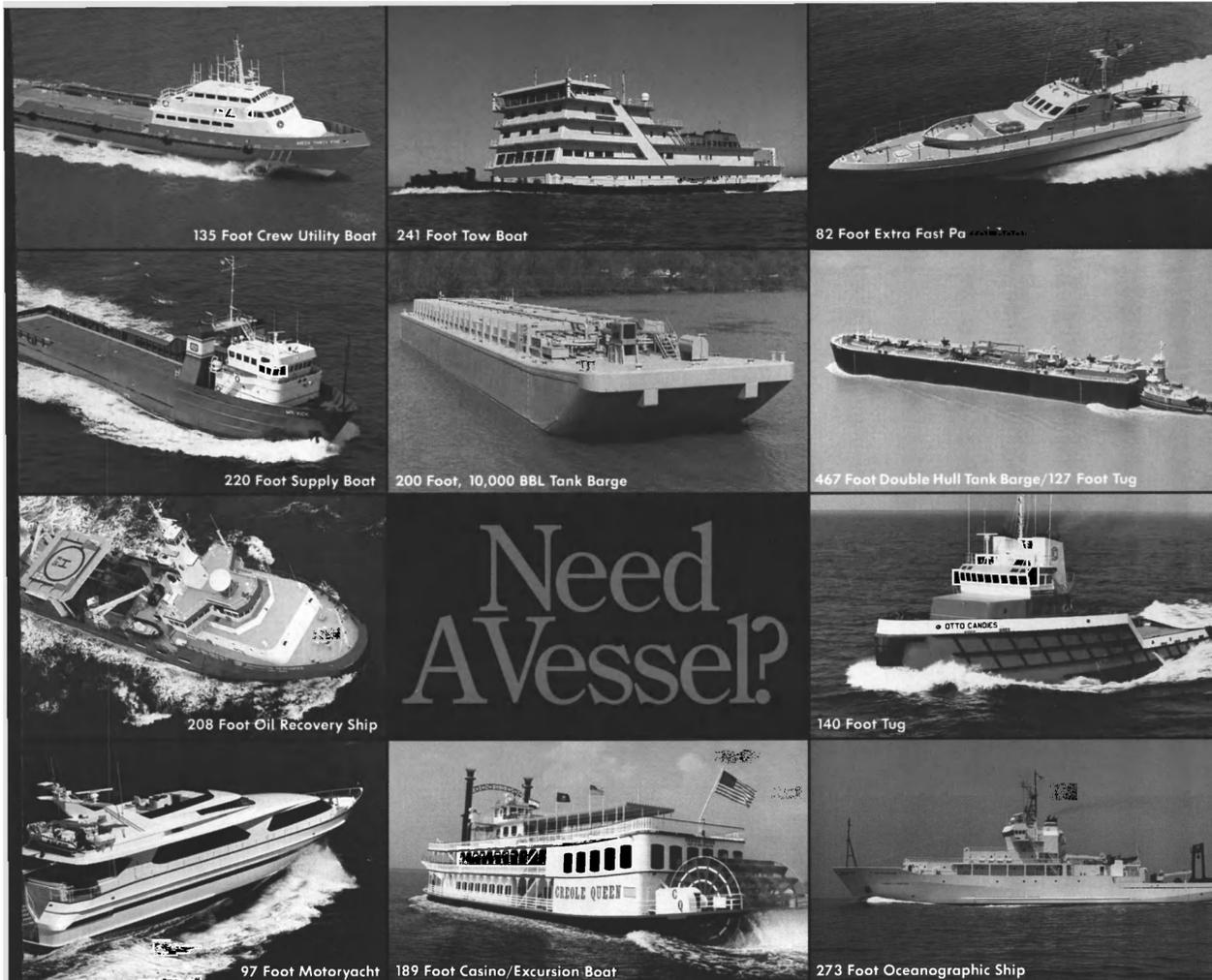
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## PRINCIPAL WORLD SHIPBUILDING CONTRACTS RECORDED — June & July

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<b>PRINCIPAL CONTRACTS, 1995 JUNE RECORDED (ALPHABETICALLY BY VESSEL TYPE)</b>													
KLAUS OLDENDORFF	CYPRUS	HALLA	KOREA	BULK CARRIER	CAPESIZE	2	—	164,000	—	—	—	97	86
NOL	JAPAN	DAEWOO	KOREA	BULK CARRIER	CAPESIZE	1	—	170,000	—	—	—	97	43
NYK	JAPAN	DAEWOO	KOREA	BULK CARRIER	COAL	1	—	—	—	—	—	96	30
ALGOMA CORP.	CANADA	GDANSK	POLAND	BULK CARRIER	OPEN HATCH	2	—	48,000	—	—	—	97	—
NOL	SINGAPORE	SAMSUNG	KOREA	BULK CARRIER	PANAMAX	4	—	73,000	—	—	—	97/98	114
COSMOS SHIPPING	—	NAKAI	—	BULK CARRIER	—	1	—	23,400	—	—	—	7/95	—
OLAMAR NAVEGACI	—	NAKAI	—	BULK CARRIER	—	1	—	27,500	—	—	—	1/96	—
MORDEUTSCHE REEDEREI	GERMANY	YARMA SHIPYARD	BULGARIA	BULK CARRIER	—	2	—	41,600	24,700	—	—	—	—
GLOBAL MARITIME VENTURES	MALAYSIA	JIANGHAN	CHINA	BULK CARRIER	—	2	—	—	—	—	—	—	—
PACIFIC BASIN SHIPP. & TRAD.	HONG KONG	SIANGAI SY.	CHINA	BULK CARRIER	—	2	—	24,000	—	—	—	96	18
APO OCEAN SA	PANAMA	TSUNESHII	JAPAN	BULK CARRIER	—	1	—	45,000	—	—	—	9/95	—
GOLDEN OCEAN GROUP	HONG KONG	NKK	JAPAN	BULK CARRIER	—	2	—	170,000	—	—	—	96	—
LONG RIVER MARI	—	TSUNESHII	JAPAN	BULK CARRIER	—	1	—	45,000	—	—	—	3/96	—
MITSUI OSK	JAPAN	SANOYAS	JAPAN	BULK CARRIER	—	1	—	49,000	—	—	—	7/97	30.9
MORNING DAEDAH	—	NAMURA	JAPAN	BULK CARRIER	—	1	—	71,200	—	—	—	7/95	—
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NIPPON YUSEN	JAPAN	HOKODATE	JAPAN	BULK CARRIER	—	1	—	20,000	—	—	—	8/96	27.25
PRAIRIE HOLDING	PANAMA	HITACHI	JAPAN	BULK CARRIER	—	1	—	71,000	—	—	—	10/97	—
ROSCOE SHIPPING	—	TSUNESHII	JAPAN	BULK CARRIER	—	1	—	45,000	—	—	—	2/97	24
SILVER RIVER MA	—	TSUNESHII	JAPAN	BULK CARRIER	—	1	—	45,000	—	—	—	9/96	—
SUN LINE SHIPPING	JAPAN	NAKAI	JAPAN	BULK CARRIER	—	1	—	27,000	—	—	—	—	—
SUN OCEAN BULK	—	TSUNESHII	JAPAN	BULK CARRIER	—	1	—	45,000	—	—	—	8/95	—
U-NING MARITIME TRANSPORTS	—	HIPPON KKK	JAPAN	BULK CARRIER	—	1	—	170,000	—	—	—	11/96	—
BHP	AUSTRALIA	DAEWOO	KOREA	BULK CARRIER	—	2	—	170,000	—	—	—	96/97	—
FAIRSKY SHIPPING	GREECE	DAEWOO	KOREA	BULK CARRIER	—	3	—	43,530	—	—	—	96/97	—
KLAUS OLDENDORFF	CYPRUS	HALLA	KOREA	BULK CARRIER	—	2	—	170,000	—	—	—	97	88
—NHC	—	DAEWOO	KOREA	BULK CARRIER	—	1	—	16,980	—	—	—	12/96	—
PARAKON SHIPPING	HONG KONG	DAEWOO	KOREA	BULK CARRIER	—	2	—	46,500	—	—	—	97	—
SHOUANG	HONG KONG	DAEWOO	KOREA	BULK CARRIER	—	3	—	210,800	—	—	—	96/97	—
FH LORENTZEN	NORWAY	IMABARI	JAPAN	BULKER	PANAMAX	1	—	68,550	—	—	—	96	—
IRSL	IRAN	3 MAJ	CROATIA	CARGO HP	—	2	—	—	—	—	—	96	—
LIBRA GROUP	BRAZIL	IV	BRAZIL	CONTAINER	—	3	2,300	—	—	—	—	—	—
LIBRA GROUP	BRAZIL	IV	BRAZIL	CONTAINER	—	3	1,700	—	—	—	—	—	—
JUHLKE	GERMANY	MAWEI	CHINA	CONTAINER	—	1	617	7,800	5,400	—	—	8/96	—
P & O CONTAINERS	UK	HDW	GERMANY	CONTAINER	—	4	6,300	—	—	—	—	97/98	—
THEN & HEYENGA	GERMANY	MUTZELFELDTWERFT	GERMANY	CONTAINER	—	1	375	—	—	—	—	—	0
RCL	THAILAND	MITSUBISHI	JAPAN	CONTAINER	—	2	1,400	21,000	—	—	—	—	50
COMTI REEDEREI	GERMANY	DAEWOO	KOREA	CONTAINER	—	6	3,660	—	—	—	—	—	276
COMTI REEDEREI	GERMANY	DAEWOO	KOREA	CONTAINER	—	2	2,100	—	—	—	—	—	60
COMTI REEDEREI	GERMANY	DAEWOO	KOREA	CONTAINER	—	4	—	21,450	—	—	—	97	—
DETEN	GERMANY	HALLA	KOREA	CONTAINER	—	2	2,500	36,100	35,300	—	—	96	—
HONG KONG TOWAGE & SALV.	HONG KONG	DAE DONG	KOREA	CONTAINER	—	2	115	2,000	1,500	—	—	96	—
KMTC / NAMSUNG SHIPPING	KOREA	SHIN-A SHIPBUILDING	KOREA	CONTAINER	—	3	342	5,000	—	—	—	2/96	25.5
DUTCH INTEREST	NETHERLANDS	TILLE SCHEEPSLOUW	NETHERLANDS	CONTAINER	—	2	207	2,800	—	—	—	96	—
ALPHA SHIPPING	GERMANY	GDYNIA	POLAND	CONTAINER	—	2	1,100	—	—	—	—	97	—
SECSO INTEREST	CYPRUS	SEZCECH	POLAND	CONTAINER	—	1	1,654	22,330	—	—	—	5/97	—
FESCO	RUSSIA	SEZCECH	POLAND	CONTAINER	—	3	1,726	22,900	—	—	—	98	—
HORN BALTIC	CYPRUS	SEZCECH	POLAND	CONTAINER	—	1	1,726	22,900	—	—	—	11/98	—
PRODEX SCHIFF	GERMANY	GDYNIA	POLAND	CONTAINER	—	2	—	30,600	—	—	—	96/97	—
CHINES INTERESTS	CHINA	IHC	NORWAY	DREDGER	—	5	—	—	—	—	—	—	102.5
RAVNSBORG KOMMUNE	DENMARK	ASSENS SKIBSVAERFT	DENMARK	FERRY	—	1	—	—	—	—	—	5/96	—
SNCM	FRANCE	LEROUX ET LOTZ	FRANCE	FERRY	—	1	—	—	—	—	—	96	28
CORSICA FERRIES	ITALY	INMA	ITALY	FERRY	—	1	—	—	3,300	—	—	3/96	—
STENA LINE	SWEDEN	WESTMARIN	NORWAY	FERRY	—	2	—	—	—	900 pax, 210 cars	—	—	—
WASHINGTON STATES DEP.	US	TODD	US	FERRY	—	2	—	—	—	—	—	99	—
THOMPSON ISLAND OUTWARD	US	GLADDING-HEARN	US	FERRY	—	1	—	—	—	—	149	—	—
SALPIQUET	FRANCE	H.J. BARREAS	SPAIN	FISHING	—	2	—	—	—	—	—	—	—
BP	UK	HARLAND & WOLFF	UK	FPSO	—	1	—	140,000	—	—	—	9/97	—
ANTHONY VEDER	NETHERLANDS	SHANGAI EDWARD	CHINA	GAS CARRIER	—	2	—	—	—	—	4,200	11/96	69
CORAL CANAL SA	PANAMA	KURINOURA	JAPAN	GAS CARRIER	—	1	—	3,821	—	—	—	95	—
CYPRUS INTEREST	CYPRUS	JIANGHOU	CHINA	GENERAL CARGO	—	4	—	6,000	4,800	—	—	96/97	—
JEBSEN	NETHERLANDS	KOMARNO	SLOVAKIA	GENERAL CARGO	—	3	—	3,700	2,446	—	—	—	95
A. VEDER GAS CARRIERS	NETHERLANDS	S. EDWARD SHIPBLDG.	—	LPG	—	2	—	4,000	—	—	—	—	—
BERGSEN	NORWAY	HUMDAY	KOREA	ORE CARRIER	—	1	—	220,000	—	—	—	97	—
NEW YORK FAST FERRY SERV.	US	DEREKTOOR SY.	SINGAPORE	PASSENGER	CATAMARAN	3	—	—	—	350 pax	—	96/97	—
BLUE LAGOON CRUISES LTD.	FUJI	ASENAV	CHILE	PASSENGER	—	1	—	—	—	72	—	—	—
LODSREGULERINGSFONDEN	DENMARK	DOCKSTAVARVET	—	PILOT BOATS	—	6	—	—	—	—	—	11/97	—
JOOHON MARINE	—	KYOKUYO	JAPAN	REEFER	—	1	—	5,000	—	—	—	12/95	—
NIPPON YK	JAPAN	IMABARI	JAPAN	REEFER	—	4	—	10,500	—	—	520,000 cu ft	96	—
NYK	JAPAN	IMABARI	JAPAN	REEFER	—	4	—	—	—	—	520,000 cu ft	96	120
S. KOREAN GOVERNMENT	KOREA	HANJUN	KOREA	RESEARCH	—	1	—	—	2,000	—	—	12/95	—
IRSL	IRAN	ULLANIK	CROATIA	RoRo	—	2	—	22,000	—	—	—	96	—
ITALIAN INTEREST	ITALY	C.N. VISENTINI	ITALY	RoRo	—	2	—	10,000	13,000	—	—	96/97	—
KARLSKRONAVARVET	SWEDEN	CHARTERFRAKT	SWEDEN	RoRo	—	1	—	5,500	—	—	—	—	—
HALTER MARINE	US	TAMPA SHIPYARDS	USA	SWATH	—	1	—	5,400	—	—	—	12/98	60
SEABULK	NORWAY	IMABARI	JAPAN	TANKER	AFRAMAX	1	—	—	—	—	—	—	—
KIWI SHIPPING	—	MINAMI	JAPAN	TANKER	CHEMICAL	1	—	30,000	—	—	—	5/96	—
MITSUI OSK	JAPAN	MINAMI NIPPON	JAPAN	TANKER	CHEMICAL	2	—	30,000	20,600	—	—	96	—
MISC	—	CHEUNG KU	KOREA	TANKER	CHEMICAL	1	—	8,000	—	—	—	97	18
OSPREY MARITIME	SINGAPORE	HALLA	KOREA	TANKER	CHEMICAL	2	—	46,000	—	—	—	97	62
MISC	—	MALAYSIA SHIPYARD	MALAYSIA	TANKER	CHEMICAL	1	—	8,000	—	—	—	97	18
STATOIL	NORWAY	SAMSUNG	KOREA	TANKER	MULTI-ROLE	1	—	103,000	—	—	—	6/97	—
NOL	SINGAPORE	ONOMICHI	JAPAN	TANKER	PRODUCT	2	—	46,500	28,400	—	—	96/97	—
TACT OCEAN SA	PANAMA	FUKUOKA	JAPAN	TANKER	PRODUCT	1	—	5,500	—	—	—	4/96	—
THETA MARITIME CO.	—	FUKUOKA	JAPAN	TANKER	PRODUCT	1	—	11,200	—	—	—	7/96	—
HIN LEONG MARITIME INT.	—	PRESIDENT MARINE	SINGAPORE	TANKER	PRODUCT	2	—	7,500	—	—	—	95/96	—
FINAVAL SPA	ITALY	APULANIA	—	TANKER	PRODUCT	1	—	—	—	—	—	97	—
VAN DAMMEREN	NETHERLANDS	NEWPORT NEWS	US	TANKER	PRODUCT	5	—	46,000	—	—	—	97	233.7
KIWI SHIPPING	—	MINAMI	—	TANKER	—	1	—	30,000	—	—	—	2/96	—
STOLT PARCEL	NORWAY	ACH	—	TANKER	—	3	—	37,000	—	—	—	97/98	—
ANDERS WILHELMSEN	NORWAY	DALLAN	CHINA	TANKER	—	1	—	150,000	—	—	—	6/97	—
NORSK HYDRO	—	KVAEKNER MASA	FINLAND	TANKER	—	1	—	110,000	—	—	—	6/97	76
NEW SEAGULL	—	KURINOURA	JAPAN	TANKER	—	1	—	9,300	—	—	—	95	—
AMERICAN HEAVY	US	DAEWOO	KOREA	TANKER	—	2	—	38,289	—	—	—	96/97	—



