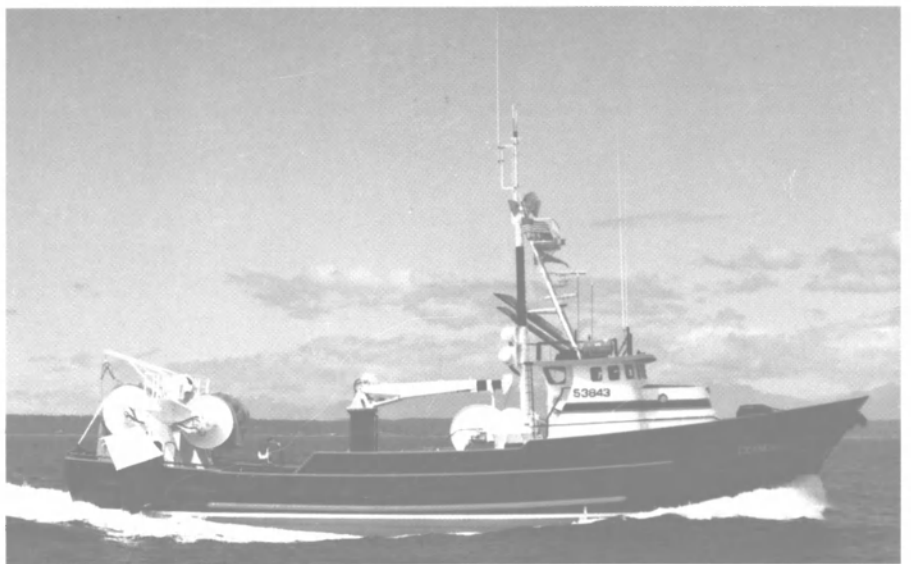


# MARITIME REPORTER AND ENGINEERING NEWS



OUTSTANDING SHALLOW-DRAFT VESSELS OF 1987

**Previews: Cruise Shipping 88 • NAPVO Annual Meeting**

**JANUARY 1988 ISSUE**

# WHY MARINE DECRA GUARD SAILS ON THE TOUGHEST BOATS IN THE WORLD.



North American Shipbuilding is famous for building some of the toughest boats in the world. So when they needed a durable, attractive finishing panel for the Research Vessel "New Venture," they chose Simpson Marine DecraGuard.®

Owned and operated by Edison Chouest Offshore of Galliano, Louisiana, New Venture is at sea virtually 24 hours a day, performing seismic studies in a never-ending quest for oil. DecraGuard sails on her and workboats like her for a very good reason. Today's boat builders demand cost effectiveness, ruggedness and consistent quality in the materials they use. Marine DecraGuard delivers it.

DecraGuard is a high quality, ready-to-use structural panel—a blend of polyester laminate fused to marine-glued Douglas fir plywood. Specifically designed for vertical and light duty horizontal use, DecraGuard is ideal for bulkheads, bunks, cabinets, consoles, walls and built-ins of all types. Available in a wide range of solid colors, lustrous woodgrains and three surface textures, DecraGuard is a versatile performer throughout a vessel—from the command bridge to the crew's quarters.

As tough as it is attractive, DecraGuard is made for a life at sea. It stands up to moisture penetration, salt water, sunlight and the punishment of 'round the clock use.



It resists staining better than wood, vinyl and many high pressure laminates, so maintenance is simple. A damp cloth or sponge takes care of dirt and spills easily.

DecraGuard offers impressive bottom line performance, too. Since it comes ready-to-use, there's no need for further finishing, sanding, sealing or buffing. It works as easily as regular plywood, so production crews work faster with less waste—just cut to fit and install. That can mean substantial savings on a new-build or refit project.

Find out how you can launch Marine DecraGuard on your next workboat project by calling us at 1-800-445-2442. In WA, (206) 427-9619. We'll send detailed product information, samples and the name of your nearest Simpson dealer.

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Painting courtesy Norman Kjeldsen, Esq.

## Unsurpassed Ship Docking and Towing Services Since 1864

In 1895, the Wavertree arrived at New York under sail. This painting by Oswald Brett depicts the historic event. While we cannot say for certain, the Wavertree may have been met by one of the McAllister tugs which have served New York Harbor since 1864. Legends are made of such moments. The Wavertree and her sister ships, in their day, were our responsibility.

We at McAllister take pride in being part of the history and lore of New York Harbor. The Wavertree is now at the South Street Seaport Museum and we support her restoration in order to keep maritime and nautical traditions alive for future generations.

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# ON THE COVER

Cover Photos (clockwise from logo): Kronprins Harald (Wart-sila); Yard Patrol Craft (Marinette Marine); Commodore (Mar-co); Island Class Patrol Boat (Bollinger); Spirit of New York (Blount Marine); Capt JP (Service Marine); (center) USCG Patrol Boat (MonArk Boat).

**Outstanding Cruise Ships, Passenger & Cruise Boats, of 1987**  
PAGE 16

**Outstanding Workboats & Military Shallow-Draft Vessels of 1987**  
PAGE 26

**Preview-Cruise Shipping**  
PAGE 10

**Preview-NAPVO Annual Meeting**  
PAGE 36

## NASSCO Delivers Second Navy Hospital Ship

The National Steel and Ship-building Company (NASSCO) of San Diego, Calif., recently delivered the second hospital ship, the USNS Comfort (T-AH-20), to the Military Sealift Command.

The Comfort, converted from a 90,000-dwt tanker, will be used to provide full medical support to the Defense Department's Rapid Deployment Joint Task Force. She will be part of the MSC's Strategic Sealift Force.

The 894-foot ship has a 1,000-bed, 12-operating room medical treatment facility.

The first hospital ship, the USNS Mercy (T-AH-19), was delivered by NASSCO in December 1986.

For free literature containing full information on NASSCO,

Circle 62 on Reader Service Card

## Oil Tanker Ordered By BHP Petroleum

A 90,000-dwt crude oil tanker has been ordered by BHP Petroleum, a subsidiary of BHP, Australia's largest industrial company.

The tanker is scheduled to be built in Japan and put into service by the end of 1988. It will be used primarily to carry export cargoes of Australian crude, and will be operated by BHP Transport, another BHP subsidiary, and will be chartered by BHP Petroleum.

## MARITIME REPORTER and Engineering News

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**JJH Inc. Appoints Chen  
Assistant Vice President,  
Engineering Management**

**Richard R. Hopkins**, president of JJH Inc., a leading naval architecture and marine engineering firm, recently announced the appointment of **Victor Yih-Yung Chen** to the position of assistant vice president of engineering management. In his new capacity, Mr. Chen will be responsible for the continued strengthening of the corporate capabilities and the coordination of engineering activities among all the area operations.

Mr. Chen has over 16 years of experience in the marine field, including design, construction and overhaul of a wide range of naval and commercial vessels. He is responsible for establishing JJH's expertise in drydock-related engineering.

**New Shaft-Mounted Line  
Cutter Automatically  
Frees Fouled Props  
—Literature Available**

Waukesha Bearings of Waukesha, Wis., is offering free literature on their unique new Sternguard® propeller-mounted net and line cutter.

The publication explains that the principle that enables the cleverly designed Sternguard propeller-mounted line cutter to cut so effectively is the "screw action" created as the propeller turns—winding line or nets directly into the blades, instantly cutting before allowing entanglement. The Sternguard line cutter will cut ahead or astern and will be manufactured to fit a particular propeller. It eliminates oil seal damage caused by fouled nets and lines and there is no loss of speed or efficiency.

Easily mounted on the shaft immediately behind the prop, the new Sternguard instantly frees fouled props, saving both downtime and expenses.

For complete details and free literature from Waukesha Bearings,

Circle 38 on Reader Service Card

**Parker Hannifin  
To Acquire Gull Inc.**

Parker Hannifin Corporation and Gull Inc. of Smithtown, N.Y., recently announced that a definitive agreement has been reached for Parker to acquire Gull, a leading producer of state-of-the-art fuel gauging and monitoring systems, engine-monitoring computers, fire-suppression systems, and navigation-monitoring computers for military and commercial aviation.

Under the merger agreement, each share of Gull common stock will be converted into .7 Parker common share. The transaction involves a total of about 3.7 million shares of Parker. Parker also has an option to purchase approximately 20 percent of Gull's stock.

Gull recorded earnings of \$4.7

million on sales of \$72.9 million for its fiscal 1987, ended May 31.

Parker is a leading producer of motion-control components and systems for industrial, automotive, aviation, space and marine markets. Sales in fiscal 1987, ended June 30, were \$1.88 billion, with net income of \$85.2 million.

For more information and free literature,

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**Chrome Companies Win  
Army & Navy Contracts  
For Remanufacture Work**

The Chrome Companies have recently been awarded a U.S. Army contract to completely upgrade and remanufacture three 80-ton industrial locomotives. This contract comes in the wake of a U.S. Navy contract for the reconstruction and repowering of 80-ton General Elec-

tric locomotives with Caterpillar engines.

The Chrome Companies are a multi-company remanufacturer of locomotives, diesel engines, crankshafts and locomotive components. The companies are headquartered in Silvis, Ill.; phone (309) 755-6800.

For free literature detailing the remanufacturing services of the Chrome Companies,

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**MACHIGONNE II**      **OCTOBER 1987**  
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**LA NINA**      **DECEMBER 1987**  
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## Marine Machinery Association Reports On Defense Mobilization Base Forum

About 100 attendees at the recent Government Industry Forum on the U.S. Shipbuilding and Repair Defense Mobilization Base received the most comprehensive brief on the current status and future prospects for the marine industry. The significance of the issues discussed, the in-depth presentations by the qualified and knowledgeable speakers, together with the far-reaching ramifications of the issues and potential legislation involved cannot be adequately and accurately described in the space available for this article.

One must hear the complete presentations to understand the complexity of the issues involved and the differing views of the various parties, DoD, Navy, shipbuilders, suppliers and indeed foreign countries, for they, too, have a tremendous influence on which way the industry will go in the future.

This article outlines and highlights the general areas covered by each speaker. Transcripts of the entire forum are available from MMA for a nominal charge of \$15 to cover reproduction and postage. Requests should be addressed to MMA, 1700 K Street NW, Suite 903, Washington, D.C. 20006.

The following was reported by **Dan Marangiello** of the MMA. During the forum, all speakers recognized the serious deterioration of the shipbuilding and repair capability of the U.S. The tone of the meeting was set by **J. P. Janetatos** of Baker & McKenzie, who noted that after the spare parts problems of three-four years ago, Congress reacted with legislation, including the Competition in Contracting Act, and DoD and the Navy complied with a vengeance. Low bid became the order of the day, with a seemingly "quality be damned" attitude. Although the pendulum seems to be swinging back with recent Senate subcommittee investigations on defective material, the emphasis in reality is on prominent criminal cases, and not on the systemic problem of going to the low bidder regardless of past performance and capability. A short-term and easy remedy would be to divert what little business there is back into the



Vice Adm. **W.D. Smith**, USN, Director of Navy Programming Plans, discussed the Navy's programs, budget and five-year defense plans.

maritime industrial base, that is to equipment manufacturers and stockyards and away from replicators and pirates. This action will also provide the fleet with safe, reliable and cost-effective machinery.

Congresswoman **Helen Bentley** related the events that are undermining the industrial base of this nation. Our policy of "free" trade has allowed American industry to be overwhelmed by foreign firms. Markets were specifically targeted, undercut and gobbled up. So began the de-industrialization of America. Taxpayers' money is being spent by our government overseas to help Europeans develop weapons and products that compete with our own. Japan is spending 135 million dollars this year to influence our elected officials. We want "fair" trade, not "free" trade. There is no free trade in the world. All employees must become involved and let their elected representatives know they are concerned about their jobs and the industrial base and security of the United States.

**William Haggett**, president and CEO of Bath Iron Works, representing the shipbuilding segment of the marine industry noted that the industry is in real peril and sinking rapidly. The whole industry is in



Principals at the forum (L to R): **Jack Flanigan**, chairman of the board, MMA; **J.P. Janetatos**, director, MMA; **James Fromfield**, vice president, MMA; **Larry Holley**, president, MMA; and **Dan Marangiello**, executive director, MMA.

deep trouble—merchant marine, shipping operators, shipbuilders and equipment manufacturers. Should an island nation commit resources to arrest and reverse this trend and assure an adequate, even minimal base? You get very mixed answers to this question in Washington, D.C. He related specifics and conclusions of the Commission on Merchant Marine and Defense of which he was a member.

The three main findings are: (1) A clear and growing danger to our national security from the deteriorated condition of the U.S. marine industry. (2) Solid evidence that the industry will be essential components of national defense for the foreseeable future. (3) The marine industry decline is symptomatic of heavy industry decline.

**Colleen Preston**, Counsel for the House Armed Services Committee, closed the morning session by describing what is going on in the "buy American" legislation. Congress is trying to balance protecting the U.S. industrial base while complying with the general agreement on tariffs and trade and our cooperative memorandum of understanding with foreign allies. Even though there is a strong indication that equal treatment is not a "two-way street," Congress still looks at the total DoD trade balance (2.8 to 1 in our favor) and not at the disastrous situation in shipbuilding by itself.

After lunch, **Adm. W. D. Smith**, USN, Director of Navy Programming Plans, talked of the Navy's programs, budgets, and five-year defense plan. He said that military personnel salaries and benefits would not be cut, therefore cuts would come elsewhere in the budget crunch. Maintenance and repair dollars would be in some jeopardy.

Bird-Johnson president and CEO **Charles Orem** provided the forum with a status report on the U.S. marine industry industry subcontractor base. Included in this grouping are all the equipment, component and system suppliers to shipyards, repair facilities, ship operators, and the Navy, the Coast Guard and the Maritime Administration. Taken together, these subcontractors constitute the full scope of support for our maritime defense industrial mobilization base and comprise the complete infrastructure for the country's maritime industry. Clearly, the economic and physical health of these subcontractors is of critical importance to our country. **Mr. Orem** went on to provide an overview of a portion of this supplier community and focus attention, through illustrative examples, on some industry statistics and key critical factors directly related thereto.

The final speaker of the day, **Richard Donnelly**, director of Industrial Resources in the Office of the Assistant Secretary of Defense for Acquisition and Logistics, described the DoD effort to analyze the status and requirements of the U.S. industrial base. He stated that the defense mobilization base is in reality the industrial base and a healthy industrial base would yield a strong mobilization base.