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OWNER/OPERATOR	COUNTRY	SHIPYARD	COUNTRY	TYPE	SUBTYPE	No.	TEU	DWT	GT	CAR/TRAIL/PAX	M. CU.	DELIVERY	PRICE M/S
KRISTEN	GREECE	DAEWOO	KOREA	TANKER		3		97,500				96/97	
AMERICAN HEAVY	US	AVONDALE	US	TANKER		2		38,757				96	
DANMERBORG REDERI	DENMARK	ALABAMA SHIPYARD	USA	TANKER		3		16,000					80.5
PORT OF CORK AUTHORITY	IRELAND	ZAMAONA	SPAIN	TUG		1						96	
WUNNE & BARENDIS BV	NETHERLANDS	NIESTERN SANDER	HOLLAND	WOOD CARRIER		2		4,250				497	21.79
KEOYANG SHIPPING		HANJIN	KOREA	WOOD CARRIER		2		48,000				96/97	85
<b>PRINCIPAL CONTRACTS, 1995 JULY RECORDED</b>													
TRANSPORT	FRANCE	ATELIER & CHANTIERS	FRANCE	BARGE		4		2,500				95/96	
CCNI	CHILE	SZCZECIN	POLAND	BULK CARRIER		6		45,000				from 10/97	180
NAVIX LINE	JAPAN	L.H.L.	JAPAN	BULK CARRIER	CAPE SIZE	1		170,000	87,000			4/97	
NAVIX LINE	JAPAN	NKK CORPORATION	JAPAN	BULK CARRIER	CAPE SIZE	1		150,000	77,000			8/96	
ITOCHU CORP./NISHIO IWA	JAPAN	TSUNESHI	JAPAN	BULK CARRIER	PANAMAX	2		69,000				97	60
PARAKOU + SINOTRANS	HONG KONG	HALLA	KOREA	BULK CARRIER	PANAMAX	2		72,000				97	57
KEOYANG SHIPPING	KOREA	HHI	KOREA	BULK CARRIER	WOODCHIP	1		48,000				96/97	85
A. P. MOLLER	DENMARK	TSUNESHI	JAPAN	BULK CARRIER		2		68,000	36,800			97	
B. RICHMERS	GERMANY	SZCZECIN	POLAND	BULK CARRIER		2		45,000				from 12/97	60
CHI LING	GERMANY	MITSUBISHI	JAPAN	BULK CARRIER		1		23,400				9/96	
CHINA STEEL CORPORATION	CHINA	CHINA SHIPBUILDING	CHINA	BULK CARRIER		3		132,000				97	
GOLDEN SHIHOL MAR.	JAPAN	ONOMICHI	JAPAN	BULK CARRIER		1		23,400				10/96	
JAPANESE INTEREST	JAPAN	IMABARI	JAPAN	BULK CARRIER		1		73,500	40,500			95	
JAPANESE INTEREST	JAPAN	SUMITOMO	JAPAN	BULK CARRIER		1		70,000	36,600			96	
N.Y.K.	JAPAN	SAIKI	JAPAN	BULK CARRIER		1		23,400	14,700			96	
NATIONAL NAVIGATION CO.	EGYPT	DAEWOO	KOREA	BULK CARRIER		1		70,000				97	29
NORDDEUTSCHE VERMOEGEN	GERMANY	YARNA	BULGARIA	BULK CARRIER		1		41,400	24,700			96	
NYK	JAPAN	HAKODATE	JAPAN	BULK CARRIER		1		27,800				7/96	
PAN OCEAN	PANAMA	DAEDONG	KOREA	BULK CARRIER		2		73,000				97	57
RAINBOW MARITIME	JAPAN	SAIKI	JAPAN	BULK CARRIER		1		23,400	14,700			96	
SATO KISEN	JAPAN	IMABARI	JAPAN	BULK CARRIER		1		69,100	35,900			95	
YUSEN MARINE SCIENCE	JAPAN	SANOYAS	JAPAN	BULK CARRIER		1		69,000	36,600			96	
UNKNOWN		SHIN-A	KOREA	CEMENT CARRIER		1		9,500	6,100			96	
HAN SUNG SHIPPING CO.	KOREA	SHIN-A	KOREA	CONTAINER		2	342	5,900	4,000			96	
ALPHASHIP	GERMANY	SZCZECIN	POLAND	CONTAINER		4	1,600					97	
COMP SUD AMERICA		SZCZECIN	POLAND	CONTAINER		1	1,729	22,900				7/97	29
CONTI REEDEREI	GERMANY	DAEWOO	KOREA	CONTAINER		2	2,100					97	80
DECO LINE		SIETAS	GERMANY	CONTAINER		1	900	13,000				96	
FAR EASTERN SHIPPING	RUSSIA	SZCZECIN	POLAND	CONTAINER		3	1,726	22,900				98	90
HANJIN SHIPPING	KOREA	HANJIN	KOREA	CONTAINER		1	4,950	68,500				6/97	77.5
HANJIN SHIPPING	KOREA	HANJIN	KOREA	CONTAINER		1	4,024	53,000				10/97	67.5
HANJIN SHIPPING CO.	KOREA	HANJIN	KOREA	CONTAINER		1	5,000	68,500	66,500			97	
HANJIN SHIPPING CO.	KOREA	HANJIN	KOREA	CONTAINER		1	4,024	62,700	50,700			97	
HARRY BROEFHAN	GERMANY	SIETAS	GERMANY	CONTAINER		1	900	13,000				7/96	
HERMANN BUSS	GERMANY	NTW	GERMANY	CONTAINER		2	1,618	22,083	15,922			96/97	
HORN BALTIC		SZCZECIN	POLAND	CONTAINER		1	1,726	22,900				10/98	30
NIEDERELBE SCHIFFAHR	GERMANY	SAMSUNG	KORLA	CONTAINER		1	2,760	35,200	31,000			97	
TASMAN EXPRESS	NEW ZEALAND	HEGEMANN, DETLEF	GERMANY	CONTAINER		2	565	5,700	4,000			96	
UNILINE NAV UNIVERSAL	PERU	SZCZECIN	POLAND	CONTAINER		2	1,116	12,400				9/97	20
UNITED ARAB SHIPPING CO.	KUWAIT	JAPANESE ALLIANCE	JAPAN	CONTAINER		10	3,500					97/98	

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Friday, October 6: 10 am to 4 pm

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OWNER/OPERATOR	COUNTRY	SHIPYARD	COUNTRY	TYPE	SUBTYPE	No.	TEU	DWT	GT	CAR/TRAIL/PAX	M. CU.	DELIVERY	PRICE M \$
UNKNOWN	—	SHIN-A	KORLA	CONTAINER	—	1	342	6,000	4,000	—	—	96	—
UNKNOWN	UK	STOCZNA	POLAND	CONTAINER	—	1	2,000	30,300	—	—	—	97	—
WORDEN, K.W.T.	GERMANY	MTW	GERMANY	CONTAINER	—	1	1,618	22,083	15,922	—	—	96	—
NINA SPA	ITALY	SOC. ESERCIZIO	ITALY	CRUISE	—	1	—	4,000	24,000	720 pax.	—	97	—
GESSELLCHAFT OLTTRANSPORT	GERMANY	BSC	BELGIUM	CHEMICAL	—	6	—	3,000	—	—	—	96/97	—
DORVAL SHIPPING	JAPAN	FUKUOKA	JAPAN	CHEMICAL	—	2	—	11,500	—	—	—	95/96	25.48
MITSU OSK	JAPAN	MINAMI NIPPON	JAPAN	CHEMICAL	—	2	—	45,000	—	—	—	96/97	—
KURAN RIVER SHIPPING	RUSSIA	ADMIRALTYWERKE	GERMANY	DRY CARGO	—	2	—	2,800	2,800	—	—	96	—
DELITS. FAHRGSELLSCHAFT	GERMANY	SEEBECKWERFT	GERMANY	FERRY	—	1	—	30,000	35,000	900 pax.	—	97	107
TRANSTUR AEROBARCO	BRAZIL	KVAERNER FJELL	SINGAPORE	FERRY	—	2	—	—	—	—	—	9/95	—
UECC	—	WELGELEGEN	NETHERLANDS	FERRY	—	3	—	—	—	1,100 cars	—	from 10/96	—
UNKNOWN	INDONESIA	MEYER WERFT	GERMANY	FERRY	—	2	—	3,500	14,000	2,000 pax.	—	97	105
TRASMED	GREECE	CANTIERI NAVALI	ITALY	FERRY RoRo	—	1	—	3,300	—	450 pax, 150 cars	—	6/96	87
ALBACORA	SPAIN	ASTILLEROS ESPAÑOLES	SPAIN	FISHING	—	1	—	3,500	2,500	—	—	96	—
ATUNSA	SPAIN	ASTILLEROS ESPAÑOLES	SPAIN	FISHING	—	1	—	3,600	2,600	—	—	96	—
SALPIDJET	FRANCE	ASTILLEROS ESPAÑOLES	SPAIN	FISHING	—	2	—	3,600	2,600	—	—	96	—
NORSK HYDRO	NORWAY	KVAERNER MASA TURKU	FINLAND	FSU	—	1	—	—	—	—	112,000	7/97	76
OY LANG SHIP AB	FINLAND	SIETAS	GERMANY	LO-LO CARGO	—	3	—	6,400	—	—	—	96	—
KYONGJIN	KOREA	SHIN KURUSHIMA	JAPAN	LPG	—	1	—	5,100	6,300	—	6,500	95	—
LATVIAN SHIPPING	UK	HYUNDAI	KORLA	LPG	—	2	—	—	—	—	20,500	97	50
SLOMAN NEPTUN	GERMANY	APPLEDORE	UK	LPG	—	1	—	—	—	—	5,600	—	—
TARQUIN SHIPPING	UK	HYUNDAI	KORLA	LPG	—	2	—	—	—	—	7,200	97	25
FAR EASTERN SHIPPING CO.	RUSSIA	AMUR SHIPYARD	RUSSIA	MULTI PURPOSE	—	6	—	5,295	—	—	—	95/97	—
WAGENDROG SHIPPING BV	NETHERLANDS	VOUARDING	NETHERLANDS	MULTI PURPOSE	—	1	—	4,140	2,785	—	—	96	—
ENGSHIP	FINLAND	SIETAS	GERMANY	MULTI PURPOSE	—	3	—	7,000	—	—	—	96	—
SEARADE GRONINGEN	NETHERLANDS	—	INDONESIA	REEFER	—	4	—	—	—	—	500,000	from 97	—
BIRKA LINE	FINLAND	FOSEN	NORWAY	RO-RO	—	4	—	8,800	—	—	—	97/98	—
FRED OLSEN & CO.	NORWAY	FINCANTIERI	ITALY	RO-RO	—	2	—	12,000	—	—	—	97/98	96.8
GRIMALDI	ITALY	FINCANTIERI	ITALY	RO-RO	—	1	—	—	—	—	—	98	—
GRIMALDI	ITALY	APUNIA	ITALY	RO-RO	—	1	—	—	—	1,300 pax.	—	97	—
AP MOLLER	DENMARK	ULSTEIN	NORWAY	SUPPLY	—	1	—	8,800	—	—	—	7/96	32.3
MISC	MALAYSIA	HYUNDAI	KORLA	TANKER	AFRAMAX	2	—	105,000	—	—	—	97	—
MITSU OSK	JAPAN	MINAMI NIPPON	JAPAN	TANKER	METHANOL	1	—	30,000	—	—	—	97	38
ELEFSON MARITIME	GREECE	NEWPORT NEWS	US	TANKER	PRODUCTS	2	—	46,500	26,000	—	—	97	—

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### New Naval Architecture Firm Opens Florida Office

**Boris W. Kiriloff**, naval architect, marine engineer, and consultant, has formed Kiriloff & Associates, Inc.

The new firm will offer complete naval architecture, marine engineering and design services for new construction, modification, conver-

sion, and repair projects. Project management, owner representation and shipyard supervision services will also be provided. Current projects contracted by Kiriloff & Associates include:

- The refit of the 240-ft. (73.1-m) USS *Williamsburg*, former presidential yacht of **Harry Truman**;
- Exploring the feasibility of converting former ocean liner SS *United States* into a luxury casino/

hotel resort.

For more information on Kiriloff & Associates Circle 143 on Reader Service Card

### O'Keene Joins Palmer Johnson Yacht Sales

**Bill Parsons**, president of Palmer Johnson Yacht Sales, located on the Great Lakes in Wiscon-

sin, announced the appointment of **Donald O'Keene** to the vice presidency of the company. Mr. O'Keene will direct the marketing of the Grand Banks and Eastbay range, and plans to add other franchises in the future. In the past, Mr. O'Keene was owner/operator of DOK Sail Makers in Lake Forest, Ill., and served as yard manager and sales manager at Larsen Marine. The Palmer Johnson sales team will operate out of the company yards in Racine and Sturgeon Bay.

Palmer Johnson specializes in the construction of large custom and semi-custom motor and sailing yachts. The company also operates a refit base in Savannah, Ga., and has international offices in London, Singapore, and Antibes, France.

For more information on Palmer Johnson Yacht Sales Circle 144 on Reader Service Card



Don O'Keene

## 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 Selsakusho 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 - F-37 (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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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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### Scott Elected President of ASNE

**Robert J. Scott**, vice president of Gibbs & Cox, Inc., was elected president of the Executive Council of the American Society of Naval Engineers (ASNE) for a two-year term that began July 1, 1995. Mr. Scott recently served as vice president of the association, and assumes leadership from **Radm. George P. Nanos, Jr.**

Mr. Scott has served ASNE in numerous capacities since becoming an active member in 1974, including as vice president and treasurer of the New York Metropolitan Section, co-chairman of the ad hoc committee on ASNE headquarters relocation, and as chairman of the Council's Ways and Means Committee. He was responsible for developing a staff compensation plan and professional engineering licensing initiative. Mr. Scott also authored a book, *Fiberglass Boat Design and Construction*.

As president of ASNE, Mr. Scott has identified goals for the association to strive towards, including: increasing society membership and attracting younger members; fostering a strong relationship between ASNE and sister societies in an attempt to share resources and reduce competition by working cooperatively; improving the exchange and participation between ASNE national and local sections; continuing to increase activities in professional development; and implementing joint sponsorship of seminars and exchange programs for publishing technical material from outside the U.S.



Robert J. Scott

## TANKERS FOR RUSSIA TO BE BUILT IN U.S.

*Avondale in deal for seven 42,000-dwt double hull product carriers, pending Title XI financing approvals*

Avondale Industries Inc. signed a contract with the Primorsk Shipping Corp. of Nakhodka, Russia, for the construction of seven 42,000-dwt double hull product carriers.

"This is a significant event in our strategic plan for increasing our commercial activities," said **Albert L. Bossier Jr.**, Avondale's CEO. Financial details were undisclosed at press time, and the contract is subject to a Title XI financing guarantee from MarAd as well as the satisfaction of certain other conditions. The vessels will be non-U.S.-flag and will comply with all of the requirements of OPA 90. All seven are scheduled to be delivered prior to the end of 1998.

The product carriers will measure 627.3 x 105.5 x 60 ft. (191.2 x 32.3 x 18.3 m) and will be propelled by a slow-speed diesel. Accommodations will be for a complement of 33 crew members. As a result of this first contract for Avondale's standard tanker, the name Primorsk

Class has been selected for the design. Mr. **Bossier** attributed much of the yard's current success to capital improvements. "Our current shipyard modernization effort, which is financed primarily using MarAd's Title XI program, played an important role in our ability to compete effectively in both the domestic and international commercial markets," he said. The Avondale modernization effort involves a \$20 million facility upgrade called "The Factory," which will provide efficient steel fabrication under cover. The area of the new steel processing facility is approximately 570,000 sq. ft. The design of the vessel was accomplished in-house with all Avondale departments supporting the Advanced Programs and Mar-

keting Department. The effort was performed under the Maritech program, part of President **Bill Clinton's** five-part plan to assist the shipbuilding industry in international competition.

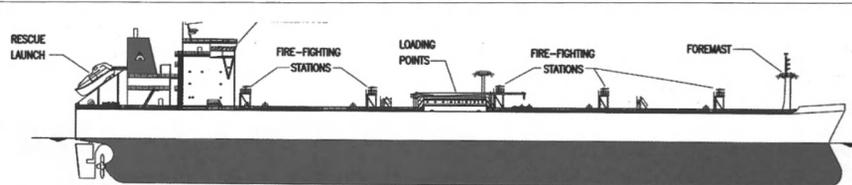
Primorsk Shipping Corp. is a publicly quoted company on the Vladivostok Stock Exchange. It is the first Russian shipping company to have been 100 percent privatized (in 1994), and its origins go back to 1969 when it was created as the tanker operating arm of Far Eastern Shipping Co. In 1972 it became an independent entity. Primorsk, the second largest Russian tanker company, owns and operates 43 tankers.