Circle 194 on Reader Service Card →

### ITW Philadelphia Resins Offers Bulletin On Repair Compounds And Adhesives

Twelve high-performance adhesives and repair compounds for marine and industrial applications are featured in a six-page, technically oriented bulletin from ITW Phila-

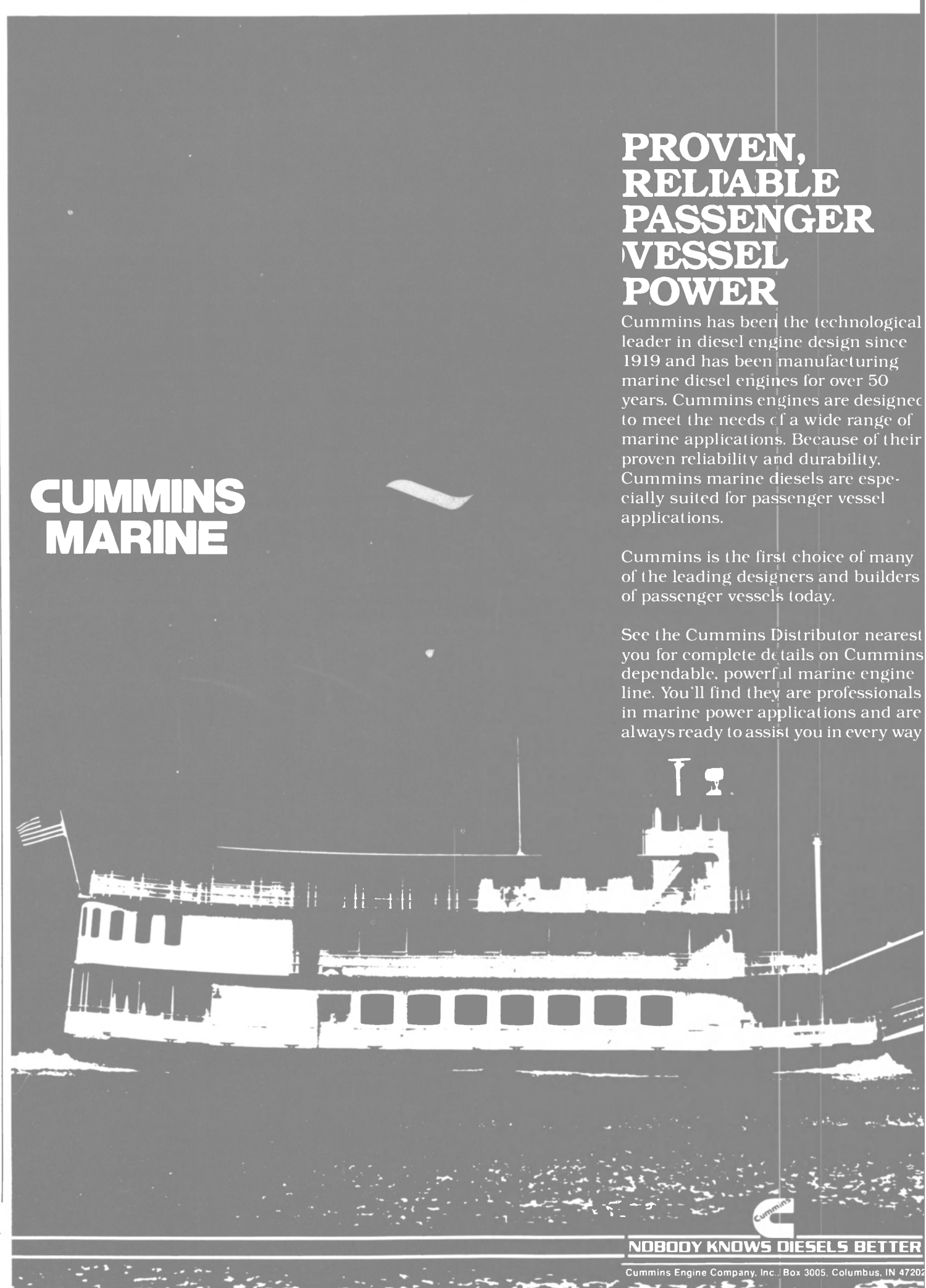
delphia Resins of Montgomeryville, Pa.

The bulletin also lists mixing ratios, cure time and packaging information. In addition to physical properties, typical applications are cited. Included are specific details for general purpose and cryogenic adhesives, liquid laminating and bonding system, a sealing and fairing putty, a new titanium-based

paste and a new trowelable ceramic putty, which create integral bonds to protect new equipment or rebuild worn equipment, and a heavy-duty high-build protective coating, recommended for submerged and other corrosion-resistant applications.

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## Rockwool Joiner Systems On New Cruise Ship —Literature Offered

Runyan Machine and Boiler Works Shipyard, Pensacola, Fla., will deliver the 170-foot luxury cruise vessel M/V Isabella II to Galapagos Cruises for operation in the Galapagos Islands.

The interior of the vessel is being designed and decorated by Interior

Designs, Inc. and completely outfitted with a high quality Rockwool TNF Joiner System in order to provide maximum thermal insulation, noise reduction and fire protection. The Rockwool TNF Joiner System is preengineered to minimize labor time and meets USCG/ABS and SOLAS standards.

For free literature detailing Rockwool TNF Joiner Systems,

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## Cruise Ship Construction Boom

### 25% Increase In Passenger Capacity By 1990

The cruise business is experiencing a new construction boom, with more than 20 new cruise ships under construction, on order, or in the planning stage. Passenger capacity of the cruise fleet is expected to increase by 25 percent up to 1990.

According to *Veritas Forum*, the quarterly corporate journal of the classification society Det norske Veritas, each year up to 1990, six to eight new cruise liners will be delivered, most of which are slated for Caribbean waters. Det norske Veritas expects to classify half of these vessels.

At present, 46 out of some 90 cruising vessels of more than 5,000 dwt operate in the Miami-Bahamas-Caribbean region. A steady growth in the number of ships in this area is expected in the years ahead. Miami, the cruise capital of the world, currently is the homeport to 23 cruise vessels. The Miami Port Authority invests about \$15 million per year on improving its facilities, and anticipates that by the turn of the century more than 4 million passengers will be taking cruises out of Miami. This year, the port expects to handle 2.75 million passengers out of the world total of 3.5 million passengers.

In interviews with *Veritas Forum*, chief executives of the Royal Caribbean Cruise Line, Kloster Cruise and Carnival Cruise Lines—three of the world's largest cruise companies—all expressed concern with the ability of the Caribbean islands to cope with the increasing cruise traffic.

**Einar Kloster**, president of Kloster Cruise, said: "When you see the harbor of St. Thomas at its busiest, you may well wonder how the island manages to stay afloat. And how will the situation look when the same number of ships are carrying twice as many passengers? We will have to cooperate with the island authorities in regulating the traffic."

Unlike shipping in general where most ships are scrapped after a life span of 15-20 years, relatively few

ships are scrapped in the cruise industry—cruise ships have an average life span of 40 years. The *Britannia*, the world's oldest cruise ship, built in 1932, is still sailing between Miami, the Bahamas and Mexico.

"Old ships are easily renovated and introduced as new in this market," said **Egil Abrahamsen**, RCCL board chairman. "Older ships naturally offer the best bargains price wise. However, it would be in the best interests of general safety to replace some of the oldest ships. The more new ships, the greater the safety advantages gained," he concluded.

**Mickey Arison**, president of Carnival Cruise Lines, believes that, "there are still not enough new ships to drive the old ships off the market, but this will start to take place in the 1990s."

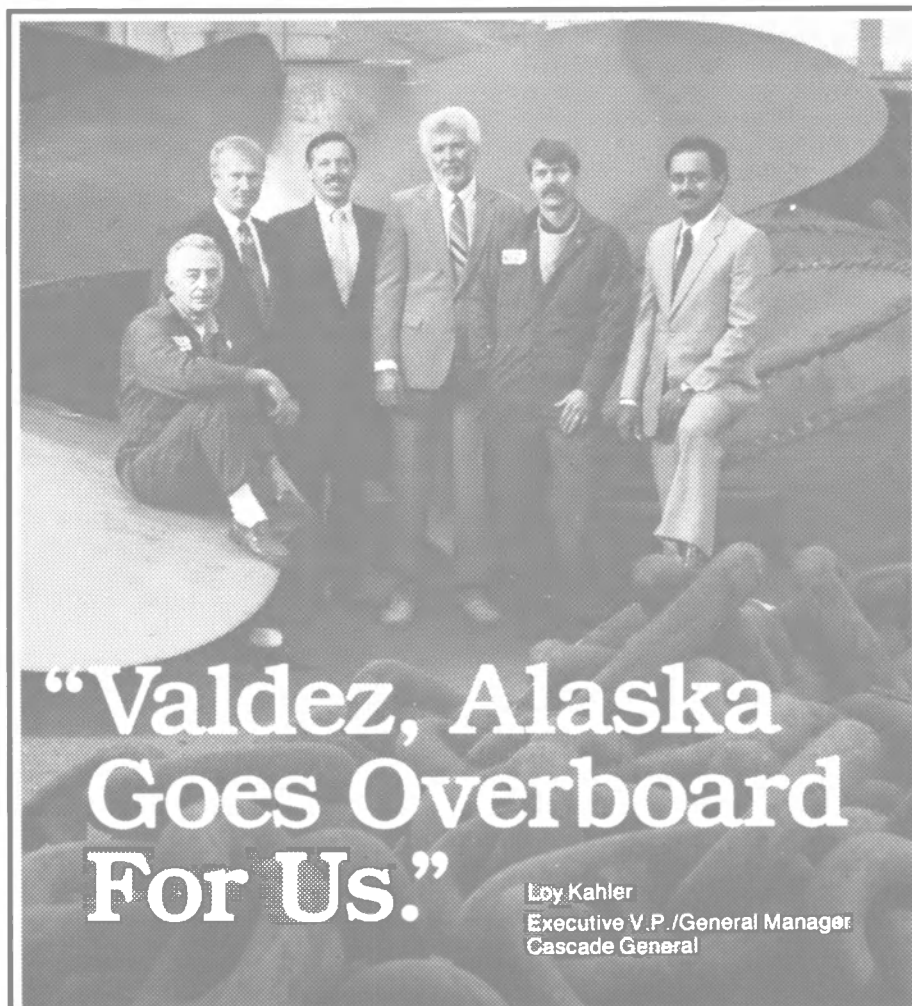
Cruise industry representatives refute the assertion that there is a 15 percent overcapacity in the American market.

For example, **Oddmund Grunstad**, president of the Crown Cruise Line in Boca Raton, north of Miami, stated that he could not "see any signs of overcapacity in the cruise market. The total capacity of the cruise fleet worldwide barely exceeds the capacity of the hotels in the Disney World area, some 60,000 beds."

The fact that cruise companies readily spend as much as 20-25 percent of their annual turnover on marketing proves that cruise activities are more in the line of tourism than shipping.

"Further growth in the cruise business depends on aggressive marketing," said Mr. **Abrahamsen**.

According to *Veritas Forum*, the boom in ships on order or in the planning stage confirms that the cruise business is ready to take on the increasing traffic created by the steady rise in the popularity of the cruise as a vacation. With a seven-day cruise on a superliner costing as little as \$600, the cruise companies are attracting a new and larger market.



Loy Kahler talks with Cascade General's executive team. Left to right: Dale Krug, V.P. Operations, Steve Anderson, Secretary-Treasurer, Ernie Brawley, V.P. Finance, Kahler, Bill Lundmark, President and Suren Menon, V.P. Contract Administration.

"Cascade General is a young dynamic ship repair company with a large array of equipment in the Northwest — and big plans for the future. When we decided to expand into Alaska to better serve our customers, we took a hard look at which port and city would best serve our needs.

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### Free Literature Package On Port Equipment Offered By Westmont Industries

Westmont Industries, headquartered in Santa Fe Springs, Calif., is offering a free, full-color literature package on their products and services, which covers their line of material handling systems, ship loaders/unloaders, crane systems, passenger gangways and other port equipment.


Included in the package is a 12-page four-color brochure detailing Westmont's design and engineering, fabrication, installation and general contracting capabilities.

A second color brochure details Westmont's material handling systems and ship loaders/unloaders. Covered in the brochure are traveling gantry shiploaders, banana unloading systems, mobile gantries, barge unloading systems and other bulk material handling systems. Both brochures have been generously illustrated with color photographs.

Also included in the package are a number of technical data sheets, which provide detailed specifications of several Westmont Industries' products.

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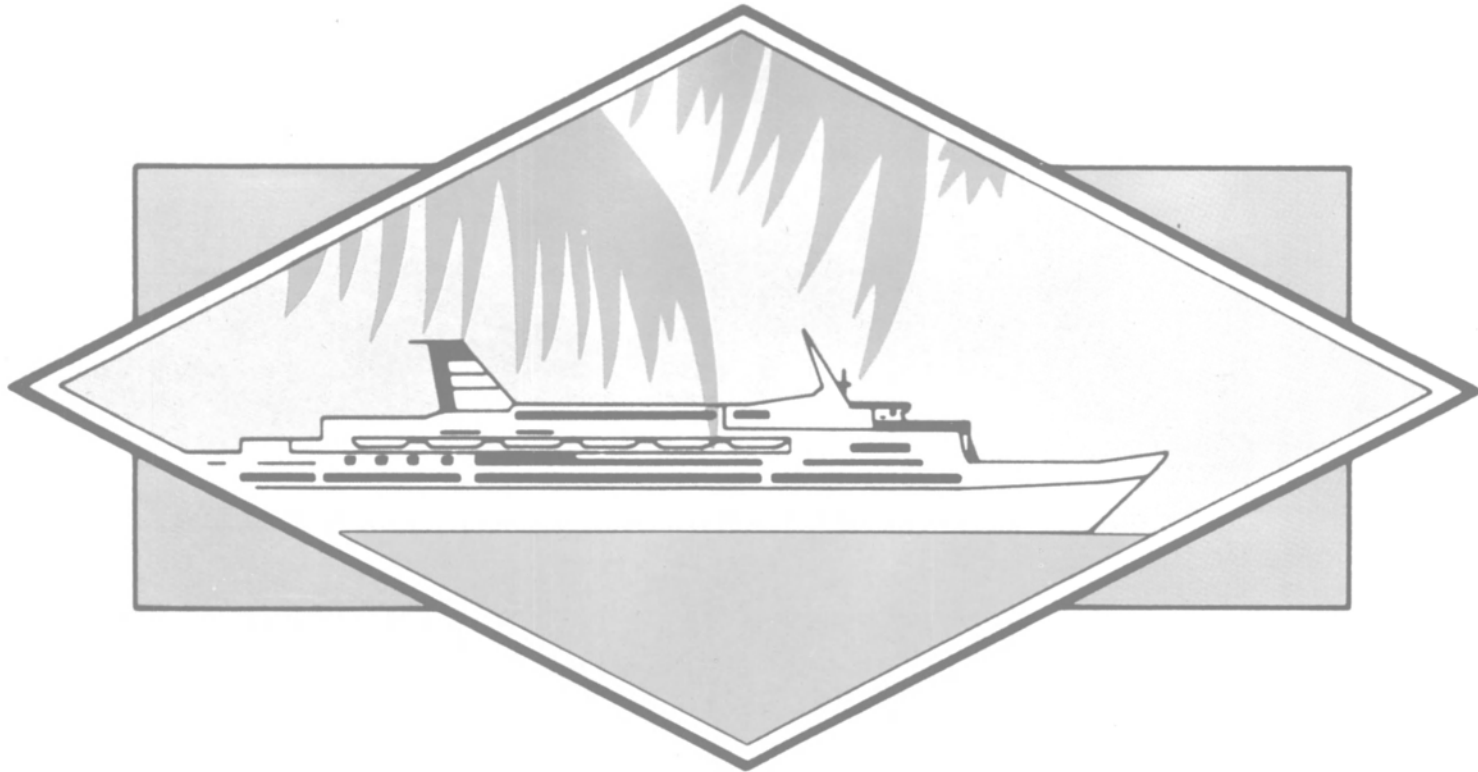
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# CRUISE SHIPPING 88

Miami Beach, Fla., February 23-25

Seatrade's fourth annual cruise shipping conference and exhibition, Cruise Shipping 88, will be held at the Fontainebleau Hilton in Miami, Fla., February 23-25.