For more information on Avondale Circle 169 on Reader Service Card

### From the CEO



"This is a significant event in our strategic plan for increasing our commercial activities"—**Albert Bossier Jr.**



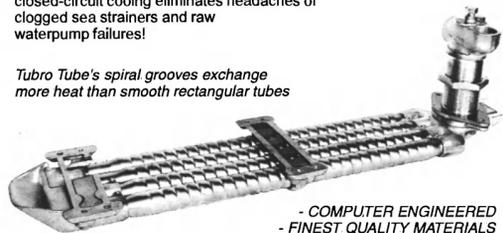
Design of the 42,000-dwt created and to be built by Avondale for a Russian owner.

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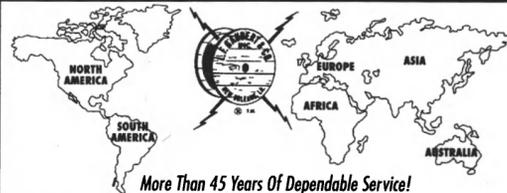
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## The Importance Of Residual Value

by Sydney P. Levine, president,  
Shipping Intelligence

Whenever the negotiations for the sale of a ship become serious, one or more of the parties to the deal will try to estimate the future value of the ship, the so-called residual value. The residual value has a substantial effect on the Internal Rate of Return of a proposed ship investment, and both the buyer and the seller know it. Consequently, the final agreement between buyer and seller is often significantly influenced by the residual value.

From the leading institution's perspective, the residual value anchors the depreciation curve of the asset against which the money is lent. The residual value affects the spread between the loan's outstanding balance and the asset's estimated value during the entire life of the loan. And if there is a sizable balloon payment at the end of the loan, the significance of the residual value is magnified.

Given the obvious importance of the residual value estimate, one would expect that a great deal of thought and care would go into calculating it. Often, however, that appears not to be the case.

At the recent Sixth Annual Ship Finance Conference in New York, I presented evidence to show that residual value was frequently estimated by simply assuming that current market conditions would continue unchanged into the future. For the ship resale market, universally regarded being volatile and eccentric, such an unrealistic assumption leads to strange and un-

expected results.

Specifically, this method of estimating residual value leads to two situations that are frequently seen and often attributed to luck, good or bad.

First, when markets are weak — low ship prices and low charter rates — residual values are underestimated. When the market eventually turns, the owner may experience a windfall profit when the resale price of the vessel exceeds the estimated residual value. The second situation, in parallel to the first, is when markets are strong — high ship prices and high charter rates. Then residual values are overestimated, and when the market eventually turns, the owner may find that the resale price is less than the estimated residual value. Two questions come immediately to mind: first, why are residual values being calculated so poorly, and second, is there a better way to do it?

To answer the first question, two factors influence the poor choice of residual values. First, there is little organized historical data available upon which to base estimates of the future. This may seem to be a strange statement when reports of sales are published daily. Nevertheless, there are very few easily accessible databases with information of this type. And second, without reliable historical data, personal memory, experience and market "feel" are used. In the absence of any factually based arguments to the contrary, a continuation of the present market status may seem reasonable.

To answer the second question, there is a better way to calculate residual value, and that is the inflation-adjusted historical average sale price. The reason for this choice is simple. It is not possible to accurately forecast specific market phenomena such as ship values, except possibly in the very near term. When predictions are needed for several years into the future, the most prudent guess — and it is just a guess — is the inflation-adjusted historical average.

In 1986, Shipping Intelligence started collecting data about the sale of ships. Currently, there is information on more than 5,000 sales, and the databases are updated almost daily. The reason for building this database was to construct a statistical model of the ship resale market, and that project now publishes the twice monthly *Shipping Intelligence Shipping Monitor*. More recently, Shipping Intel-

ligence has become involved in evaluation of proposed ship investments. The company soon realized it needed better estimates for ship residual values, and decided to use the inflation-adjusted historical average. With this, the company was able to calculate estimates directly from its ship sale database. While the database itself is proprietary, residual value information derived from it is available in several forms. A Ship Resale and Residual Value Guide has been published that con-

tains residual value estimates for 20 different sizes of bulk carriers and tankers at a variety of critical ages. An example of this type of information included in the guide is shown in the accompanying table (below, left). For particular investment evaluations, a report containing extensive statistical and historical information is available.

For information on these reports, contact Shipping Intelligence at tel: (212) 997-0966; fax: (212) 997-1105.

### Recent Ship Sales

This report, compiled by Shipping Intelligence, Inc., a New York maritime consulting firm, tracks sale prices of secondhand bulk carriers and tankers.

Date Reported	Vessel Name	Vessel Type	DWT	Year Built	Sale Price (M)
7/95	Sarinderjit	Bulker	10,144	75	\$1.8
8/95	Kition	Bulker	18,692	81	\$6.3
7/95	Shinshima	Bulker	20,986	82	\$7.9
8/95	Keyera	Bulker	23,386	84	\$9.35
8/95	Daoyang Harmony	Bulker	24,017	74	\$3.05
7/95	Rover	Bulker	24,274	79	\$6
7/95	Future Crows	Bulker	26,973	90	\$17
8/95	Eratini	Bulker	27,372	68	\$9.99
8/95	May Lily	Bulker	28,780	82	\$10.2
8/95	Norman Queen	Bulker	32,131	73	\$3.5
8/95	Seavenus	Bulker	34,370	70	\$2.7
8/95	Trans Comfort	Bulker	35,208	76	\$6.5
8/95	Nomadic Dixie	Bulker	35,223	75	\$6.7
7/95	Callan S	Bulker	35,224	74	\$4.5
8/95	Esmeralda I	Bulker	37,096	84	\$15.5
7/95	La Marquesa	Bulker	37,994	89	\$11.9
8/95	Mary M	Bulker	41,100	75	\$5.5
8/95	Mary L	Bulker	41,102	74	\$4.8
7/95	Baune	Bulker	41,800	86	\$17.625
7/95	Bulk Garnet	Bulker	42,609	86	\$16.5
7/95	Darya Tara	Bulker	43,569	86	\$17.2
7/95	Sea Prosper	Bulker	45,345	85	\$15.9
8/95	Calima	Bulker	46,913	85	\$16.2
7/95	Pilion	Bulker	47,893	84	\$17
7/95	Venus	Bulker	54,317	77	\$11
8/95	Mirs Bay	Bulker	64,120	81	\$11.650
7/95	Suvretta	Bulker	64,482	78	\$9.5
8/95	Evangelica T	Bulker	65,698	74	\$6
8/95	Helen	Bulker	66,324	83	\$14.35
8/95	Seaqueen II	Bulker	68,278	73	\$4.5
8/95	Longevity	Bulker	69,428	81	\$12.25
7/95	De Poterne	Bulker	70,255	93	\$27.5
7/95	Marvellous	Bulker	151,376	89	\$30
7/95	Mineral Zulu	Bulker	170,698	86	\$25
8/95	Doha Star	Tanker	12,545	73	\$1.8

For more information call (212) 997-0966; or fax: (212) 997-1105.

### Ship Resale/ Residual Values

Inflation Adjusted Historic Averages  
(in 1995 dollars (millions))

Ship Type: 65,000-dwt Bulk Carrier

Age Yrs	Average Value	High Value	Low Value
10	\$15	17.1	13.1
15	\$9.7	11.0	8.4
20	\$5.0	5.7	4.4
25	\$2.5	2.8	2.1

## BUILD NOW: Low Prices, Tightening International Regs Make Newbuilds Attractive

A modest positive for tanker owners is that 1995 world oil demand is now expected to rise more than had been earlier estimated, is just one of the conclusions drawn by the *Lazard Freres Shipping Monitor*.

The International Energy Agency (IEA), citing a smaller seasonal decline in oil use in the former Soviet Union than previously forecast, projected a 1.9 percent gain in global demand for the second quarter to 67.5 million barrels a day, a revision 200,000 barrels a day higher than its projections from the month before. The IEA also indicated that world demand rose more in the first quarter than its initial data had indicated. The IEA increased its global demand forecast for 1995 by 100,000 barrels a day to 69.3 million barrels a day as compared to 1994's global consumption of 68.2 million barrels/day. The *Shipping Monitor* predicts that if the latest forecast proves accurate, OPEC should be the chief beneficiary. The IEA estimated that the amount of oil needed from OPEC, before adjustments to world oil inventories, should average 24.9 million barrels a day for the year, or 100,000 barrels a day more than the agency forecast a month ago.

IEA figures also show that OPEC is already producing at least 500,000 barrels a day more oil than its stated

output ceiling of 24.5 million barrels/day. May output climbed to 25.2 million barrels/day.

Despite overproduction, oil prices have averaged roughly \$2 more a barrel over last year's prices. One reason for the strength is the lower flow from non-OPEC areas. However, it has become apparent that recent supply reductions outside OPEC were only temporary and were caused primarily by the strike of oil workers in Brazil, which appears to have ended, and maintenance shutdowns this spring of some North Sea oil fields. Arguably, these developments should have been beneficial to long-haul tanker demand, although they appear to have "masked the underlying upward trend in non-OPEC supply, which is expected to re-emerge in the second half of the year," according to IEA.

### Tanker Supply: Decline Set To Continue

The year 1994 was the first time in eight years that scrapping and

loss of tankers exceeded new deliveries, resulting in a net contraction of total tanker capacity.

Through early June, scrapping of tanker tonnage rose to roughly seven million dwt, compared to about 5.5 million dwt in 1994. Year-to-date deliveries of new capacity totaled only 3.5 million dwt. Including vessels lost, net capacity declined by

about three million dwt, or 1.1 percent. All in all, the contraction would be seen as a natural response to extremely difficult market conditions, which seem to be quite effectively enforcing stricter

environmental regulations. A prominent German shipowner translated a saying which captures the difficulty of operating older tankers today: "Environmental costs (insurance and maintenance) are eating the shipowner from the feet up, while poor rates and the two-tier rate structure are eating him from the head down."

National governments, customers and insurers are demanding and enforcing higher standards with

which a tanker must comply in order to trade in various areas around the world.

For older tonnage, it has become increasingly difficult and costly to meet these requirements. The *Lazard Freres Shipping Monitor* believes the economics of investing in older tonnage have virtually disappeared in view of the risk of unlimited liability, and that the trend is now in favor of modern tonnage.

The report cites statistics which show that, over the next three years, the capacity on order for delivery equals about 9.5 percent of the existing fleet, as compared to a peak of about 16 percent in 1992. This comes despite the fact that newbuilding prices have dropped 25 percent in U.S. dollars from the peak in 1992. The drop (deflated) in Japanese yen has been more than 50 percent and about 35 percent in Korean won. Newbuilding prices are now approaching the bottom achieved in late 1986 and 1987.

The *Lazard Freres Shipping Monitor* was initiated as a service to the firm's institutional clients, and the publication is designed to provide an investment perspective of the fundamental developments affecting both the domestic and international shipping markets.

*...the economics of investing in oldertonnage have virtually disappeared in view of the risk of unlimited liability... the trend is now in favor of modern tonnage.*

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## CALENDAR

### SEPTEMBER

**NEVA 95:** September 12-16, St. Petersburg, Russia.  
Contact: **Roderick Keay**, Dolphin Exhibitions Ltd., 112 High Street, Bildeston, Suffolk IP7 7EB, England, tel: +44 449 741801; fax: +44 449 741628.

**American P&I Club's Safety/Claims Seminar:** September 13,

International Trade Mart Building, New Orleans, La.  
Contact: **Don Moore**, tel: (212) 908-2411.

**Maritime Environmental Sym-**

**posium '95:** September 13-14, Sheraton National Hotel, Arlington, Va.  
Contact: **Danice Beal**, ASNE, 1452 Alexandria St., Arlington, Va. 22314-3458, tel: (703) 836-6727; fax: (703) 836-7491.

**Riverboat Gaming Congress & Expo:** September 13-15, St. Louis, Mo.  
Contact: World Gaming Congress & Expo, Seven Penn Plaza, N.Y., N.Y. 10001-3900, tel: (212) 594-4120; fax: (212) 714-0514.

**Superyacht Northwest '95:** September 13-16, Kirkland Yacht Club Marina, Kirkland, Wash.  
Contact: **Sharry Stabbert**, Kirkland Yacht Club Marina, 135 Lake St. South, Suite 115, Kirkland, Wash. 98033, tel: (206) 827-3200; fax: (206) 827-7455.

**Third Thematic Conference on Remote Sensing for Marine and Coastal Environments:** September 18-20, Westin Hotel, Seattle, Wash.  
Contact: ERIM/Marine Environmental Conference, P.O. Box 134001, Ann Arbor, Mich. 48113-4001, tel: (313) 994-1200, ext. 3234, fax: (313) 994-5123.

**BIMCO Seminar: ISM Code Implementation In Practice - Corporate Risk:** September 18-22, Copenhagen, Denmark.  
Contact: **Bent Jørgensen**, course manager, The Baltic and International Maritime Council, 161 Bagsvaerdvej, 2880 Bagsvaerd, Denmark; tel: +45 44 44 45 00; fax: +45 44 44 50.

**American Petroleum Institute (API) Electronic Data Interchange Conference & User Group Meeting:** September 25-27, New Orleans Hilton, New Orleans, La.  
Contact: API, 1220 L. Street, N.W., Washington, D.C. 20005, tel: (202) 662-8000; fax: (202) 682-8223.

**9th International Symposium On Unmanned Submersible Technology:** September 25-27, New England Center, Durham, N.H.  
Contact: **J. Susan Thorton**, Northeastern University, Marine Science Center, Nahant, Mass. 01908; tel: (617) 599-7114; fax: (617) 599-0687.

**CADAP '95: Computer Aided Design & Production for Small**

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**Craft:** September 26-27, Southampton Novotel, U.K.  
 Contact: Royal Institute of Naval Architects, 10 Upper Belgrave St., London SW1X 8BQ, tel: +44 0171 235 4622; fax: +44 0171 245 6959.

**Waterborne Gaming Forum:** September 26-27, Downtown Athletic Club, New York City.  
 Contact: The Maritime Association of the Port of New York/New Jersey, 17 Battery Place, Suite 115, New York, N.Y. 10004, tel: (212) 425-5704; fax: (212) 635-9498.

**Offshore Noise and Vibration:** September 27, Kings College, Aberdeen, U.K.  
 Contact: The IMarE Conferences Dept., The Institute of Marine Engineers, 76 Mark Lane, London EC3R 7JN, tel: +44 171 481 8493; fax: +44 171 488 1854.

**National Waterways Conference (NWC) Annual Meeting:** September 27-29, Adam's Mark Hotel, Tulsa, Okla.  
 Contact: NWC, 1130 17th St., Wash., D.C. 2003-4676, tel: (202) 296-4415; fax: (202) 835-3861.

#### OCTOBER

**NASPL:** October 1-3, Minneapolis Convention Center, Minneapolis, Minn.  
 Contact: World Gaming Congress & Expo, Seven Penn Plaza, N.Y., N.Y. 10001-3900, tel: (212) 594-4120; fax: (212) 714-0514.

**SNAME Annual Meeting and International Maritime Exposition:** October 4-7, Washington Hilton, Washington, D.C.  
 Contact: Society of Naval Architects and Marine Engineers (SNAME), 601 Pavonia Ave., Jersey City, N.J. 07306, fax: (201) 798-4975.

**Electric Propulsion: The Effective Solution?:** October 5-6, Institute of Marine Engineers, London.  
 Contact: **Kathleen Ford**, Institute of Marine Engineers, The Memorial Building, 76 Mark Lane, London, EC3R 7JN, U.K., tel: +44 171 481 8493; fax: +44 171 488 1854.

**Oceans '95 MTS/IEEE Conference and Exhibition:** October 9-12, San Diego, Calif.  
 Contact: **Deam Given** or **Bill Hulburd**, 9825 Bonnie Vista Dr., La Mesa, Calif. 91941-6828, tel: (619) 695-1197; or contact the MTS at tel: (202) 775-5966; or the IEEE at tel: (206) 525-2578.

**Training And The Human Element In Accident Prevention:** October 11-13, Downtown Athletic Club, New York City.  
 Contact: **Rosalie Vitale**, The Seaman's Church Institute, 241 Water St., New York, N.Y. 10038, tel: (212) 349-9090; fax: (212) 349-8342.

**World Gaming Congress & Expo:** October 16-18, Las Vegas Convention Center, Las Vegas, Nev. Contact: World Gaming Congress & Expo, Seven Penn Plaza, N.Y., N.Y. 10001-3900, tel:

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1956 Tugboat, 52' x 16' x 5.3', 40.7 gt. Flat bottomed push boat, Harbor Master rudderless stern drives, '89 Survey

1943 Tugboat, 46' x 13.8' x 5.5', 30 gt. Flat bottomed push boat, (2) 6V-71 (300 HP), '91 Fife & Jones Survey

#### BARGES

Carfloat Barge, 190' x 35' x 9', 586 gt. Steel Riveted & Welded, Raked bow & stern, (3) 24" spud wells, '92 Hull & Cargo Survey

Spud Barge, 75' x 38' x 8', 200 gt. Raked bow, (4) 22" spud wells with rings, '93 Fife & Jones Survey

#### CRANES

1983 American 9720 Pedestal Crane, 125 Ton, 120' Boom, Cummins NT855, Twin Disc, S/N 8209A03082, on

1982 Spud Barge, Conrad Industries, 120' x 45' x 7', 339 gt., (4) 24" spud wells, ABS Loadline for ocean service, '91 Fife & Jones Survey, Asking Price \$695,000.00\*

1975 P&H 670WLC Dragline Crane, 70-Ton, 100' Boom  
 1977 Bucyrus - Erie 60-T Truck Crane, 60 Ton, 100' Boom  
 Lorain MC320M Truck Crane, 100' Boom, Tagwinder

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## CALENDAR

(212) 594-4120; fax: (212) 714-0514.

**American Association of Port Authorities' 84th Annual Convention:** October 16-20, Sheraton New Orleans, New Orleans, La.  
Contact: AAPA, 1010 Duke St.,

Alexandria, Va. 22314, tel: (703) 684-5700; fax: (703) 684-6321.

**SPE Annual Technical Conference and Exhibition:** October 22-25, Dallas, Texas.  
Contact: SPE, Office, 4 Mandeville

Pl., W1M 5LA, London, England, tel: +44 71 487 4250; fax: +44 71 487 4229.

**Fleet Maintenance Symposium 95 - Fleet Maintenance in the Joint Environment:** October 23-

25, Virginia Beach, Va.  
Contact: **Bill Conley**, American Society of Naval Engineers, 1452 Duke St., Alexandria, Va. 22314-3458, tel: (804) 857-4922; fax: (804) 857-4934.

**API Refining Autumn Meeting:** October 23-25, Walt Disney World Dolphin Hotel, Orlando, Fla.  
Contact: API, 1220 L Street, N.W., Washington, D.C. 20005, tel: (202) 662-8000; fax: (202) 682-8223.

**International Marine Transit Association's (IMTA) 20th Annual Conference:** October 23-26, Sydney, Australia.  
Contact: **Philip Hercus**, president, IMTA, 1 Mafeking Ave., Lake Cove, NSW 2066, Australia, tel: +61 2 427 2822; fax: +61 2 427 7238.

**Surface Navy Association Eighth National Symposium:** October 23-27, Sheraton National Hotel, Arlington, Va.  
Contact: **Ruth Kane**, SNA symposium manager, 7205 Burtonwood Dr., Alexandria, Va. 22207, tel: (703) 765-SHIP.

**ASNE Maintenance Symposium: Fleet Maintenance in the Joint Environment:** October 24-25, Virginia Beach, Va.  
Contact: **Ray Michelin**, 1001 19th St., Suite 200, Virginia Beach, Va. 23451, tel: (804) 491-5086; fax: (804) 491-6684.

**Newbuild 2000 And The Role Of The Naval Architect:** October 24-25, 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.

**Expoship Riomar '95:** October 24-27, Rio de Janeiro, Brazil.  
Contact: **Paulo Corrêa**, FCI, Av. das Americas, 1.155 - Sala 1.507 22631-000, Rio de Janeiro, Brazil, tel: 55 21 439 9097; fax: 55 21 493 8203, or in the U.K., contact **Bob Hill**, Seatrade House, 42-48 N. Station Rd., Colchester CO1 1RB, tel: +44 206 45121; fax: +44 206 45190.

**Pacific Structural Steel Conference (PSSC) 1995:** October 25-27, The Mandarin Hotel, Singapore.  
Contact: **John S.Y. Tan**, PSSC 1995, Fourth Pacific Structural Steel Conference, 150 Orchard Road, #07-14, Orchard Plaza, Singapore 0923,

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**Bermuda International Shipping Association (BISA) Conference:** October 25-28, Sonesta Beach Hotel, Bermuda.

Contact: **Carleen L. Kluss**, International Marketing Strategies, 66 Field Pt. Rd., Greenwich, Conn. 06830, tel: (203) 622-4014; fax: (203) 622-1929.

**Clean Gulf '95:** October 1-November 1, Pontchartrain Center, Kenner, La.

Contact: **Sean Guerre**, sales manager, Penn Well Conferences & Exhibitions, 3050 Post Oak Blvd., Suite 205, Houston, Texas 77056-6524, tel: (713) 963-6218; fax: (713) 963-6284.

#### NOVEMBER

**Transportation Fatigue Symposium:** November 1-2, Sheraton Premiere Hotel, Tysons Corner, Va. Contact: National Transportation Safety Board (NTSB) Office of Public Affairs, Washington, D.C. 20594; tel: (202) 382-0660; fax: (202) 382-6609.

**Small Craft Symposium:** November 9-10, Great Lakes/Great Rivers Section, Ann Arbor, Mich. Contact: SNAME, 601 Pavonia Ave., Jersey City, N.J. 07306, tel: (201) 798-4800, fax: (201) 798-4975.

**American Petroleum Institute (API) Annual Meeting:** November 12-13, Hyatt Regency, Houston, Texas.

Contact: API, 1220 L. Street, N.W., Washington, D.C. 20005, tel: (202) 662-8000; fax: (202) 682-8223.

**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 71 487 4250; fax: +44 71 487 4229.

**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 71 487 4250; fax: +44 71 487 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.