Last year, Cruise Shipping 87 was also held at the Fontainebleau Hilton, drawing more than 30 marine industry-related exhibitors and over 300 attendees.

At this year's conference and exhibition, Seatrade officials expect even more attendees, and already more than 40 exhibitors have been registered for the event.

The principal theme of Cruise Shipping 88 will be the shape of the cruise industry as it moves into the 1990s. The conference will feature a number of expert speakers who will discuss how and where the next generation of cruise ships will be designed, built, financed and positioned in the marketplace, in order to broaden the appeal of the cruise product.

Delegate registration and collec-

tion of conference documentation will take place on Tuesday, February 23. Additionally, visitors will be able to view the Seatrade Cruise Exhibition after 3 p.m. A cocktail party reception will be held later that evening between 6 and 7:30 p.m.

During the next two days, Wednesday, February 24, and Thursday, February 25, industry experts and executives will discuss important issues facing the cruise industry.

A special visit to the Port of Miami has been scheduled for Friday, February 26.

For further information on attending, or exhibiting at the Seatrade Cruise Shipping 88 conference and exhibition, contact: **Lenore Cox**, Seatrade North America, Inc., Suite 1805, 40 Rector Street, New York, N.Y. 10006; telephone: (212) 393-1000/1004; telex: 233629 SEA UR; or fax: (212) 608-5874.

## CONFERENCE PROGRAM

### Tuesday, February 23

Delegate registration and collection of conference documentation.

**3 p.m.**—Seatrade Cruise Exhibition opens.

**6-7:30 p.m.**—Seatrade cocktail party reception.

### Wednesday, February 24

#### Morning Session

Introductory address: **A. Kirk Lanterman**, president, Holland America Line-Westours, Inc. and chairman, Cruise Lines International Association.

"Towards the 1990s—Shipbuilding and Design," by **Kai Levander**, manager, research and development, Wärtsilä Helsinki Shipyard.

Shipbuilders and naval architects around the world are coming up with a wide range of new design concepts for cruise vessels. What will be the shape of ships to come?

Left, The Fontainebleau Hilton, Miami, Florida

"Cruise Ships and Hotels," speaker to be announced.

What can the cruise industry learn from the hotelier in terms of operations and product development in such areas as conventions and incentives?

**Session break:** Open period for visit to Cruise Shipping exhibition.

"Supply and Demand," by **Dan White**, transportation analyst, County Securities, Ltd.

As the newbuilding boom continues, it is necessary to take regular readings on the barometer measuring the forward supply of berths versus demand outlook.

"The Yard Perspective," by **Jean-Francois Cristau**, Barry Rogliano Salles

Shipyards in Europe have benefited from the strong demand for cruise ships. Will the traditional cruise shipbuilders face competition from outside Europe, for example from Japan?

Panelist: **Knut Kloster, Sr.**, president, Kloster Group.

Moderator: **Christopher Hayman**, Publisher, Seatrade.

Luncheon address: **Carmen J. Lunetta**, port director, Port of Miami.

### Afternoon Session

"Marketing Workshop"

The afternoon session will take the form of a panel discussion on the strategies for the effective marketing of the cruise product.

Introduction: **Robert H. Dickinson**, senior vice president, sales and marketing, Carnival Cruise Lines.

"Packaging the Product," by **Bruce Nierenberg**, executive vice president, Premier Cruise Lines.

"The Medium and the Message," speaker to be announced.

"The Distribution System," by **Jay Silberman**, president and **Debbie Adams**, vice president, National Association of Cruise Only Agencies (NACOA).

"What the Passenger Actually Wants," by **Jay L. Lewis**, president and **Dr. Dan Sarel**, director, Market Scope, Inc.

Panelist: **Jim Godsman**, president, Cruise Lines International Association.

During the afternoon session there will be an open period to enable delegates to visit the Cruise Shipping exhibition.

**Reception and Dinner** hosted by the Port of Miami.

### Thursday, February 25 Morning Session

"Raising Equity—Public Offerings," by **Peter Wexler**, vice president, transportation group, Saloman Brothers Inc.

The initial public offering in the equity markets as a means of raising money for cruise lines.

"The Commercial Banks' Role," speaker to be announced from Citibank.

A banker's view of ship finance for the cruise ship market.

"Choosing a Register and a Crew," speaker to be announced.

The trend towards reflagging out of the traditional European ship registers continues in the cruise industry. Crewing is a vital issue for cruise lines, as a major factor in operating costs and because of its relevance to passenger relations.

"Insurance," speaker to be announced.

The special insurance needs of the cruise industry, and the role of the P&I clubs.

"Maximizing Onboard Revenues," speaker to be announced.

A host of new ideas are now available both to improve the range of facilities for passengers and to increase onboard revenues. What are the likely directions of the future?

"Marketing," by **Stan Buchin**, senior vice president and director, marketing management group, Temple, Barker & Sloane.

### Afternoon Session

"Destinations and Ports"

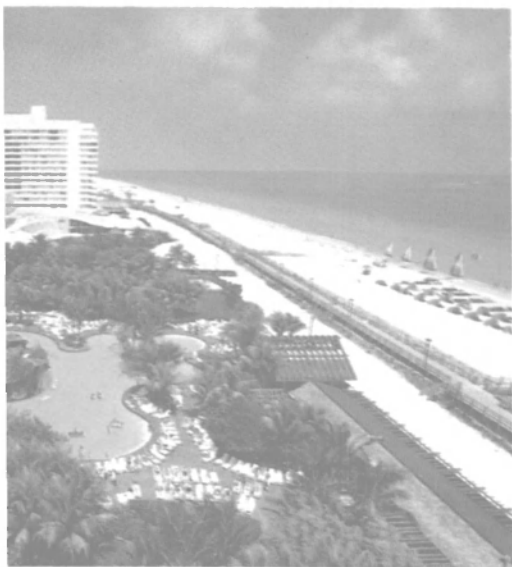
Introduction: **Andreas Potamianos**, president, Epirotiki Lines SA and president, Union of Greek Passenger Shipowners.

"China and the Far East," by **Michael Lewis**, deputy managing director, the China Navigation Company Limited, Hong Kong.

The Far East is one of the growth areas for cruise, both as a destination and ultimately as a source of passengers.

"Europe's Cruise Market," by **Alf P. Pollak**, managing director, Seetours International GmbH.

A leading European tour operator gives his views on ship charters and the demand for cruise products in Europe.





**Session Break:** Open period for visit to Seaside Cruise Shipping exhibition. "The Caribbean Theatre," by **Ferdie R. Martin**, director, cruise division, Jamaica Tourist Board.

The Caribbean market continues to absorb an ever-increasing volume of cruise traffic. What trends are emerging in terms of homeporting, resort construction, etc.? "The Air Connection," speaker to be announced.

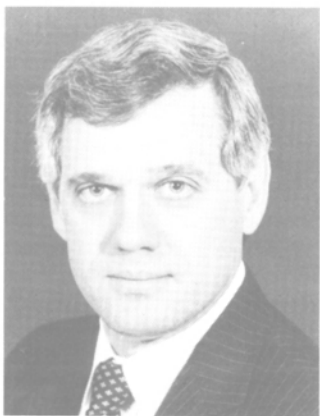
The airline connection represents an increasingly important element in cruise marketing. What is the airlines' view of the cruise industry?

Panelists: **Howard A. Fine**, president and chief executive officer, Costa Cruises. **Ken Page**, director, Passenger Shipping Association.

**Evening**

Cocktail reception party hosted by the Portland Ship Repair Yard.

**Shipley Joins Comsat As Sales Director**



Gerald Shipley

**Gerald Shipley** has joined Comsat Maritime Services as director of international sales. He will be responsible for developing and implementing marketing and sales programs to encourage greater use of Comsat's telecommunications services by overseas ship management, operating companies, and other maritime communications users.

Prior to joining Comsat, Mr. **Shipley** was director of international marketing for Telenet Communications Corporation where he managed the marketing and sales of that company's telecommunications services abroad. He also held various sales, marketing, and product management positions during a 12-year tenure with General Electric Company.

**Unitor Awarded Order For Fire, Rescue And Safety Equipment —Literature Available**

Unitor Ships Service AS of Norway recently secured an order for the fire, rescue and safety (FRS) equipment package for the Stena II passenger ferry.

The ferry was recently delivered from Gdansk Shipyard.

The FRS order amounted to approximately NOK900,000.

For free literature giving additional information on Unitor,

Circle 35 on Reader Service Card

**Dampa Awarded Contract To Furnish Joiner Systems —Literature Available**

Dampa, Inc. of Baltimore, Md., has been awarded a contract to furnish its marine designed joiner ceilings with lights, joiner bulkheads, floating floors, joiner doors, and related engineering for the 138-passenger United States-flagged luxury yacht, Yorktown Clipper, currently

the largest vessel of its type under construction in the United States.

The \$12-million Yorktown Clipper, owned by Clipper Cruise Line of St. Louis, Mo., is being constructed by First Coast Shipbuilding, Inc. of Green Cove Springs, Fla. The vessel is scheduled for completion in March 1988.

The 257-foot-long luxury yacht is 39 feet wide and has a draft of 7½ feet. She will carry a crew of 35 in addition to the 138 passengers.

The Yorktown Clipper has al-

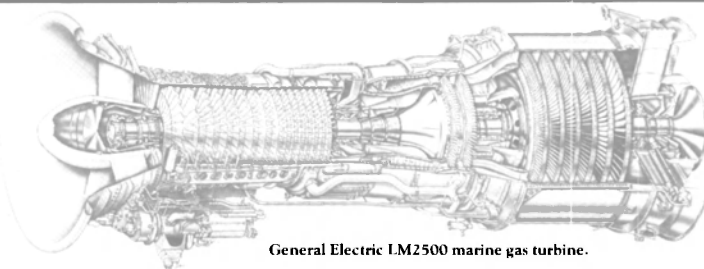
ready announced her sailing schedule with the maiden voyage beginning March 26, 1988, in the Colonial South. The summer will take the vessel to New England and the Maine coast. Winters will find the Yorktown Clipper in the Leeward Islands, operating between St. Martin and Antigua.

For free literature on Dampa marine joiner bulkhead and ceiling systems,

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# The jet age comes to cruise liners.

**LM2500 helps cruise liners earn more profits, gain extraordinary levels of operating reliability.**



General Electric LM2500 marine gas turbine.

Everything is right about an aeroderivative propulsion system from General Electric.

**More profits.** Because of the space saving advantages of the LM2500, a typical 1,900-passenger cruise liner, for example, can gain upwards of 70 extra passenger cabins.

**A superior ship.** A GE gas turbine engine is cleaner and quieter, with lower vibration which allows a cruise liner to offer a more comfortable environment. The engine not only produces propulsion power, but plenty of power for fresh water distillation, air conditioning and other uses as well.

**More reliable.** State of the art technology built into the LM2500 means exceptional reliability, and availability that consistently runs over 99%.

**Proven in service.** The GE LM2500 is the standard propulsion system for the US Navy and for 16 other navies around the world. Today, the engine powers more than 220 ships of the line — from patrol boats and

corvettes to frigates, destroyers, cruisers, carriers, even auxiliary ships. In addition, the engine has an equal depth of experience with tough, industrial applications like offshore drilling platforms and pipeline pumping stations, plus cogeneration systems that produce both steam and electricity from the same equipment at high efficiency.

**A natural fit.** In sum, the aeroderivative engine is the ideal engine for cruise line applications. And GE will not only supply the gas turbine system, but complete propulsion plant design consulting services as well.

For more information on entering the jet age, contact Ian Stopps, Manager of International Marine Marketing, Mail Drop N158, General Electric, 1 Neumann Way, Cincinnati, Ohio, USA 45215, or call (513) 552-5376.



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## Sea-Land Purchases Five USL Containerships For \$80 Million

Sea-Land Corporation recently paid \$80 million at auction for five former United States Lines (USL) containerships. Sea-Land outbid the Maritime Administration for the vessels, which were sold by the U.S. Marshal as part of the Chapter 11 bankruptcy proceedings for USL.

The USL containerships involved in the auction were: the American Puritan, built in 1980; the American Pioneer, built in 1979; the American Entente and American Envoy, both

built in 1972; and the American Merchant, built in 1973. The first four containerships have 1,708-TEU capacities, while the last has a 964-TEU carrying capacity.

Sea-Land bid \$26.5 million for the Puritan, \$24.5 million for the Pioneer, \$12 million each for the Entente and Envoy, and \$5 million for the Merchant.

The company plans to use the five ships in its trans-Pacific trade routes, in a loop from California to Hawaii, Guam and Taiwan.

### Commander Bearings Offer Excellent Performance In Harsh Environments —Literature Available

According to **Jim Murphy**, senior vice president of Georgia Transporter, Panama City, Fla., Cutless® Commander™ water-lubricated bearings from L.Q. Moffitt offer a distinct improvement over some other bearings in the gritty, silty waterways that his pushboats operate.

Georgia Transporter operates a fleet of seven pushboats and haulers on the Appalachian River and other inland waterways as far as New Orleans. According to **Mr. Murphy**, these rivers are gritty and full of silt giving bearings a severe test,

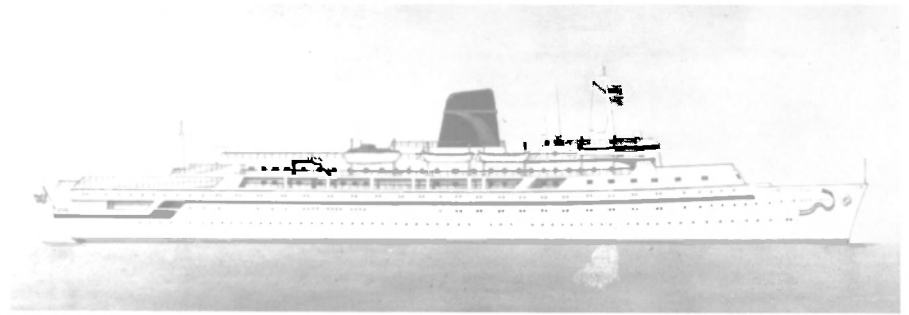
especially in vessels designed to handle heavy service.