**Trans Marine Propulsion's 2nd Diesel Engine Propulsion Semi-**

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Contact: **Terje Wennberg**, Trans Marine Propulsion Systems, Inc., 4200 24th Ave. West, Seattle, Wash. 98199; tel: (206) 282-9142; fax: (203)

**Pacific Fishing 95:** November 16-18, Seattle, Wash., Pier 48. Contact: **Bruce Buls**, tel: (206) 789-5333; fax: (206) 784-5545.

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# 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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Fredco, 253 Winslow Way West, Bainbridge Island, WA 98110
- ADHESIVES**  
Jin Industries, Corp., 2081 Bridge View Dr., Charleston, SC 29405
- AIR CONDITIONING AND REFRIGERATION - Repair & Installation**  
Adrick Marine, 1410 Central Ave., Farmingdale, NY 11735  
Bill Brown Enterprises, Inc., 4956 Ocean Pines, Berlin, MD 21811  
Carrier Transicold, P.O. Box 4905, Syracuse, NY 13221
- ALARMS, FACTORY MUTUAL-APPROVED**  
Midland Mfg. Corp., 7733 Gross Point Rd., Skokie, IL 60076-0226
- ALUMINUM BOATS**  
Workskill, Inc., 10824 Bothell Hwy S.E., Bothell, WA 98012-6889
- AUCTIONEERS**  
MCCI Auctioneers, 2334 Willis Rd., Richmond, VA 23230
- BALLAST**  
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031  
Mineral Research & Recovery Inc., 4620 South Coach Dr., Tucson, AZ 85714
- BASKET STRAINERS**  
Beard Industries, P.O. Box 31115, Shreveport, LA 71730
- BEARING—Rubber, Metallic, Non-Metallic**  
B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401  
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Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Orion Corp., 1111 Cedar Creek Rd., Grafton, WI 53024  
Ortel Engineered Prods., 2535 Prairie Rd., Unit D, Eugene, OR 97402  
Thoron Bearings Inc., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6
- BILGE OIL/FUEL ABSORBER**  
Northstar Marine, 11 Wall Street, Farmingdale, NY 11735
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- CABLE ASSEMBLIES**  
Times Microwave Systems, P.O. Box 5039, Wallingford, CT 06492
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- CAD/CAM SYSTEMS**  
Abarco Research Ltd., 3880 Uplands Rd., Victoria, BC V8P 8B4  
Al Alpha Int'l., Inc. P.O. Box 489885, Cincinnati, OH 45249  
Autoshop Systems Corp., #403, 611 Alexander St., Vancouver, BC, Canada V6A1E  
Chant Corporation, 157 Hwy 654, Matthews, NC 70375  
Creative Systems, Inc., P.O. Box 910, Port Townsend, WA 98368  
IMS 202 C Packets Cl., Williamsburg, VA 23185  
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Microcomputer Technology Consultants Ltd., P.O. Box 457 Buxley Bldg., Ste. 342, Lockport, NY 14095-0457  
Nautical Software, 14657 SW Teal Blvd., Ste. 132, Beaverton, OR 97007  
Nautical Technologies Ltd., 217 Burling Rd., Bangor, ME 04041  
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
- CELLULAR TELEPHONE SERVICE**  
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- CHAINS**  
All Alpha Int'l., Inc. P.O. Box 489885, Cincinnati, OH 45249  
Crandall Dry Dock Engineers Inc., 2 Williams Street, Chelsea, MA 02150  
Washington Chain & Supply Inc., Box 2945, Seattle, WA 98124  
Waterman Supply Co., P.O. Box 596, Wilmington, CA 90748
- CHAIRS**  
Gasser Chair Co., 4136 Logansway, Youngstown, OH 44505
- CHEMICALS**  
Anland Chemical/Drew Ameroid Marine, One Drew Plaza, Bonton, NJ 07005  
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Nautical Software, 14657 SW Teal Blvd., Ste. 132, Beaverton, OR 97007  
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Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610  
Collec Industries, 701 Lawton Ave., Beloit, WI 53511  
Cummins Engine Co., 4500 Lunds Ave., Ste. 301, Charleston, SC 29405-8521  
Cummins Mid-South, Inc., 110 E. Airline Highway, Kenner, LA 70062  
John Deere, John Deere Rd., Moline, IL, 61265  
DMJ Northrop Co., P.O. Box 2100, Norfolk, VA 23501-2100  
Goltens Worldwide, 160 Van Bunt St., Brooklyn, NY 11231  
In-Place Machining Co., Inc., 1929 North Bullum Street, Milwaukee, WI 53212-3793  
Kierne Diesel, 225 S. Fairbanks, Addison, IL 60101  
Klatterberg Marine, 17 Grandview Ave., W. Orange, NJ 07052  
MAN B&W Diesel AG, Stadbachstrasse 1, D-86153 Augsburg 1, GERMANY  
MAN B&W Diesel AS, Teghmoegade 41, DK-2450 Copenhagen SV, DENMARK  
MAN B&W Diesel, 17 State St., New York, NY 10004  
Motor Service AB, Box 2115, S-144 04 Rönninge, SWEDEN  
Motor Service-Hugo Stamp, 3190 S.W. 4th Ave., Ft. Lauderdale, FL 33315  
Nor-Tech, Inc., 100 Wall St., New York, NY 10005  
Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND  
Paxman Diesels USA, (A Div. of Ruston Gas Turbines, Inc.), 15950 Park Row, Houston, TX 77064  
Ulesten Bergen AS, PO Box 924, NS022 Bergen, NORWAY
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H.J. Merrhue, P.O. Box 92123, New Orleans, LA 70183  
Muldron Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731
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Mapoco Walz & Krenzer, Inc., 90 Forest Ave., Locust Valley, NY 11560  
Marine Accommodations, 8553-B Baymeadows Rd., Jacksonville, FL 32256
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- ELECTRICAL EQUIPMENT**  
L. F. Gaubert & Co., Inc., P. O. Box 50550, New Orleans LA 70150  
MAN International, 60 Hip Dr., Iroquois NY 11696
- ELECTRICAL WIRE DEVICES**  
Metric Corp., 1935 Acar World Wide Lane, Cudahy, WI 53110
- ELECTRONIC DISPLAY**  
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068  
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboten, NORWAY
- ELECTRONIC INFORMATION SUPPORT**  
Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolboten, NORWAY
- EMISSION CONTROLS**  
Habor Topsoe Nymollevel 55, DK-2900, Lyngby, Denmark
- EMPLOYMENT**  
Boat Crews, 1 Seine Court, Suite 309, New Orleans, LA 70114
- ENGINEERING SERVICES**  
AmClyde, 240 E. Plato Blvd., Saint Paul, MN 55107-1609  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029
- ENGINE ROOM LIGHTING**  
Janolin Electric Mfg. Co., Inc., 1616 N. Main, P.O. Box 53, Pearlard, TX 77581
- ENGINE TEST EQUIPMENT**  
General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Rd., Plymouth, MA 02060
- ENVIRONMENTAL SYSTEMS**  
Foss Environmental Services, 7440 West Marginal Way So., Seattle, WA 98108-4141
- EPHES**  
ACR Electronics, Inc., 5757 Ravenwood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247  
Alcon Electronics, 40 Washington St., Westborough, MA 01581
- EQUIPMENT - Marine**  
Bonnet & Associates, 1150 Rue Rochelle, Sidell, VA 70458
- EVAPORATORS**  
Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974  
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71730
- FANS - VENTILATORS - BLOWERS**  
Jon M. Liss Associates, Inc., 411 Borel Ave., San Mateo, CA 94402
- FASTENERS**  
Westwood Distributors, 28 Naragansett Ave., P.O. Box 348, Jamestown, RI 02835  
Oxabe Co., Inc., 645 Forest Edge Drive, Vernon Hills, IL 60069-3106
- FENDERING SYSTEMS/BUOYS—Dock & Vessel**  
B.F. Goodrich, 150 Division Drive, Wilmington, NC 28401  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Schuyler Mfg. Co., Inc., 16901 Woodville Redmond Rd., Woodville, WA 98072  
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Clearbrook, VA 22624  
Ultra Poly Inc., 2826 South Steele Tacoma, WA 98409  
Wing Fender Co., 1160 State St., Perth Amboy, NJ 08861
- FIBERS**  
Allied Signal, Meyer 1 Box, 101 Columbia Rd., Monstun, WI 07962
- FILTER SYSTEMS**  
U.S.A. Rese. Simpler-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
- FIN STABILIZERS**  
Blom & Voss AG, P.O. Box 10 07 20, D-2000 Hamburg 1, GERMANY  
U.S.A. Rese. Simpler-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
- FINANCIAL LOANS**  
Hobson Nutt Bank, 812 graver St., 10th Fl., New Orleans, LA 70130
- FIRE DETECTION SYSTEMS**  
Autonica Marine AS, Drammensveien 126, N-0277 Oslo 2, NORWAY
- FLAME CUTTING MACHINE**  
Larg Manufacturing, P.O. Box 905, Redmond, WA 98073
- FLEXIBLE COUPLINGS**  
American Vulcan, P.O. Drawer 673, Winter Haven, FL 33882
- GALLEY EQUIPMENT**  
Cospolch Refrigerator Co., 949 Industry Rd., Kenner, LA 70062  
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431  
Lang Manufacturing, P.O. Box 905, Redmond, WA 98073  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031
- GANGWAYS, LADDERS**  
Sea Systems Inc., 187 Ward Hill Ave., Ward Hill, MA 01835-0679  
Woolter Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691
- GENERATOR**  
Cunningham Engineering, 7-32 Takashima 4 - Chome, Nishiyodogawa Ku Osaka, JAPAN
- HATCH COVER SEAL RENOVATION**  
Baywood Inc., 3841 Soundway, Bellingham, WA 98223  
KSI Corporation, U.S. Rese. Simpler-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168
- HEAT EXCHANGERS**  
Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974  
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71730
- HORNS/WHISTLES**  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Kockum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068
- HYDRAULIC SYSTEM FLUSHING**  
Consolidated Fluid Power, 155 Wright Ave., Dartmouth, N.S. CANADA B4C3M1
- HYDRAULICS**  
Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken, NJ 07030  
Del Gavo Marine Hydraulics Inc., 619 Industrial Rd., Carlsbad, NJ 07072  
Engine Monitor, Inc., 179 Hickory Ave., Harahan, LA 70123  
Hamilton Jet, P.O. Box 709, Christchurch, New Zealand
- INERT GAS SYSTEMS**  
Hiller Systems, 3710 Lakeside Court, Mobile AL 36693
- INFORMATION TECHNOLOGIES**  
Morse Management Systems, 102 Hamilton Ave., Stamford, CT 06902
- INSULATION**  
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123
- INTERIORS**  
Directions In Design, 11457 Olive Cabin Rd. Ste. 100, St. Louis, MO 63141  
Hopeman Brothers, 435 Essex Ave., Waynesboro, VA 22980  
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123  
Interior Design Int'l, 701 Dexter Ave. N., Ste. 100, St. Louis, MO 63141  
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431  
Marine Accommodations, 8553-B Baymeadows Rd., Jacksonville, FL 32256  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031  
CustonShip Interiors, Inc., P.O. Box 227, Lusby, MD 20657  
Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980  
Insulations, Inc., 1101 Edwards Ave., Harahan, LA 70123  
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431  
Slida Systems, Inc., 220 Carpenter St., Greenport, NY 11944  
Walz & Krenzer, Inc., 90 Forest Ave., Locust Valley N.Y., 11560
- KEEL COOLERS**  
R.W. Fernstam & Co., 1716 Eleventh Ave., Menominee, MI 49858  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
The Water Machine Co., Inc., 84-88 Cambridge Avenue, Jersey City, NJ 07307
- LIFEBOATS/RAPTS**  
American Eagle Mfg., Inc., 780 Peaslee Jensen Way, LaConner, WA 98257  
Norsale AS, P.O. Box 115, N-4818 Faerik, Norway  
Revere Survival Products, 3 Fairfield Crescent, West Crescent, NJ 07006-6204  
Willard Marine Co., Inc., 1250 N. Grove St., Anheim, CA 92806  
Zodiac of North America, P.O. Box 400, Stevensville, MD 21666
- LIFELINE EQUIPMENT**  
MGI International, 119-225 West 1st St., North Vancouver, B.C. CANADA
- STEERING MANUFACTURING**  
P.O. Box 1498, St. Cloud, MN 56302
- LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights**  
ACR Electronics, Inc., 5757 Ravenwood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247