Cutless Commander water-lubricated bearings were selected for Georgia Transporter's new pushboat Goldilocks when she was commissioned last year. The L.Q. Moffitt composite shell bearings were selected for the Goldilocks, after an older sister ship, the Nancy Jane, performed well with Commander bearings. After four months of operation on the gritty river, the Nancy Jane's bearings showed no signs of wear when inspected.

The performance of the bearings in the Nancy Jane was one of the major reasons that they were selected for the Goldilocks, according to **Mr. Murphy**.

For free literature on L.Q. Moffitt's Cutless Commander water-lubricated bearings,

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Artist's conception of the S.S. Monterey after the completion of her conversion at Wartsila-Helsinki. The U.S.-flag ship will be delivered in the spring of this year.

## Transformation Of S.S. Monterey Into Luxury Cruise Liner Underway At Wartsila-Helsinki

The rebirth of the passenger/cargo ship S.S. Monterey, idled since 1978, as a modern 660-passenger luxury cruise liner is in full swing at Wartsila Marine Industries' Helsinki yard.

The Helsinki yard is performing all the outfitting and interior work on the U.S. flagship, which includes the repair and upgrading of existing machinery and equipment, and installation of new sewage and waste-handling plants, a bilge water separator and bowthruster. Additionally, Wartsila is refurbishing the Monterey's existing passenger cabins, as well as installing 127 new cabins, some of which are suites and minisuites. The crew compartments are also being modernized and 23 new cabins are being installed to handle the expected complement of 265. Space for the new cabins was created by the enlargement of the superstructure to the fore and aft of the ship. Some of the new cabins

will be located in the existing cargo holds at both ends of the vessel.

In addition, five conference rooms will be added, along with the modernization of the vessel's lounge, cinema and galley. Other new features of the Monterey will include an all-day dining facility, boutique, deck/sport facilities, swimming pool and jacuzzis.

The conversion work on the Monterey is being performed under a contract with Aloha Pacific Cruises Inc., Alexandria, Va.

Last year, under a subcontract from Wartsila, Tacoma Boatbuilding Co., Tacoma, Wash., performed structural modifications and repairs to the hull and superstructure of the 563-foot Monterey in accordance with the Jones Act. The Jones Act specifies that all structural modifications of a U.S.-flag vessel must be carried out in the U.S., in order to keep its U.S. coastline trading provisions. The work performed at Tacoma involved the addition of 17 modules, renewal of steel, tank tops and bulkheads and replacement of thin deck plate. Northwest Marine Iron Works, Portland, Ore., provided shell plate for the conversion. Tacoma completed the work in early October, and the Monterey was towed to Helsinki for her outfitting and interior work.

Upon her delivery in the spring of 1988, the refurbished Monterey will be operated by Aloha Pacific Inc. in the interisland Hawaiian cruise market.

For free literature on the shipbuilding, ship-repairing and converting services and capabilities of Wartsila Marine,

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### Krupp MaK Offers 28-Page Brochure On Dicare Engine Diagnosis System

Krupp Mak Maschinenbau GmbH of Kiel, West Germany, has published a 28-page brochure that describes the Dicare engine diagnosis PC software system development by diesel experts of Krupp Mak. Dicare can only be used for Krupp MaK diesel engines.

The publication explains that the Dicare system offers, in connection

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with a personal computer, the following services: compares the engine data stored on the diskette with actual measurement data, which are recorded from the running engine; computes a comparison of nominal and actual data, records deviations and displays messages if and when limit values are reached or exceeded; provides a subsequent diagnosis and a plan for required action; shows the nominal and actual data under comparison in a table or a graphic display; stores all measured deviations in a long-term protocol mode and displays the historical development of deviations; stores and displays all input data and also runs diagnosis for past recordings.

The software program and a data base diskette are exclusively produced by Krupp MaK and handed over to the purchaser, once a contract to use Dicare has been acknowledged.

The brochure points out that Dicare has been developed as a user-friendly and simple-to-handle program. The operator's manual which is supplied with Dicare will enable an operator to use Dicare without special knowledge.

For more information and a free copy of the brochure "DICARE—Description of System" from Krupp Mak,

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### A. Edward Owen Named President And CEO, ZF Of North America



A. Edward Owen

A. Edward Owen recently joined ZF-NA after 23 years in executive positions with Borg Warner. He managed the Remanufacturing Division in Ottawa, Ill., for 11 years and was head of Borg Warner Brazil from 1979 until 1983. Most recently, he was vice president/general manager of Borg Warner Clutch Systems, in charge of worldwide clutch operations with plants in four overseas locations and a major distribution center in Chicago.

ZF of North America, Inc., is a subsidiary of Zahnradfabrik Friedrichshafen AG (ZF-AG), West Germany, and as such the exclusive sales and service organization for the North American market—providing transmissions, drivetrains, axles and steering gears for passenger cars, on- and off-highway vehicles and equipment as well as marine applications to North American customers since 1979.

ZF-NA also maintains an OE sales/application engineering office

in Farmington Hills, Mich., near Detroit.

In addition, ZF-AG has installed manufacturing companies to serve the American market: ZF-Transmissions Inc., Gainesville, Ga., and ZF-Steering Gear (US) in Brewer, Maine.

For more information and free literature from ZF-NA,

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### First Wartsila Vasa 46 Ordered For RO/RO Ship

The first order for Wartsila Diesel's new Vasa 46 medium-speed heavy fuel engine was recently received. The propulsion unit was chosen for a new RO/RO vessel under construction at the J.J. Sietas Shipyard of Hamburg for Schiffahrtsgesellschaft M/S Odin KG.

The 6,300-dwt multipurpose RO/RO will be powered by a six-cylinder Vasa 46 diesel engine with an output of 5,430 kw at 450 rpm. The engine will be delivered this June and the vessel will be completed in September.

For free literature fully detailing the new Vasa 46 engine from Wartsila,

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**Maintenance Saving Money**

**Hempel's Uni-Primer 1385 is a cost-effective solution for any onboard paint repair job. It's easy to use, dries rapidly and provides excellent corrosion protection on hand-prepared surfaces. For further information call your local Hempel office.**

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quality and service

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## Edger Named President Of Jered Brown Brothers



R. J. Edger

R. J. (Rick) Edger has been named president of Jered Brown Brothers, Inc., a Troy, Mich., engineering and manufacturing company specializing in shipboard equipment for the U.S. Navy, including aircraft, cargo, and weapons elevators; ship steering systems; submarine bow planes; anchor windlasses; and specialized handling systems.

Jered Brown Brothers is an operating unit of Vickers Marine Engineering Division, which in turn is a major division of Vickers P.L.C., the London, England, based parent company of Rolls Royce Motors, and a worldwide supplier of systems and equipment for business, lithography, medical and scientific as well as for defense and marine industries.

Mr. Edger had previously been Jered Brown's vice president of sales and marketing. He joined the company in 1985 from Lake Shore, Inc., an Iron Mountain, Mich., manufacturer of deck machinery, where he had been general manager of Lake Shore's marine division. Prior to the Lake Shore stint, Mr. Edger for 10 years served in a series of marketing and sales engineering positions with Sperry Vickers, a major marine hydraulics manufacturer.

Mr. Edger is a member of the Society of Naval Architects and Marine Engineers (SNAME), the American Society of Naval Engineers (ASNE), and the Navy League.

## Veritas Group Restructures Into Corporation With Independent Subsidiaries

The Board of Det norske Veritas is to restructure the Veritas Group into a corporation in which activities within its different business areas are managed by independent limited companies with worldwide market responsibility.

This reorganization means that from January 1, 1988, the Veritas Group will consist of a new classification company, a new industrial company, an offshore company (Veritec A.S) and the existing companies A.S. Veritas-huset, A. S. Veritas Research and A.S. Computas.

With the exception of A. S. Computas, the subsidiaries will be owned 100 percent by the foundation Det norske Veritas through a Veritas Holding Company.

## Saab Offers New User Friendly System To Load And Discharge Tankers

Saab Marine Electronics of Gothenburg, Sweden, has introduced the Mac/501 system that enables the operator to load and discharge tankers by operating a light pen or a tracker ball on a color monitor. While studying on-line graphic

mimic pictures on the screen he will have full control of the cargo handling and its associated pumps and valves. By use of the latest man-machine communication techniques, the handling is simplified and made safer.

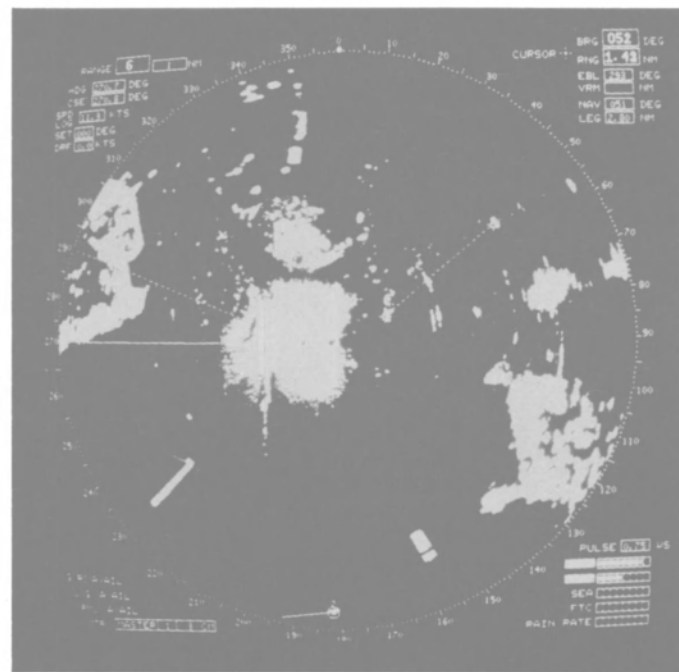
Distributed independent substations provide increased reliability and secures operation even if the central processor should fail.

The cargo level is monitored by

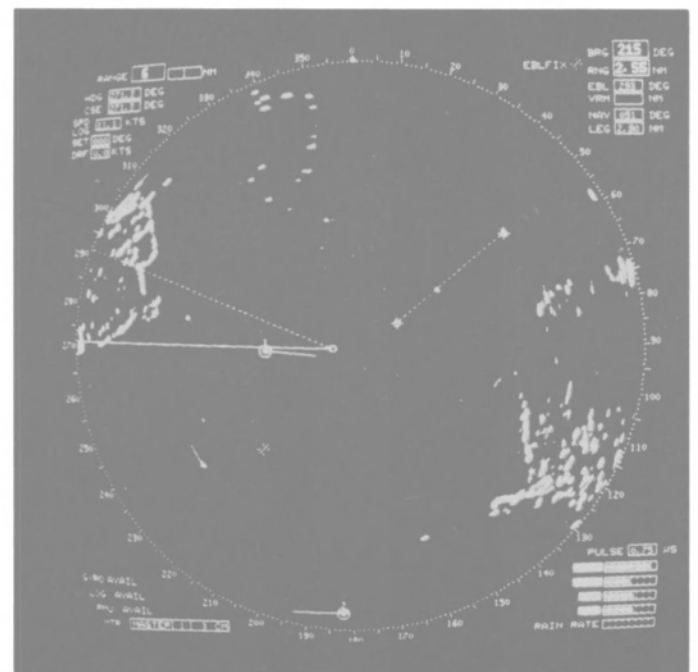
the integrated radar sensors of the well-known TankRadar system giving non-contact measurement of cargo levels. Also ballast gauging, temperature and pressure measurement as well as other types of sensors can be included.

For free literature giving complete details on the Mac/501 from Saab,

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With rain and sea clutter circuits OFF on PATHFINDER/ST ARPA, sea clutter extends 1.8 to 2 miles from ship, ice floe belts appear 320° to 35°, additional ice clutter scattered beyond sea clutter 270° to 320° (Thick lines at 230° and 155° are RACONS).



With rain and sea clutter circuits ON, the radar picture is absolutely "clean." Sea and ice clutter are gone. All targets previously masked are clearly visible.

## Raytheon PATHFINDER/ST: Superior Technology Provides Superior Target Detection.

### True Motion with Electronic Plotting or ARPA.

Raytheon sets radar performance standards for the 21st century with technology breakthroughs that virtually eliminate noise, interference and clutter, while recognizing and displaying even weak targets typically lost on other radars.

The heart of this improved radar system is Raytheon's exclusive five-stage signal processing... we call it Superior Technology.

ST for short.

Combined with higher performance transmitters and receivers, and the latest raster displays, ST provides performance levels never before available. Now, with PATHFINDER/ST, your vessels—and their crews—can have an important extra measure of safety and efficiency, including a unique Safety-Coded CPA Circle, which shows course selections for safest CPAs. PATHFINDER/ST is available as an ARPA or a True Motion/Relative Motion

display with Electronic Plotting. These displays can easily retrofit the displays in older Raytheon Bright Display Radar Systems, and can be high-performance repeaters for radars of most other manufacturers.

When interfaced with an SNA-91 Integrated Bridge Display, the PATHFINDER/ST ARPA also becomes a key sensor/decision-aid in a complete shipboard navigation and control system.

### Near-Perfect Target Detection.

Using increased signal-to-noise levels, high dynamic range, precisely matched pulse bandwidths, and exclusive Rain Rate circuits, PATHFINDER/ST receivers faithfully capture target returns even in severe clutter.

PATHFINDER/ST multistage processing analyzes, compares, tests, and samples the received signal so that all detected targets, no matter how weak in signal strength, are distinguished from clutter and clearly displayed.

with a personal computer, the following services: compares the engine data stored on the diskette with actual measurement data, which are recorded from the running engine; computes a comparison of nominal and actual data, records deviations and displays messages if and when limit values are reached or exceeded; provides a subsequent diagnosis and a plan for required action; shows the nominal and actual data under comparison in a table or a graphic display; stores all measured deviations in a long-term protocol mode and displays the historical development of deviations; stores and displays all input data and also runs diagnosis for past recordings.

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For further information call your local Hempel office.

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R. J. Edger

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With the exception of A. S. Computas, the subsidiaries will be owned 100 percent by the foundation Det norske Veritas through a Veritas Holding Company.

## Saab Offers New User Friendly System To Load And Discharge Tankers

Saab Marine Electronics of Gothenburg, Sweden, has introduced the Mac/501 system that enables the operator to load and discharge tankers by operating a light pen or a tracker ball on a color monitor. While studying on-line graphic

mimic pictures on the screen he will have full control of the cargo handling and its associated pumps and valves. By use of the latest man-machine communication techniques, the handling is simplified and made safer.

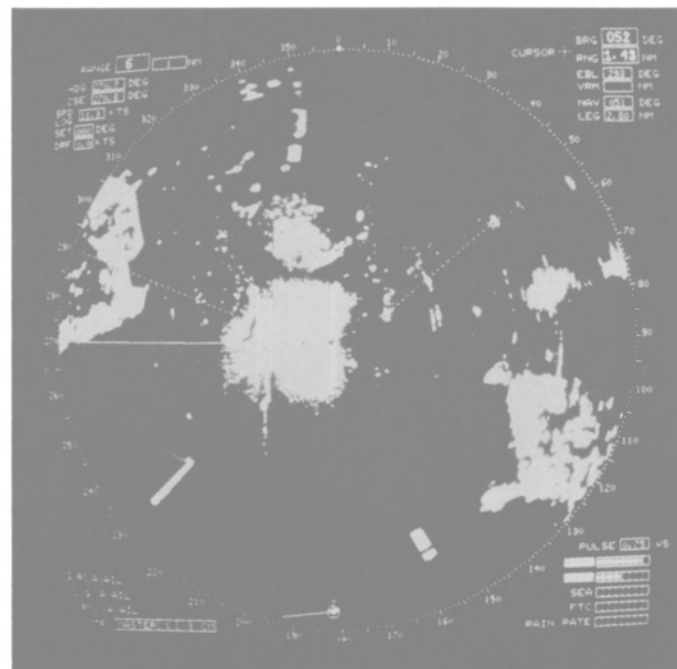
Distributed independent substations provide increased reliability and secures operation even if the central processor should fail.

The cargo level is monitored by

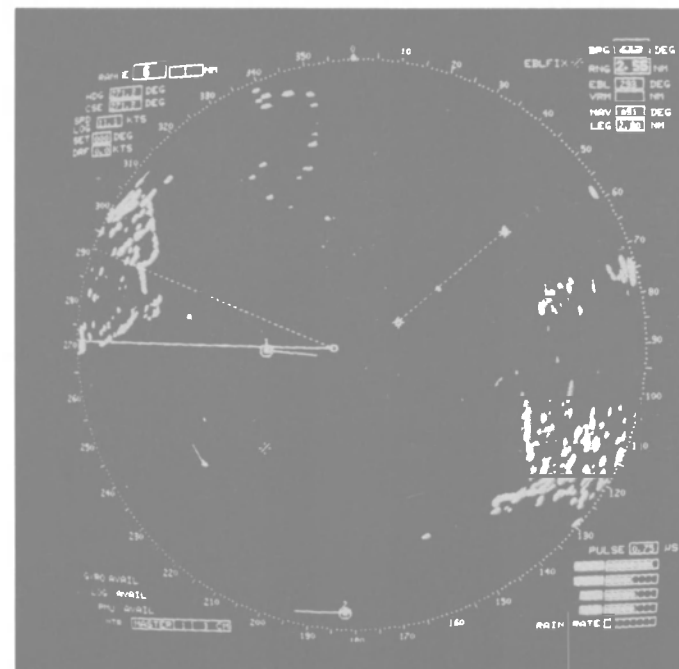
the integrated radar sensors of the well-known TankRadar system giving non-contact measurement of cargo levels. Also ballast gauging, temperature and pressure measurement as well as other types of sensors can be included.

For free literature giving complete details on the Mac/501 from Saab,

Circle 42 on Reader Service Card



With rain and sea clutter circuits OFF on PATHFINDER/ST ARPA, sea clutter extends 1.8 to 2 miles from ship, ice floe belts appear 320° to 35°, additional ice clutter scattered beyond sea clutter 270° to 320° (Thick lines at 230° and 155° are RACONS).



With rain and sea clutter circuits ON, the radar picture is absolutely "clean". Sea and ice clutter are gone. All targets previously masked are clearly visible.

## Raytheon PATHFINDER/ST. Superior Technology Provides Superior Target Detection.

### True Motion with Electronic Plotting or ARPA.

Raytheon sets radar performance standards for the 21st century with technology breakthroughs that virtually eliminate noise, interference and clutter, while recognizing and displaying even weak targets typically lost on other radars.

The heart of this improved radar system is Raytheon's exclusive five-stage signal processing... we call it Superior Technology.

ST for short.

Combined with higher performance transmitters and receivers, and the latest raster displays, ST provides performance levels never before available. Now, with PATHFINDER/ST, your vessels—and their crews—can have an important extra measure of safety and efficiency, including a unique Safety-Coded CPA Circle, which shows course selections for safest CPAs. PATHFINDER/ST is available as an ARPA or a True Motion/Relative Motion

display with Electronic Plotting. These displays can easily retrofit the displays in older Raytheon Bright Display Radar Systems, and can be high-performance repeaters for radars of most other manufacturers.

When interfaced with an SNA-91 Integrated Bridge Display, the PATHFINDER/ST ARPA also becomes a key sensor/decision-aid in a complete shipboard navigation and control system.

### Near-Perfect Target Detection.

Using increased signal-to-noise levels, high dynamic range, precisely matched pulse bandwidths, and exclusive Rain Rate circuits, PATHFINDER/ST receivers faithfully capture target returns even in severe clutter.

PATHFINDER/ST multistage processing analyzes, compares, tests, and samples the received signal so that all detected targets, no matter how weak in signal strength, are distinguished from clutter and clearly displayed.



## Free 46-Page Booklet Offered On 'Flex' Electric Power Tools

A 46-page four-color booklet on Flex® electric power tools is being offered by Ackermann u. Schmitt GmbH & Co. KG of West Germany.

The publication describes, illustrates and gives technical data on Flex electric power tools, such as

angle grinders, straight grinders, shears, nibblers, pendulum jigsaws, etc. Also included are photos and technical information on the accessories that are available.

The booklet is generously illustrated with color photos, some of them full-page, showing the tools in actual use for a specific purpose. The accompanying text lists characteristics (e.g., high-speed, maximum performance in real heavy-duty

work); what the tool can be used for (e.g., grinding, roughing, cutting, derusting, stone cutting, removal of rust and old paint, edge trimming, deburring, snagging, milling, brushing); and users (e.g., iron and steel engineering shops, vehicle repair and body shops, welding shops, fitting shops, stone process industries, sheet-metal processing shops, tool manufacturers, foundries, builders).

The U.S. distributor for Flex electric power tools is Levant Tools Distribution Company of Saint Paul, Minn.

For more information and a free copy of the booklet,

Circle 22 on Reader Service Card

## Unitor Secures Major Polish Order For Freon Gases

Unitor Ships Service AS of Kolbotn, Norway recently announced that Centromor (the Polish coordination office for sales and purchasing) has awarded an order for the supply of freon gases and cylinders to Unitor. The order is worth NOK1.3 million.

A spokesman for the company said that Unitor's good standing in Poland and its proven record as a worldwide service organization for the Polish fleet secured the order.

**Trygve Bolstad**, Unitor's sales executive for Poland, pointed out that Unitor has always maintained a close and consistent relationship with Polish shipping companies and yards over the last 10 years and that Poland has always been treated as a prime Unitor customer.

For more information and free literature from Unitor,

Circle 37 on Reader Service Card

## Cynthia Martin Heads Avondale Industries' New Washington Office

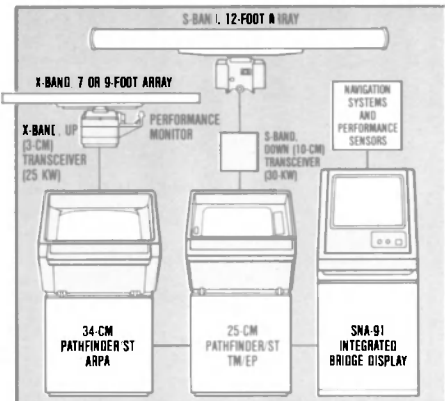


Cynthia L. Martin

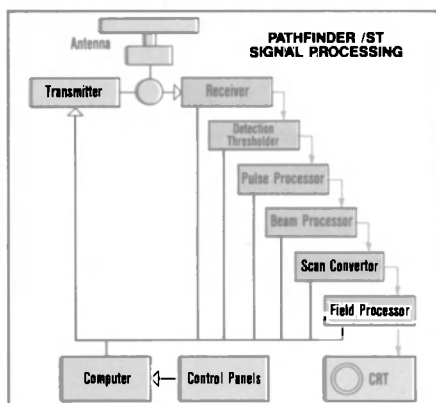
Avondale Industries, Inc. of New Orleans, La., recently opened a Washington, D.C., office. The office, which is located in Crystal City, Va., will be headed by **Cynthia L. Martin**, director, government relations.

In her position, Ms. **Martin** is responsible for all legislative and lobbying activities for the entire company.

Previously, she was employed by Ogden Corporation for six years as a legislative representative in their Washington, D.C., lobbying office. While working for Ogden her primary responsibility was the legislative concerns of Avondale Shipyards, which was an Ogden subsidiary until September 1985. In 1985, Avondale was sold by the Ogden Corporation to an Employee Stock Ownership Plan creating Avondale Industries, Inc.



Electronically switches up to 3 displays and transceivers, with CRT diagrams, for single/simultaneous 3 or 10-cm operation.



From the control panels through the computer, transmitter, and receiver—and then in five steps leading to the CRT—Raytheon's exclusive Superior Technology provides sharp, bright radar pictures virtually free of clutter.



**PATHFINDER/ST ARPA:** 34-cm or 25-cm PPI's (16" or 12" diagonal CRT IMO equivalents), provide automatic tracking of up to 40 targets with vectors and readouts for most dangerous 20. Have auto and manual acquisition, and unique trial maneuvers.

**PATHFINDER/ST TM/EP:** 34-cm or 25-cm PPI's (16" or 12" diagonal CRT IMO equivalents), have True and Relative Motion displays. Electronic Plotting, course, speed, bearing, CPA and TCPA for two selected targets.

## Comparison Tests Prove PATHFINDER/ST Radars See What Other Radars Can't.

In side-by-side comparison tests, a PATHFINDER/ST display and a conventional radar display were connected to the same radar system. *PATHFINDER/ST consistently displayed targets not detected by the conventional display.*

## Optimum Resolution Displays are Clearly Superior.

PATHFINDER/ST raster scan PPI images are refreshed 50 times each second. This eliminates the annoying "flicker" found in other radar systems. The number of pixels has been carefully chosen for optimum resolution. The result is an extremely sharp, ultra-bright image that is easy to view, day or night.

## Superior Technology Will Clearly Fit Your Needs.

PATHFINDER/ST Radars satisfy a very wide range of installation and operating requirements. Signal multiplexing reduces connections between PATHFINDER/ST receivers and displays. This, combined with electronic interswitching for dual systems, the ability to mount transceivers "up" in antenna pedestals, or "down" in separate cabinets, and keyboard entry of all set-up parameters, makes any installation straightforward, simple, and economical.

In addition to having the optional IMO-required, antenna-mounted performance monitors, PATHFINDER/ST Radar software provides menus for extensive self-testing of virtually every function.

## Worldwide Approval and Support.

Raytheon PATHFINDER/ST Radars are designed to meet or exceed all applica-

ble commercial standards and reliability testing requirements, including those of IMO and the national regulatory agencies of countries worldwide.

They are backed by extensive worldwide support and service facilities, located in major ports everywhere.

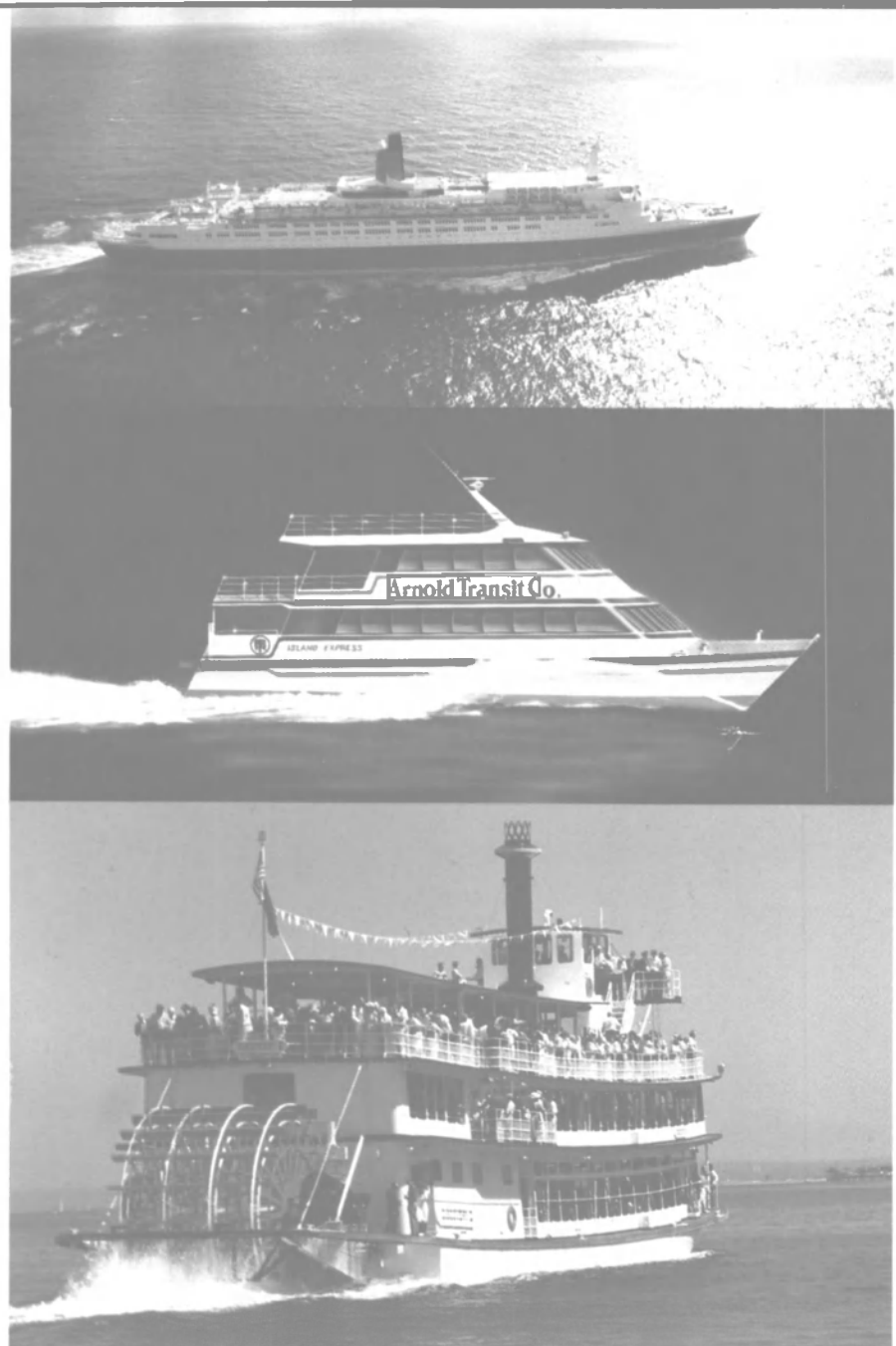
Specifications subject to change without notice

## Raytheon

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Circle 116 on Reader Service Card



## OUTSTANDING PASSENGER VESSELS OF 1987

Since worldwide cruise ship construction is at an all-time high, with more than 20 new cruise liners being built, on order, or in the planning stage, and U.S. yards are busy building a number of cruise boats and ferries, the editors of Maritime Reporter and Engineering News have put together a feature on some of the most notable, and perhaps, momentous newbuildings and conversions of 1987.