Archway Marine, 4501 Swan Ave., St. Louis, MO 63110  
Glanco, 44 Austin Street, P.O. Box 15322, St. John's, NF CANADA A1B 4B8  
Goffen Marine, 180 Van Brunt St., Brooklyn, NY 11231  
Kocum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068  
Julian A. McChesni 1839 Stephen St., Ridgewood, NY 11385  
Paluh Electric Mfg. Co., Inc., 1616 N. Main, P.O. Box 53, Pearland, TX 77581  
Pacifica Seating/Stam Supply Co., 4415 6th N.W., Seattle, WA 98107

**LIQUID COATINGS**  
Fero Corp., 1301 North Flora St., Plymouth, IN 46563

**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., 7733 Gross Point Rd., Skokie IL 60076-0226

**LIQUID OVERFILL PROTECTION SYSTEMS**  
E.R.L. Marine Products, P.O. Box 1026, New Albany, IN 47151-1026  
Methlape, Inc., 59 Porter Rd., Littleton, MA 01460  
Midland Mfg. Corp., 7733 Gross Point Rd., Skokie IL 60076-0226

**LOGISTICS**  
Newport News Shipbuilding, Logistics & Technical Services, 12129 Jefferson Ave., Newport News, VA 23602  
OED, 4646 N. Wilchuck Road, Virginia Beach, VA 23455  
V Logistics Consultants, Inc., 3420 Blenville Blvd., Ocean Springs, MS 39564

**LOW-SMOKE CABLES**  
Times Microwave Systems, P.O. Box 5039, Wallingford, CT 06492

**LUBRICANTS**  
Tasaco International, 2000 Westchester Avenue, White Plains NY 10590

**MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING**  
Del Gavio, 619 Industrial Rd., Carlsbad, NJ 07072  
John Marine Company, Inc., 160 Van Brunt Street, Brooklyn, NY 11231  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

**MACHINERY MONITOR AND CONTROL SYSTEMS**  
Electronic Marine Systems, 800 Franklin St., Haverhill, MA 01795

**MARINE ACCOMMODATIONS**  
Directions in Design Inc., 11457 Old Cabin Rd., Ste. 100, St. Louis, MO 63141  
Hopman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980  
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Ave., Boca Raton, FL 33431  
Marine Accommodations, 8555-1 Barnardown Rd., Jacksonville, FL 32256  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

**MARINE CEILING**  
Del Gario Aluminum Vix Verh, N-5880 VIK I SOGN, Norway

**MARINE DECKING**  
Selly, P.O. Box 1600, Sapulpa, OK 74067

**MARINE EQUIPMENT**  
Frank L. Beier Radio, 2001 Ridgeway Drive, Metairie, LA 70001  
Kocum Sonics, Inc., 819 Veterans Blvd., Suite 201, Kenner, LA 70068  
Saab Marine Electronics AS, Box 13045, 402 S1 Galathea, SWEDEN  
Scientific Marine Services, Inc., 101 State Pl., Suite F, Escondido, CA 92029

**MARINE ELEVATORS**  
Alimak Elevator Co., 1100 Boston Ave., Bridgport, CT 06601  
McElroy Machine, 1101 Lorraine Rd., Bloom, MI 39535-4454

**MARINE EQUIPMENT**  
McElroy Machine, P.O. Box 4454, Bloom, MI 39535-4454

**MARINE FINANCING**  
Salsco Credit Co., Inc., 4909 156th Ave. NE, Redmond, WA 98052

**MARINE FIRE PROTECTION**  
Hille Systems, 3710 Lakeside Court, Mobile, AL 36683  
Unitor Ship Service, 2375 West Esther Street, Long Beach, CA 90813

**MARINE FURNITURE**  
Jamestown Metal Marine Sales, Inc., 4710 NW Second Ave., Boca Raton, FL 33431  
Maritime Services Corp., 3457 Guignard Dr., Hood River, OR 97031

**MARINE GEARS**  
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227  
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492  
Marine Gears, P.O. Box 688, Greenville, MI 38701  
Westech Gear Corp., 2600 East Imperial Hwy., Lynwood, CA 90262  
ZF Industries Inc., 77 Hickory Hill Drive, Vernon Hills, IL 60061

**MARINE HYDRAULICS**  
Del Gario Marine, 619 Industrial Rd., Carlsbad, NJ 07072

**MARINE INSURANCE**  
John G. Alden, 1300 SE 17th St., Fort Lauderdale, FL 33316

**MARINE INTERIORS**  
Jamestown Metal Marine Sales, 4710 Northwest Second Ave., Boca Raton, FL 33431  
Johnson Construction Specialties, Inc., 3420 Rusik P.O. Box 1360 Houston Texas 77251

**MARINE LADDERS**  
Sea Systems, Inc., 75 Avco Rd., Ward Hill, MA 01835

**MARINE LUBRICANTS**  
Royal Lubricants Co. 6 Campus Drive, Parsippany, NJ 07054

**MARINE PUMPS**  
Bill Brown Enterprises, Inc., 4995 Ocean Pines, Berlin, MD 21811  
Giles Inc., P.O. Box 628, Seabrook, TX 77586

**MARINE SUPPLIES SALES**  
Del Gario Marine, 619 Industrial Service, 2163 Airways Blvd., Memphis, TN 38114

**MARINE TRAINING & SPILL PREVENTION**  
Center for Marine Training and Safety, P.O. Box 1675, Galveston, TX 77553  
Center for Maritime Education, 241 Water St., New York, NY 10038

**METALIZING**  
International Metalizing Corp., P.O. Box 201, Cherry Hill, N.J. 08003

**MONITOR CONTROL ALARM**  
Engine Monitor, Inc., 179 Hickory Ave., Harahan, LA 70123  
MULTI-SCALE PENETRATION SERVICE  
NAP, 12437 E. 60th St., Tulsa, OK 74133

**NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS**  
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202  
Donald L. Bount, 2550 Ellerslie Ave., Ste. K, Norfolk, VA 23513  
CDI Marine Co., 4040 Woodcock Dr., Suite 200, Jacksonville, FL 32207  
Childs Engineering Corp., Box 333, Medford, MA 02052  
Crandall Dry Dock Eng'g, Inc., 21 Pottery Ln., Dedham, MA 02026  
Crane Consultants, 15301 First Ave S., Seattle WA 98148  
C.R. Cushing, 18 Vesey St., New York, NY 10007  
CT Marine, 56 Crooked Trail, Rowayton, CT 06853  
Arthur D. Darden, 3200 Ridgeblake Dr., Suite 403, Metairie LA 70002  
DeLong & Label, Inc., 1704 Emerson Street, Jacksonville, FL 32207  
Design & Planners, 2120 Washington Blvd., Suite 200, Arlington, VA 22204  
Diversified Technologies, 812 Live Oak Dr., Chesapeake VA 23020  
Elliot Bay Design Group 5301 Shiloh Ave. N.W. Ste. 200, Seattle, WA 98107  
Ercon Marine & 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., 50 West 23rd St., New York, NY 10010  
John W. Gilbert & Assoc., Inc., 66 Long Wharf, Boston, MA 02110  
The Glosten Assoc. Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle, WA 98104  
Guido Parla & Assoc., 720 3rd Ave., Ste. 1200, Seattle, WA 98104  
Morris Gurakoff Associates, Inc., 130 Butler St., Ste. 400, San Francisco, CA 94104  
C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110  
Hydrocomp, Inc., 202 C Packets Court, Williamsport, VA 23185  
JH Inc., 3412 Progress Dr., Bensalem PA 19009  
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073  
James S. Kroger, 789 Brickell Plaza Ste 701, Miami, FL 33131  
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225  
MCA Engineers, Inc., 2960 Airway Ave., #A-103, Costa Mesa, CA 92626  
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063  
McElroy Machine & Mfg Co., Inc., P.O. Box 4454, Bloom, MI 39535-4454  
John J. McMillan Associates, Inc., 1 World Trade City, Ste 3000, N.Y. NY 10048  
Fennell Marbury, P.O. Box 2201, Annapolis, MD 21401  
Marine Design & Operations, Inc., 226 Chestnut St., Roselle Park, NJ 07204  
Marine Management Systems, Inc., 182 Hamilton Ave., Stamford CT 06902  
Marine Power Associates, 1010 Turquoise St., Ste 217, San Diego, CA 92109  
Maritech, Seacell, Bay Road, Newmarket, NH 03857  
Maritime Design, Inc., 3203 Hedley Rd., Jacksonville, FL 32257  
R.J. Mehall & Co., 71 Hudson St., New York, NY 10013  
Nautical Designs, Inc., 2101 S. Andrews Ave., Suite 202, Ft. Lauderdale FL 33316  
Ocean Motore Co., P.O. Box 130, 40 Shore Drive, Barrington, RI 02806-0130  
Ocean Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777  
OED Systems Inc., 4646 Wilchuck Rd., Virginia Beach, VA 23455  
M. Rosenblatt & Son, Inc., 300 Broadway, New York, NY 10013 and 630 Fulton 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 Sayre Pl., 5203 Leesburg Pike, Suite 700, Falls Church, VA 22041.  
George G. Shaw, Inc., 100 Church St., New York, NY 10007  
R.A. Seam, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235  
A.K. Suda & Ass., 3004 19th St., Metairie, LA 70002-4969  
TIMSCO, P.O. Box 9130, Mobile AL 36691