The selections for the "Outstanding Cruise Ships and Passenger Vessels of 1987" were chosen on the basis of their superior performance characteristics, design and features.

This year's selections seem to have a distinct "aristocratic flavor," with almost half of the 23 award recipients having a "royal aspect" to their names.

For example, the Sovereign of the Seas, the 74,000-grt luxury liner built by Alsthom's Chantiers de l'Atlantique, the Queen Elizabeth 2, converted by Bremerhaven-based Lloyd Werft, and the Wart-

sila-built Kronprins Harold headline the cruise ships.

Featured among the inland and coastal cruise and passenger vessels are the Caribbean Princess, the steamer replica Cajun Queen and the cruise boat Treasure Queen, built by Freeport Shipbuilding.

Two selections were named Majestic, one a 1,000-passenger sternwheeler replica converted by Patti Shipyard, and another a 325-passenger ferry built by Aluminum Boats.

### The Ships

#### CELEBRATION Kockums

The newest Carnival Cruise Lines Inc. "Fun Ship," the Celebration, joined her sistership, the Jubilee, after her delivery last year. Both 47,262-grt cruise liners were built by Kockums AB of Malmo, Sweden. The Jubilee was delivered in the summer of 1986.

With an overall length of 733 feet, beam of 92 feet and moulded depth

of 25 feet, the Celebration has a total of 733 standard cabins and 10 deluxe suites. The new Superliner has a passenger capacity of about 1,500 and carries a crew complement of 680.

Powered by two low-speed Sulzer 7RLB66 diesel engines with integral thrust bearings each coupled directly to KaMeWa controllable-pitch propellers with highly skewed blade design. The main engines each have a maximum continuous rating of 15,770 bhp at 140 rpm. She can obtain a service speed of 19.5 knots.

The Siemens propulsion control system, which includes automatic main engine overload control as well as an engine load increase feature, incorporates different operating modes, including: constant speed operating mode at 136 rpm for shaft alternator operation; and two combination operating modes—one thrust mode and one pitch mode—where the engine speed, propeller thrust and propeller pitch are controlled according to pre-established curve.

#### Celebration

Main engines (2) . . . . . Sulzer  
Engine controls . . . . . Siemens

Propellers & thrusters . . . . . KaMeWa  
Steering gear . . . . . Frydenbo  
Stabilizers . . . . . Sperry  
Alternators (5) . . . . . Siemens  
Alternator diesels (3) . . . . . Wartsila-Vasa  
PTOs (2) . . . . . Lohmann & Stolterfoht  
Switchboards . . . . . L. K. Ness  
Oil-fired boilers (2) . . . . . Sunrod  
Distilling plant . . . . . Atlas  
Air conditioning plant . . . . . Flakt  
Compressors . . . . . Stal  
Sprinkler & alarm system . . . . . Wormald  
Deck machinery . . . . . Norwinch  
Anchors . . . . . Ramnaes  
Side doors . . . . . Velle  
Watertight doors . . . . . Schoenrock  
Windows . . . . . Wingerden  
Sewage plant . . . . . Hamworthy  
Purifiers . . . . . Laval  
Bearings . . . . . Railco  
Elevators . . . . . Dan  
Lifeboats . . . . . Harding  
Life rafts . . . . . Viking  
Radars (3), Loran C, facsimile recorder, speed log . . . . . Raytheon  
SatNav system . . . . . Magnavox  
Radio direction finder . . . . . Ramantenn  
VHF/RFD . . . . . Furuno  
Gyrocompass . . . . . Sperry  
Adaptive autopilot . . . . . Racal Decca  
Magnetic compass . . . . . Krohn  
Echo sounder . . . . . Simrad  
SatCom system . . . . . Raytheon/JRC  
Communications equipment . . . . . Sailor

**Photos** (clockwise from top left): Majestic (Patti Shipyard); QE2 (Lloyd Werft); Mackinac Express (Gladding Hearn); Discovery III (Nicols); Margaret Chase Smith (Atlantic Marine); Caribbean Princess (Fjellstrand).

Steering controls & rudder indicator . . . . . EMRI  
 TV & PA systems . . . . . Phillips  
 Sat/TV-at-sea . . . . . Gendra/SeaTel

## KRONPRINS HARALD Wärtsilä

The 545½-foot car/passenger ferry Kronprins Harald was delivered during March of last year by the Turku Shipyard of Wärtsilä Marine Industries to her owner, I/S Jahre Line. After her delivery, she left for her homeport of Oslo, Norway, where she was put into service on the Oslo-to-Kiel run, replacing the old Kronprins Harald built in Germany in 1976.

The 31,122-gross-ton ferry has a molded breadth of 93 feet and design draft of 21 feet. She is powered by four medium-speed main diesel engines, two Wärtsilä-Sulzer 12ZAV40, each having a capacity of 6,600 kw, and two Wärtsilä-Sulzer 6ZAL40, each having a capacity of 3,300 kw, coupled to the shafts in a "father-and-son" arrangement. She has a speed of 22 knots at 83 percent mcr and a draft of 21 feet. Her auxiliary engines comprise two Wärtsilä Vasa 8R22HF, each having a capacity of 1,180 kw, and two Wärtsilä Vasa 12V22HF, each with a capacity of 1,770 kw.

When designing the engines, the main dimensions and the hull form, special attention was given to the total fuel consumption. The new vessel uses the same amount of fuel during a tour (Oslo-Kiel-Oslo) as

the old Kronprins Harald, even though the gross tonnage is about 50 percent higher.

The passenger areas of the new ferry comprise 468 cabins with a total of 1,440 berths. Special attention was given to the sound insulation of the cabins. The vessel has a trailer deck, a cargo room for trailers, and a private car deck above the trailer deck. The maximum number of trailers she can hold is 54, while her No. 4 deck can hold 283 cars.

## MONACO Perana Dockyards

The RO/RO passenger ship Monaco operated by Euroferries was refitted last year with two Wärtsilä Vasa 6R32 heavy fuel main engines at Perana Dockyards in Greece.

The refit on the 20-year-old vessel, which operates between Patras, Greece and Brindisi, Italy, was carried out on a very tight schedule,

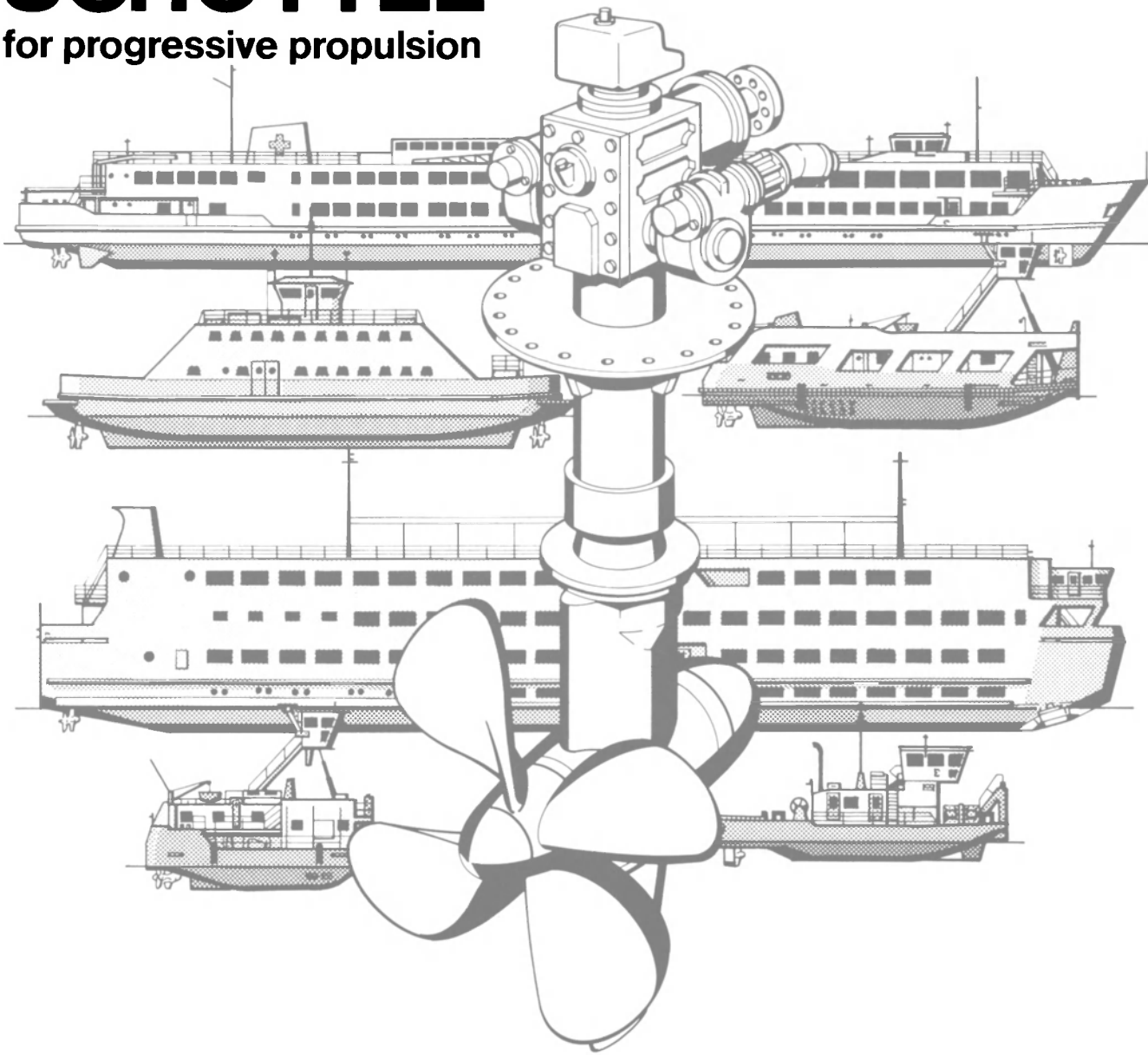
with installation and delivery only nine weeks after the order.

The new main Wärtsilä Vasa engines were hauled on board through the stern cargo door and a hole cut in the trailer deck. The existing cooling water system and engine foundation were slightly modified, while the existing reduction gears and propulsion system were used with alteration. New fuel and lube oil ancillary systems and a new cool-

(continued)

# SCHOTTEL

for progressive propulsion



## SCHOTTEL System for Main Propulsion and as Manoeuvring Aids

For over 35 years the SCHOTTEL-System has proved itself throughout the world. More than 20 different types of SCHOTTEL-Rudderpropellers are now being offered, covering a power range from 15 to 5,000 kW (20 to 7,000 hp). SCHOTTEL-Navigators, SCHOTTEL-Transverse Tunnel Thrusters, SCHOTTEL-Bow-Jets, SCHOTTEL-Cone-Jets, and SCHOTTEL-Pump-Jets round off the versatile palette of SCHOTTEL propulsion

and steering units for main propulsion and as manoeuvring aids. The SCHOTTEL-System requires a minimum of maintenance. It is economical and space-saving.

To date over 19,000 SCHOTTEL units with more than 6 million hp propulsion capacity have been delivered all over the world. If you plan a newbuilding or conversion - get in touch with one of the world-wide SCHOTTEL companies or representatives.

SCHOTTEL-WERFT, D-5401 Spay / West Germany, Tel.: (02628) 610, Teletex: (17) 262891 SW SPAY  
 SCHOTTEL OF AMERICA, INC., 8375 N.W. 56 Street, Miami/Florida 33166, Tel.(305) 592-7350

The SCHOTTEL-Group offers world-wide sales and service through SCHOTTEL companies located in Hamburg, The Hague, London, Paris, Genoa, Basle, Vienna, Miami, Buenos Aires, Porto Alegre, Singapore, Sydney, and representatives throughout the world.



### KRONPRINS HARALD Equipment List

Main engines . . . . .	Wärtsilä-Sulzer
Auxiliary engines . . . . .	Wärtsilä
Alternators . . . . .	Strömberg
Emergency alternator . . . . .	Siemens
Emergency alt. engine . . . . .	Deutz
CP propellers . . . . .	KaMeWa
Bowthruster . . . . .	KaMeWa
Boilers . . . . .	Sunrod
Gyrocompass . . . . .	Anschütz Kiel
Echo sounder . . . . .	Simrad
S-Band and	
X-Band radars . . . . .	Racal-Decca
Interswitches . . . . .	Racal-Decca
X-Band docking radar . . . . .	Racal-Decca
Direction finder . . . . .	Skipper
EM-log . . . . .	Sagem
Typhons . . . . .	Zöllner
Decca navigator . . . . .	Racal-Decca
Autopilot . . . . .	Anschütz Kiel
Magnetic compass . . . . .	Ludolph
Windmeter . . . . .	Vaisala
Radiostation—main transmitter,	
reserve transmitter, main	
receiver, reserve receiver	
extra receiver, auto alarm,	
auto key and	
navtex . . . . .	EB Communications
Watch receiver . . . . .	Simrad
Portable lifeboat	
radiotelephones . . . . .	Skanti
VHF-FM radio telephones . . . . .	Shipmate
VHF port. radiotelephones . . . . .	Motorola
NMT stations . . . . .	Dancall
VHF-AM emergency radiotelephones,	
VHF-AM emer. radio beacons, &	
VHF-AM emer. free-float	
radio beacon . . . . .	Jotron
Steering gears . . . . .	Wärtsilä
Anchor capstans . . . . .	Hatlapa
Mooring winches . . . . .	Hatlapa
Anchors . . . . .	SCSI Sanghai
Gyrofin stabilizers . . . . .	HDW
Ventilation systems . . . . .	Fläkt, Suomen/ Svenska Fläkt



ing water system were also installed to facilitate heavy fuel operation.

The two six-cylinder Wartsila Vasa 32 main engines featured in the 2,600-grt Monaco are four-stroke medium-speed units capable of operating on the lowest grade of heavy fuels from start to stop.

## NORSUN NKK

The Norsun is a large, luxurious cruise ferry built and delivered by the Tsurimi Works of Nippon Kōkan K.K. (NKK) for the Royal Nedlloyd Group N.V. of the Netherlands.

With an overall length of 588 feet, breadth of 83 feet and maximum draft of 20 feet, the Norsun has a gross tonnage of 31,598. She has a passenger capacity of 1,250 with 452 cabins.

Powered by four Wartsila-Sulzer medium speed diesel engines, two nine-cylinder 9ZAL40 engines and two six-cylinder 6ZAL40 engines, producing about 26,100 bhp in a "father and son" arrangement, the Norsun will travel from Hull, U.K., to Europort at 18.5 knots. While traveling from Europort to Hull, the Norsun will travel at 16.5 knots using her two aft Wartsila-Sulzer six-cylinder 6ZAL40 main engines.

Along with her sister ship, the Norsesea, which was built by Govan Shipbuilders of the United Kingdom, the Norsun is in service for North Sea Ferries, a joint concern incorporated by Nedlloyd and P&O, and operating once a day between Hull and Europort, a distance of 200 nautical miles.

Equipped with cargo access equipment supplied by MacGregor Far East, the Norsun is also capable of carrying 850 cars and 590-foot by 40-foot trailers on her three fixed vehicle decks and one hoistable car deck. Crew and passenger accommodations are on her top four decks.

NORSUN Equipment List	
Main engines	Wartsila-Sulzer
Auxiliary engines	Wartsila-Sulzer
Propellers	KaMeWa
Electric generators	Taiyo
Rudders	Willi Becker
Steering gears	MHI
Fin stabilizers	HDW
RO/RO equipment	MacGregor FE
A/C system	Novenco Nippon
Lift	Dereus
T/O system	Saarloos
Fire protection	Van Rijn
Windlass & winch	Fukushima
Galley equipment	Electrolux
Vacuum sewage system	Evac
Boat davits	Davit
Life boats	Mulder & Rijke
Life rafts	Beaufort Air-Sea

## QE 2 Lloyd Werft

One of the largest and most complex conversions ever performed by a West German shipyard was completed last spring, as one of the world's most famous ships, the Queen Elizabeth 2, was refitted with a new diesel-electric propulsion system and her accommodations and

public spaces refurbished by Lloyd Werft of Bremerhaven. The complicated task took just 179 days.

The new propulsion plant of the QE 2 consists of nine MAN B&W 9L58/64 medium-speed diesel generators, which weigh 220 tons each, and two 340-ton GEC electric propulsion motors. The nine MAN B&W diesel generator sets develop a total output of 95,580 kw. The QE 2, with an overall length of 962½ feet, breadth of 105 feet and draft of 32½ feet, can reach a maximum speed of more than 32 knots.

Besides the installation of the new propulsion plant, which comprised the major part of the conversion, passenger accommodations and public rooms were refurbished. This work included the addition of eight penthouse suites, the rearrangement of the Double Down public area (with a new shopping area, bar and leisure rooms), renovation of the "Tables of the World" restaurant, upgrade of passenger and crew quarters, improvement of ship-to-shore communications, and new furnishings. Also, the QE 2 was fitted with a new funnel, which was lifted into place by a Smit Tak Taklift 5 floating crane, and a new livery. International Paint supplied specialized coatings for the underwater hull of the QE 2 as well as other areas.

## SOVEREIGN OF THE SEAS Alsthom

When she makes her maiden voyage from Miami on January 16 of this year, Royal Caribbean Cruise Line's Sovereign of the Seas will become one of the largest and most luxurious cruise ships in operation today.

Built by Alsthom's Chantiers de l'Atlantique shipyard of St. Nazaire, France, the Sovereign has an overall length of 874 feet, breadth of 106 feet, draft of 25 feet and a gross registered tonnage of 74,000. She will have a passenger capacity of 2,600, with 722 outside and 416 inside staterooms on her 14 passenger decks.

Cruising at about 21 knots, the Sovereign is powered by four nine-cylinder 7,425-hp Pielstick diesel engines.

On her first sea trials, extensive tests of her engines, operating machinery, control and navigation systems, noise and vibration were all performed and met the owners' rigid standards.

"Sovereign of the Seas met or exceeded those standards throughout the entire ship's public areas, cabins, engine and control rooms," said Peter Whelpton, executive vice president-operations for Royal Caribbean Cruise Line.

The Centrum, a central five-deck lobby area, is the centerpiece of the Sovereign. Highlighted by glass bubble elevators, elegant staircases, fountains and plants, the Centrum connects many of the ship's 20 pub-

lic rooms, including the shopping area, lounges, bars, conference center and two-story indoor/outdoor Windjammer cafe.

In all, the Sovereign offers two 650-passenger restaurants, six lounges, 16 shops, one casino and two pools. She has enough open deck space to fill three football fields.

## SOVEREIGN OF THE SEAS Equipment List

Main engines	Pielstick
Generator engines	Wartsila
Generators	Wartsila
6.6 kV motors	CGEE Alsthom
Line shaft bearings	Renk
Line shaft	A. Johnson
Bowthrusters	KaMeWa
Steering gear	Porsgrunn Staland
	Maskin
Rudders	Willi Becker
Stabilizers	Sperry
Engine room automation	Norcontrol
Remote gaging	Auxitrol
Propulsion machinery	
remote control	KaMeWa
Stern tube packing	Waukesha/Lips
M.E. silencer	Vibrachoc
LO/FO separator	Alfa-Laval
Emer. alternators, transformers, & main and emer. switchboards	Alsthom
Integrated nautical equipment	Racal Decca
Radars	Atlas
Anemometer, aerovane, & depth sounder	CRM
Facsimile receiver	Taiyo
Gyrocompass, autopilot & magnetic compass	Anschuetz
Radio direction finder & doppler log	OCEL
Battery	SAFT
Automatic telephones	Jeumont
	Schneider
Fluorescent lamps	Philips
Heating, ventilation & air conditioning plants	Flakt
Air coolers, piping & accessories	York
Refrigerator cooling plant	York
Evaporators	Alfa-Laval
Displacement pump	SCAM-IMO
Centrifugal pumps	A. Johnson
Heeling & reciprocating pumps	Iron
Valves & fittings	Coyard
Starting air compressor	Sperre Mek
O/W separator	St. Louis Ship
Sound signal equipment	Kockums
Auxiliary boiler	Vapor Fluidoternus
Garbage handling & incinerator	Norsk Hydro
Sewage treatment units	SAAB Tank
Sanitary vacuum system	EVAC
Passenger sanitary units	Resine
	Armee
Crew sanitary units	E. Modul
Shell doors	MacGregor
Watertight doors	Schoenrock
	Hydraulic
Davits	Schat Davit
Fairleads	Sambre & Meuse
Accommodation ladder	Metalu
Medical equipment	Unitor
Laundry equipment	EDCO
Galley/pantry erection	Sea King
Galley/pantry equipment	Sea King
Bulkheads & cabin partitioning	Rockment
Ceilings	Danacoustic
Windows	Dalmas
Cabin doors	Compin
Fire doors	Saajos
Halon & foam systems	SEPCI
Firefighting gear	Unitor

### OUTSTANDING CRUISE SHIPS 1987

SHIP	YARD	MAIN ENGINES
Celebration	Kockums	Sulzer (2)
Kronprins Herald	Wartsila	Wartsila-Sulzer (4)
Monaco*	Perana	Wartsila-Vasa (2)
Norsun	NKK	Wartsila-Sulzer (4)
Queen Elizabeth 2*	Lloyd Werft	MAN B&W (9)
Sovereign of the Seas	Chantiers de l'Atlantique	Pielstick (4)

### OUTSTANDING PASSENGER & CRUISE BOATS 1987

BOAT	YARD	MAIN ENGINES
Cajun Queen	Halter Marine	Caterpillar (2)
Capt. JP	Service Marine	Detroit Diesel (2)
Caribbean Princess	Fjellstrand	MTU (2)
Cinderella	Marinteknik	Scania (4)
Discovery III	Nichols Bros.	Detroit Diesel (2)
Golden Sunset	Westport	Caterpillar (2)
Mackinac Express	Gladding-Hearn	Deutz-MWM (2)
Majestic	Aluminum Boats	Detroit Diesel (2)
Majestic*	Patti	Caterpillar (2)
Majestic Lady	Conrad	Perkins (2)
Margaret Chase Smith	Atlantic Marine	Caterpillar (2)
Mozart	Deggendorfer Werft	Deutz-MWM (2)
Pride of Rainy Lake	Munson	Cummins (2)
Princess Pat	Huckins Yacht	MAN B&W (2)
Spirit of New York	Blount Marine	Detroit Diesel (2)
Treasure Queen	Freeport	Caterpillar (2)
Twilight	Leevac	Cummins (2)

\*denotes conversion/refit

## The Boats

### CAJUN QUEEN Halter Marine

The 600-passenger dinner/cruise boat Cajun Queen was delivered to New Orleans Paddlewheels, Inc., by Halter Marine, Inc., New Orleans, during 1987.

The 140-foot by 36-foot vessel, built to resemble an 1800s steamer, is powered by two 402-hp Caterpillar 3408 DITA diesel engines. Caterpillar Marine gear Model 7211 reduction gears operate through a 4.48 to 1 ratio. Electric power for the vessel is provided by two Caterpillar main generators, producing 135 kw at 1,200 rpm.

The vessel features three decks with enclosed air-conditioned rooms for viewing and private parties, and an open promenade deck. Victorian chandeliers, ceiling fans, pressed tin ceilings, bars, bandstands, dance floors, food service equipment and a sophisticated audiovisual system are a few of the features of the Cajun Queen.

#### CAJUN QUEEN Equipment List

Main engines	Caterpillar
Reduction gears	Caterpillar
Main generators	Caterpillar
Propellers	Columbian Bronze
Electrohydraulic steering	Engine Monitor
Engine alarm system	Engine Monitor
Bowthruster	Thrustmaster
Radar	Furuno

### CAPT. JP Service Marine

Service Marine Industries, Inc., Morgan City, La., delivered the 600-passenger dinner cruise boat Capt. JP to her owner Seguro, Inc., Ft. Myers, Fla., last year.

The 106½-foot false sternwheeler is powered by twin Detroit Diesel 8V-71 diesel engines rated at 262 hp each. The engines drive a pair of four-bladed Columbian Bronze propellers through Twin Disc MG509 reduction gears. Electricity is supplied by Cummins generator sets.

In addition, although she is classified as a false sternwheeler, the Capt. JP's paddlewheel has the ability to propel the cruise boat at about 3 knots without the use of her main engines. The paddlewheel is powered by a hydraulic motor via a chain and sprocket mechanism. The hydraulic motor is driven by a hydraulic pump, which is powered by a

#### CAPT. JP Equipment List

Main engines	Detroit Diesel
Reduction gears	Twin Disc
Propellers	Columbian Bronze
Generator engines	Cummins
Engine controls	WABCO
Depth sounder & Loran C	Si-Tex
Radar & VHF radiotelephone	Raytheon
A/C & heat system	Carrier

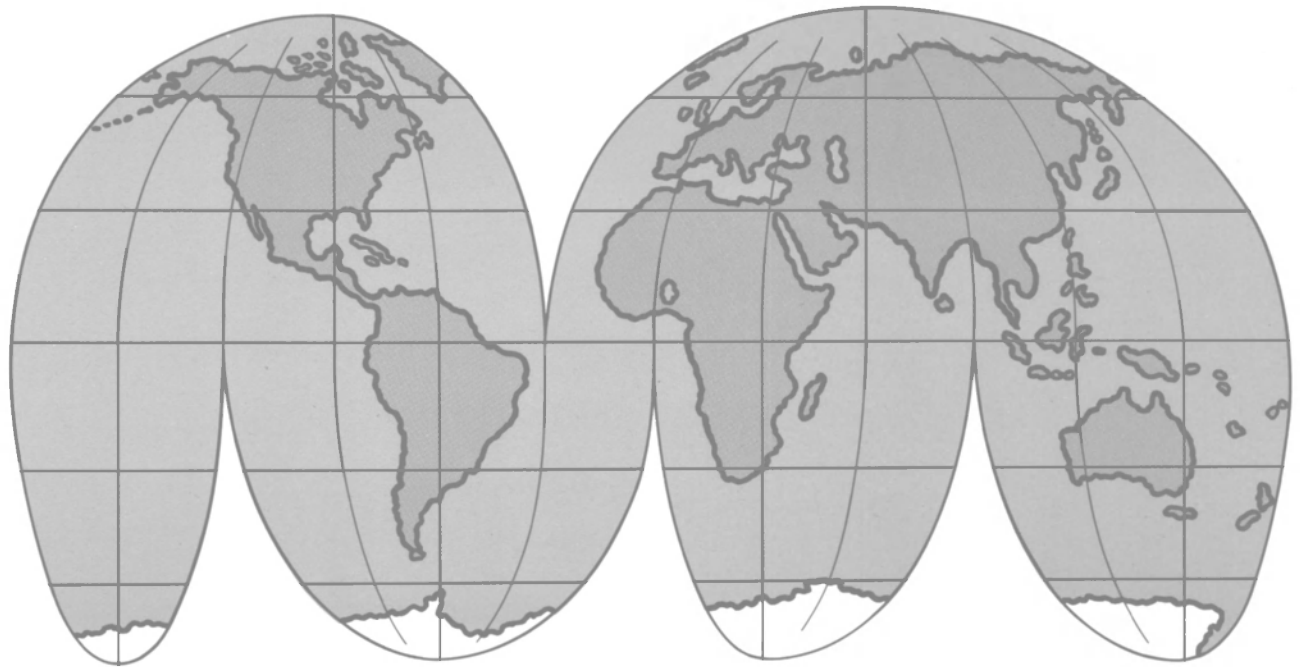
40-hp electric motor. The motor is powered by one of the Cummins gensets.

### CARIBBEAN PRINCESS Fjellstrand

The passenger catamaran M/V



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Photos (clockwise from top left): Celebration (Kockums); Norsum (NKK); Sovereign of the Seas (Chantiers de l'Atlantique); Monaco (Perana).



Caribbean Princess was delivered early last year by Fjellstrand A/S of Norway to her owners, Viking Express Ltd. (Bahamas). At present, the 127-foot vessel operates between Ft. Lauderdale, Fla., and Freeport, Bahamas.

The Caribbean Princess, with a maximum speed of 35 knots, is equipped with two MTU engines providing a total output of 3,896 bhp, and Lips fixed-pitch propellers.

Together with the vessel's advanced slender hull design, the Caribbean Princess's high speed produces favorable operating costs and high reliability.

With a passenger capacity of 310, the Caribbean Princess has a tourist class saloon on the first deck and a first class and exclusive VIP class saloon on the second deck. Other entertainment facilities on board include a cafeteria/bar and 14 slot machines.

**CARIBBEAN PRINCESS  
Equipment List**

Main engines	MTU
Auxiliary engines	Mercedes-Benz Stamford
FP propellers	Lips
Marine gears	ZF
Radars	Furuno
Satnav	Furuno
Navigation lights	Aqua
Gyrocompass	Anschutz
Echo sounder	Hondex
Autopilot	Robertson
Radiotelephones and watchreceiver	Sailor
VHF emergency com. set	Skanti
Intercom/PA	NTW
TV-supervision system	Hitachi

**CINDERELLA  
Marinteknik**

Last year, City Jet Line, a newly formed ferry company based in Stockholm, took delivery of the 137½-foot fast ferry/day cruise boat Cinderella from Marinteknik Verstads AB, Oregrund, Sweden.