**NAVIGATION & COMMUNICATIONS EQUIPMENT**  
Autonica Marine A/S, Christoffersens 126, N-2277 Oslo 2, NORWAY  
Celnet Corp., 400 Main St., Stamford, CT 06901-3004  
Comsat Maritime Services, 950 L'Enfant Plaza SW, Washington DC 20024  
Cresphone, 2100 Park Central N., Pompano Beach, FL 33064  
Electronic Marine Systems, 800 Female Pl., Rahway, NJ 07065  
Funuro U.S.A., 271 Harbor Way S., San Francisco, CA 94080  
Hose-McCorm, 1241 W. Newport Center Dr., Deerfield Beach, FL 33442  
ICS Electronics Ltd., Unit V, Rutland Industrial Estate, Ford, Arundel, West Essex, UK  
Mackay Communications, 300 Columbus Circle, Edison, NJ 08837  
Megapole, Inc., 6 Preston Court, Bedford MA 01730-2386  
Mobile Telematics, Inc., 300 Professional Dr., Gaithersburg, MD 20879  
Neyron Marine Consultants, 340 Bond Street, Elizabeth, NJ 07201  
Offshore Systems Ltd., 107-630 West 1st St., North Vancouver, B.C. V7P 3N4 CANADA  
Rosa Engineering, 12505 E. Stanley Rd., Largo, FL 34643  
Scandinavian Micro Systems P.O. Box 155, N-1411, Kolbotn, NORWAY  
Scientific Atlanta, 4291 Communications Dr., Norcross, GA 30093  
Sea, Inc., 7209 220th St. W., Moundsview, Suite 100, Houston, TX 77043-1923  
Seacoast Electronics, Inc., 240 Tallyrand Ave., Jacksonville, FL 32202  
Sennad, 18210 33rd Avenue West, Lynnwood, WA 98036  
Sennad Robertson, 18001 Hammerly, 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  
Starlink, Inc., 8400 Highway 280 East, Suite 202, Austin TX 78752  
Trimble Navigation, 585 North Mary Avenue, P.O. Box 3842, Sunnyvale, CA 94086  
Wireless Communications System, Inc., 453 E. Park Pl., Jeffersonville, IN 47130

**NOZZLE SYSTEMS**  
Rice Propellers, Av Rio Espinho 888, Mazatlan, MEXICO 82180

**OIL—HYDRAULIC CONTROLS**  
Luber-Finer, Inc., 5050 Quorum Drive, Dallas, TX 75240  
Mobil Oil Corporation, 3225 Galloway Road, Fairfax, VA 22037-0001  
Tasaco International, 2000 Westchester Avenue, White Plains NY 10590

**OIL SPILL CONTAINMENT**  
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141

**OILWATER SEPARATORS**  
Alfa-Laval Separation, Inc., 955 Meams Rd., Warminster, PA 18974-0556  
Bilhm & Vost AG, P.O. Box 10 07 20, D-2000 Hamburg 1, GERMANY  
U.S.A. Rep: Simpson-Turner Inc., P.O. Box 168, Little Neck, NY 11363-0168  
Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
M&C International, 50 1st St., New York, NY 10002  
National Fluid Separators, 827 Harley Industrial Ct., St. Louis, MO 63144  
Local Industries, Highway 51 West, Stoughton, WI 53589

**PAINT—COATING—CORROSION CONTROL**  
Ashland Chemical Co., Drew Marine Co., One Drew Plaza, Broomfield, NJ 07005  
Comsol, Inc., 1045 12th Ave., NW-FSA, Issaquah, WA 98027  
Densco Coatings, 5601 DuPont Circle, Louisville, KY 40207  
Egald, Inc., P.O. Drawer 2898, Lafayette, LA 70502  
Norgren Distrib., 28 Nagsarsett Ave., P.O. Box 348, Jamestown, RI 02835  
Hennel Coatings, 6801 Cananda St., Houston, TX 77036  
International Zinc, 450 Seventh Ave., New York, NY 10123  
Microphor, Inc., Marine Div., 432 E. Hill Rd., P.O. Box 1480, Willis, TX 76798  
Product Research Service, Inc., 150 E. Main St., Belle Chasse, LA 70007  
Royal Chemical, 2705 Concord Road, Belle Chasse, LA 70007  
Sigma Coatings, 8975 Market St., Houston, TX 77029, 330 Rover Rd., Harvey, LA 70059, 1100 Adams St., Houston, TX 77030  
Unitor Ship Services, Inc., 2375 West Esther Street, Long Beach, CA 90813

**PIPE FITTING/PIPEWORKING SERVICES**  
Loring Corp., 396 Hatch Drive, Foster City, CA 94404

**PLATING EQUIPMENT**  
SFCO Selective Plating, 578 Scharf Rd., Cleveland, OH 44131-1394

**POLLUTION CONTROL/PRODUCTS/MARINE SERVICES**  
Foss Environmental, 7440 W. Marginal Way S., Seattle, WA 98108-4141  
OH Moa, Inc., Rue de la Vieille, Minneapolis, MN 55439

**POLLUTION PACKER COMPACTORS**  
TFC Corporation, 7746 Canal Rd., Minneapolis, MN 55439

**PREDICTIVE MAINTENANCE**  
Predict/DLI, 253 Winslow Way West, Bainbridge Island, WA 98110

**PROPELLERS**  
Bird Johnson, P.O. Box 1528, Pascagoula, MS 39567  
Rota SP Propellers SA, Via Silva, 6 - P.O. Box 251, 6828 Balema - SWITZERLAND  
Rota SP Propellers USA, Inc., 4023 Mustang Road, Melbourne, FL 32904 USA  
Sound Propeller, 1928 Fairview Avenue E., Seattle, WA 98102

**PROPULSION EQUIPMENT**  
—Braniff, Diesel Engines, Gears, Propellers, Shafts, Turbines  
Avondale Industries, Harvey Quik Repair, P.O. Box 116, Harvey, LA 70058  
American Air Filter, P.O. Box 56990, Louisville, KY 40432  
ASE Drive Inc., P.O. Box 372, Milwaukee, WI 53201-0372, USA  
ABB Industry Oy, P.O. Box 185, 00281 Helsinki, FINLAND  
ABB TURBOCHARGER, INC., 1400 Livingston Avenue, Jenneville, NJ 08902  
Aquamaster-Rauha Ltd., Box 220, 01011, Rauma, FINLAND  
Aquamaster-Rauha Inc., 2318 North Woodlawn Ave., Ste. 103, Metairie, LA 70001  
Brunsvik A/S, P.O. Box 370, N-6401, Molde, Norway  
Caterpillar, 100 NE Adams Street, Plover, IL 61829-2320  
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227  
The Falk Corp., PO Box 492, Milwaukee, WI 53201-0492  
Fincantieri, Diesel Engines DW-GMT, Bagnoli della Rosandra 324, Trieste, ITALY  
GE Naval & Drive Turbine Systems, 146 Boulder Dr., Fitchburg MA 01420  
Gottens Marine Company, 160 VanBrunt St., Brooklyn, NY 11231  
Hobart Engineering, Inc., 1303 Kemper Meadow, Ste. 500, Cincinnati, OH 45240  
In-Phase Mechanics Co., Inc., 1929 North Buffalo Street, Milwaukee, WI 53213-3793  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Knapik, 7555 Danbro Crescent, Mississauga, Ontario, CANADA L5N 6P9  
Robel Manufacturing, 11750 Horseshoe Way, Richmond, BC Canada V7A 4V5  
LIPS B.V., P.O. Box 6, 5151 RP Drunen, The Netherlands  
LIPS U.S.A., Inc., 3617 Koppers Way, Chesapeake, VA 23023  
Lohmann & Stoltehoff, P.O. Box 1860, D-58408 Witten, Germany  
Lo-Rez Vibration Control, 188 West 8th Ave., Vancouver, BC CANADA, V5Y 1N2  
Mapco Products Inc., 90 Forest Road, Locust Valley, N.Y., 11560  
Marineflex Werk, P.O. Box 1442, D-5884 Haver, GERMANY  
MAN B&W Diesel, 17 State St., New York, NY 10004  
MAN B&W Diesel AS, Oslove 2, DK-4860 Hovdy, DENMARK  
MAN B&W Diesel AS, Alpha Diesel, Nels Juaq Vaq 15, DK-8000 Frederikshavn, DENMARK  
MAN B&W Diesel GmbH, Stadthofstrasse 1, D-86153 Augsburg 1 GERMANY  
North American Marine Jet, P.O. Box 1232, Benton, AR 72015  
Omnistar, Inc., 9515 Sorensen Ave., Santa Fe Springs, CA 90670  
Oron corp., 1111 Cedar Creek Rd., Graceland, WI 53024  
Rota SP Propellers SA, Via Silva 6, P.O. Box 251, 6828 Balema SWITZERLAND  
Rota SP Propellers USA, Inc., 4023 Mustang Road, Melbourne, FL 32904, USA  
Karl Serner, Inc., 25 W Third, Kenner LA 70002  
Schottel-Werft, Manzer Strasse 99, D-56322 SpayRhein, GERMANY  
Schottel North America, Inc., 1505 Corbin Ave., Hammond, LA 70403  
Siemens Electric Ltd., 1180 Courtyardpark Rd., Mississauga, ONTARIO  
Sound Propellers, 1608 Fairview Ave., Seattle, WA 98102  
Stewart & Stevenson, 1400 Dextrahan, P.O. Box 8, Harvey LA 70059-0008  
Ustlen Bergen Diesel AS, P.O. Box 824, N-5002, Bergen, NORWAY  
V. M. Voth GmbH, Marine Division, Postfach 1940, D-7520, Heidenheim/Brenz, GERMANY U.S. Rep: Voth Schneider America, Inc., 121 Susquehanna Ave., Great Neck, NY 11021  
Oy Wartsila Ab, Vasa and Abo Divisions, P.O. Box 244, SF65100 Vasa, FINLAND

**PUMP—LIFEBOAT (hand operated)**  
Buckson, P.O. Box 3338, Engleport, CT 06605

**PUMP—Recip—Drive**  
Del Gavio, 619 Industrial Rd., Carlsbad, NJ 07072  
Giles, Inc., PO Box 628, Seabrook, TX 77586  
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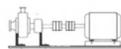
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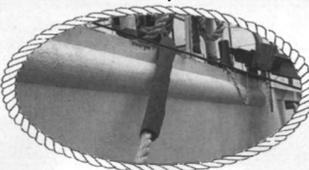
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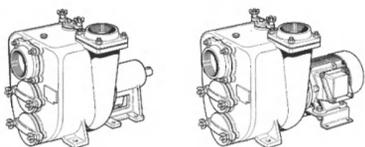
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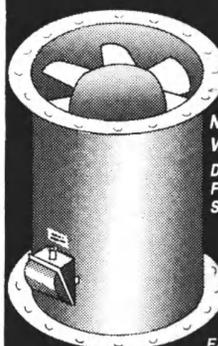
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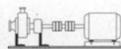
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#### ATTENTION SHIPWRIGHTS!

The Columbus Fleet Association of Corpus Christi, Texas, is seeking a Master Shipwright and several journeymen, to rebuild the *Pinta* and the *Santa Maria*, beginning this autumn. Both are double sawn and very heavy, and were damaged in an unfortunate accident. *Pinta's* work will be extensive: all beams and knees to be replaced, as well as the planking that covers them! Anticipated launch in spring of '97. *Santa Maria* to follow with launch in the autumn of '99.

Send resumes to: 1900 N Chaparral  
Corpus Christi, TX 78401  
or  
Contact: the Association at 512-882-1232  
or fax: 512-884-7392

## Leica Navigators Support Type 9

**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!*



MX 200 Navigator, six-channel system with superior software for the professional navigator.



MX 300 Navigator, a high resolution DGPS system designed for offshore survey and land-positioning.



MX 100 Navigator, six-channel continuous tracking for yacht skippers and blue water sailors.



MX 51R Beacon Receiver and MX 200 DGPS Navigator, with combined GPS and H-field beacon antenna.



MX 41R, affordable differential GPS Beacon Receiver that improves precision up to 10 times.



MX 9212 12-channel DGPS Navigator, gives submeter DGPS accuracy for real-time applications.



The MX 100 GPS Navigator combined with the MX 41R Beacon Receiver provides accuracy to under 5m.

*In February 1994 Leica purchased the Magnavox GPS Division, and its Navigator product line.*

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