The Cinderella, a double deck ferry with a passenger capacity of 450, operates on a 60-nautical mile route from Stockholm to the Stockholm Archipelago.

The Cinderella differs from previous archipelago craft in that she is reportedly the first to use waterjet propulsion. With a cruising speed of 22 knots, she is powered by four Scania DSI 14 engines. The engines drive two Marinjet waterjets supplied by Marinejet Power System.

The upper deck of the Cinderella is an 85-seat restaurant. The ferry also has a cafeteria in her main saloon.

**DISCOVERY III  
Nichols Bros.**

The 1,000-passenger sternwheeler Discovery III was built and delivered by Nichols Bros. Boat Builders of Whidbey Island, Wash., to owners Alaska Riverways, Inc., Fairbanks, Alaska, last year.

The Discovery III has an overall length of 156 feet, beam of 34 feet and a draft of 3 feet. The sternwheel is propelled by an advanced hydrau-

**DISCOVERY III  
Equipment List**

Main engines	Detroit Diesel
Steering system	Wagner
Generator engines	GMC
Motor starters	Klockner-Moeller
VHF radio	Harris
Wiring & lighting	Hardware Specialties
Coatings	Hempel

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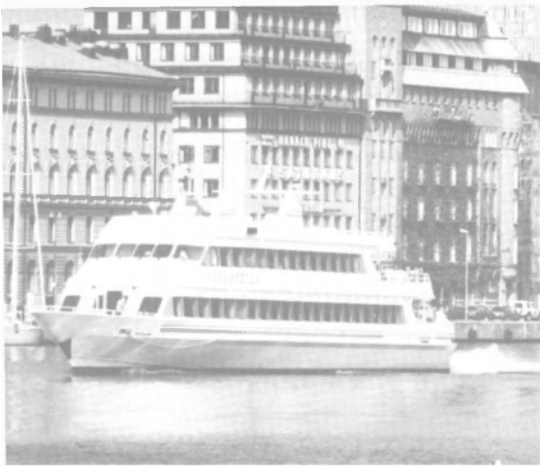
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Cinderella

lic system powered by a pair of Detroit Diesel 540-hp 12V71 diesel engines. She can reach speeds of about 11 knots. The vessel is also equipped with stern and bow thrusters to propel and maneuver the vessel in rapid, shallow water.

The 310-ton sternwheeler is operated from her homeport of Fairbanks, offering four-hour excursion/sightseeing tours on the Chena River.

### GOLDEN SUNSET Westport

Westport Shipyard, Inc., Westport, Wash., delivered the 75-foot fiberglass luxury yacht Golden Sunset to the San Francisco-based tour and charter boat operator Blue & Gold Fleet during 1987.

The first boat built from a new, adjustable fiberglass mold at Westport, the Golden Sunset is powered by two Caterpillar diesel engines with Twin Disc reduction gears and Michigan Wheel propellers.

The vessel has a beam of 21.5 feet, draft of 5 feet, and a top speed of 17 knots. Designed for 100-person receptions and meetings, or 40-person informal dinners afloat, the craft offers a formal dining room, a custom wooden bar in the main salon and a bar on the sundeck, a master stateroom with queen-sized bed and Jacuzzi, a guest stateroom, a full-service galley, and elaborate stereo sound and video systems.

#### GOLDEN SUNSET Equipment List

Main engines	Caterpillar
Reduction gears	Twin Disc
Propellers	Michigan Wheel
Steering system	Wagner
Generators	Alaska Diesel
Radar & Loran C	Furuno
VHF radio	ICOM
Scanner	Regency
Loud hailer	Uniden
Depth sounder	Si-Tex
Engine controls	Schrader Bellows
Phone system & intercom	Ai-Phone
Stereo speakers	Jensen
Monitors/silencer	Westport



GOLDEN SUNSET

### MACKINAC EXPRESS Gladding-Hearn

Delivered during the summer of 1987, the Mackinac Express, built by Gladding-Hearn Shipbuilding of Somerset, Mass., is 82-foot, 365-passenger catamaran. The vessel is being operated by the Arnold Transit Company on the Great Lakes. She is said to be the first catamaran to operate on the Great Lakes.

The Mackinac Express is an International Catamarans (INCAT) P/L-designed vessel. These types of vessels are built by Gladding-Hearn and Nichols Bros. Boat Builders of Whidbey Island, Wash., under license in the U.S.

The 26-knot craft is of all-aluminum construction, and is powered by twin Deutz-MWM 604B diesel engines rated at 1,142 bhp at 1,800 rpm. The engines drive through ZF reduction gears.

### MAJESTIC Aluminum Boats

Aluminum Boats, Inc., Crown Point, La., delivered the 325-passenger commuter boat Majestic to the Boston Harbor Commuter Service. Presently, she serves as a water shuttle to Boston's Logan Airport.

The Majestic is 100 feet in length, with a 25-foot, 6-inch beam and a (continued)



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9-foot 4½-inch depth. She is powered by four Detroit Diesel 12V71TI diesel engines driving through Twin Disc 514 reverse/reduction gears with a ratio of 2:1.

The Majestic's main deck can carry 175 passengers on padded seats and her upper deck can accommodate 150 people. The middle row of seats on the 01 level can be removed for dancing, the wet bar, buffet tables, etc., for the boat's other role as a charter vessel.

#### MAJESTIC List of Suppliers

Main engines	Detroit Diesel
Reduction gears	Twin Disc
Engine controls	Morse
Generator control panel	Contec
Propeller shafts	Aquamet
Bearings	BF Goodrich
Propellers	Columbian Bronze
Radar	Furuno
VHF	Standard International
Loran	Sitex
Depth sounder	Datamarine
Compass	Ritchie



#### MAJESTIC Patti Shipyard

The Gateway Clipper Fleet, Pittsburgh, Pa., took delivery of the 1,000-passenger, 270-foot riverboat Majestic last year. The riverboat was converted from a 160-foot barge, which was originally built by Mathis Shipyard, Camden, N.J., in 1950, with final outfitting performed by the Patti Shipyard, Pensacola, Fla.

The 270-foot Majestic, which is really a combination of two vessels generally referred to as an ATB or articulated tug-barge, is a deluxe false sidewheeler developed by **Norman N. DeJong**, president of the naval architecture and marine engineering firm of DeJong & Lebet Inc. of Jacksonville, Fla.; **John E. Connelly**, owner of the Gateway Clipper Fleet; **Zack D'Alesandro**, general manager, Gateway Clipper Fleet; and **Terry Wirginis**, assistant manager at Gateway.

The Majestic's power plant consists of Caterpillar 3508 main and 3408 auxiliary engines. The main engines drive Columbian Bronze stainless steel propellers via Twin Disc MG530 reverse reduction gears, while the auxiliary engines drive 300-kw generators, which pro-

vide power to both the power unit and vessel.

The barge's superstructure underwent conversion at Baton Rouge, La., where the steelwork on the sponson decks, main deck, paddle boxes, Boiler Deck, and Hurricane and Texas Decks took place, and final outfitting at Patti Shipyard in Pensacola, Fla. Patti Shipyard provided shipfitting, sandblasting, painting, crane and other services.

#### MAJESTIC Equipment List

Main engines	Caterpillar
Auxiliary engines	Caterpillar
Reduction gears	Twin Disc
Shaft and rudder bearings	BTR Silverton
Propellers	Columbian Bronze
Engine controls	WABCO
Engine controls, air compressors, and stack winch	Circuit Engineering
Switchboard, transformer panels	Industrial Power
Battery chargers	La Marche
Pumps	ITT-Marlow
Electrical wiring and navigational lights	LF Gaubert
Air conditioning equipment	Carrier
Heating boilers	Weil-McLain
Horn	Kahlenberg
Windows	Wynne
Doors	Dean Steel
Sewage treatment plant	Envirovac
Barge connecting winches	NABRICO
Fenders	Morse Rubber

#### MAJESTIC LADY Conrad

The 76½-foot, 300-passenger catamaran Majestic Lady was delivered by Conrad Industries, Inc. of Morgan City, La.

Commissioned by Citesjam Tours of Nassau, Bahamas, the three-deck catamaran is used for sightseeing, private parties, diving and inter-

island transportation among the 700 West Indian Islands.

The catamaran is equipped with twin 165-hp, turbocharged Perkins diesels and two 12.5-kw Perkins generators. With a design speed of 10 knots, the Majestic Lady, when fully loaded, will require a maximum draft of 3.5 feet. The shallow draft accommodates near shore anchoring enabling passengers to disembark via a gangplank directly onto the beach.



Majestic Lady

The pleasure craft is designed with full kitchen facilities, bar, dance floor, and bandstand to accommodate calypso musicians.

#### MARGARET CHASE SMITH Atlantic Marine

Atlantic Marine, Inc., Fort George Island, Fla., delivered the 166½-foot ferryboat Margaret Chase Smith to the State of Maine Department of Transportation, last year.

With a passenger capacity of 226 and a car capacity of 30, the Margaret Chase Smith is powered by two Caterpillar D-3508TA diesel engines rated at 565 hp each at 1,200 rpm. The main engines are fitted to Caterpillar model 7241 reduction gears with a 3.54:1 ratio.

The vessel's electric power is supplied by two main generators and one emergency generator from Caterpillar, model D-3304, producing 55 kw each at 1,800 rpm. The main propulsion and generators will be keel cooled.

A hydraulically powered bowthruster from Schottel is also provided for maneuvering and docking operations.

The Margaret Chase Smith ferries between Isleboro and Lincolnville, Maine.

#### MARGARET CHASE SMITH Equipment List

Main engines (2)	Caterpillar
Auxiliary engines	Caterpillar
Reduction gears	Caterpillar
Engine controls	Kobelt
Generator control panels	Industrial Power Systems
Clutch	Marco
Bowthruster	Schottel
Keelcoolers	Fernstrum
Steering system	Sperry
Stern bearings	Johnson
Shafts	Aquamet
Propellers	Columbian Bronze
Freshwater pressure & sanitary systems	Meyers
Bilge & fire pumps	Gorman Rupp
Fuel transfer pump	Blackmer
Radars	Sperry/Furuno
VHF radiotelephones	Raytheon
Autopilot	Sperry
Depth sounder	International Offshore
Monitors & alarms	Murphy/SSI
Horn	Kahlenberg
Searchlights	Perko
Running & navigation lights	Perko
Lifesaving gear	Viking
Winches	New England Trawler
Firefighting system	Ansel

#### MOZART Deggendorfer Werft

The 2,680-ton M/S Mozart, reportedly the world's largest river/coastal cruise ship, was delivered during 1987 by Deggendorfer Werft und Eisenbau (DWE) GmbH to owners DDSG (Erste Donau-Dampfschiffahrts-Gesellschaft) for operation on the Danube River.

Built at a cost of \$24 million, the 398-foot Mozart is twin-engined with six-cylinder Deutz-MWM 628

Series diesel engines. Each engine is rated for a maximum continuous power of 1,185 kw at 1,000 rpm. Electricity is supplied by three auxiliary sets equipped with Deutz-MWM 816 Series engines.

The double-bow, single-hull M/S Mozart, named for one of Austria's most illustrious composers, appropriately uses titles of his operas and names of operatic characters for its decks, lounges, restaurants, etc. The fully air-conditioned, luxury vessel offers the "Figaro" deck with hot



M/S Mozart

whirlpool, sauna, solarium, massage room, etc., the "Papageno" sundeck, the "Don Giovanni" deck with restaurant and large lounge with stage and ballroom, and the "Cafe Amadeus," and the "Magic Flute" restaurant, to name only a few.

### PRIDE OF RAINY LAKE Munson Manufacturing



Last year, Edmonds, Washington-based Munson Manufacturing Inc. delivered the 42-foot, 49-passenger tour boat Pride of Rainy Lake to Rainy Lake Cruises Inc. of International Falls, Minn. She is operated on Rainy Lake in the Voyageurs National Park on the Canadian border.

The Pride of Rainy Lake, is powered by twin Cummins VT-903 engines, each rated at 425 hp at 2,800 rpm. The engines are coupled with two large Hamilton 291 waterjets. Waterjet propulsion was necessary because the boat must operate in shallow waters—sometimes less than five feet deep—in order for tourists to take a close look at the wildlife ashore. The boat draws only 2 feet 3 inches of water.

The Pride of Rainy Lake, which has a beam of 15 feet, has a spacious cabin with huge windows for visitor viewing. The cabin is fitted with perimeter seating and contains upholstered dining room seats that can be arranged in a variety of configurations, including on-board conferences attended by 20 to 30 persons.

### PRINCESS PAT Huckins Yacht

The Princess Pat, a 78-foot yacht, was delivered last year by Huckins Yacht Corporation, Inc.

The aft cockpit motoryacht's hull is of fiberglass/Airex® core construction. Her two main engines are

Below, Princess Pat.



MAN B&W diesels rated at 760 shp at 2,300 rpm with ZF reduction gears. She features Arneson Surface Drives, model ASD 14 and two 38-inch, four-bladed Nibral surface-piercing propellers. Her top speed in trials was 23.3 knots.

The two Arneson Surface Drives provide the Princess Pat with excellent maneuverability and performance. Combining lightweight with the trimmable ASDs, the Princess Pat can float in as little as 3 feet 9 inches of water, even with 42-inch, four-bladed propellers.

### SPIRIT OF NEW YORK Blount Marine

In 1987, Blount Marine Corporation, Warren, R.I., delivered the 600-passenger cruise boat M/V Spirit of New York to her owners, Holiday Cruise IV Inc., a subsidiary of Cruise International.

With a 192-foot overall length, 35-foot beam and attractive, well-appointed interiors, the Spirit of New York is one the largest and most elegant dinner/cruise vessels in the U.S.

The Spirit of New York, which cruises on New York Harbor and the East and Hudson Rivers, is powered by a pair of Detroit Diesel 12V-71TI series engines coupled with Twin Disc MG-514 reduction gears with a 3.5:1 ratio. She is also fitted with a Blount-designed, shaft-driven flume thruster prop with a hydraulically actuated direction flo-rudder. The bowthruster

#### SPIRIT OF NEW YORK Equipment List

Main engines	Detroit Diesel
Propellers	Columbian Bronze
Generators	Lima
Generators engines	Detroit Diesel
Reduction gears	Twin Disc
Flume thruster prop	Blount
Bowthruster engine	Detroit Diesel
Engine controls	Mathers
Steering system	Wagner
Shaft bearings	BFGoodrich
Winches	Boston Gear
Fire pump	Gorman Rupp
Bilge pump	Jabsco
Lifesaving equipment	Jim-Buoy
Exterior deck coverings	Phillyclad
Sound systems	Satellite Sound
Refrigeration	Glenco/Kolpac

engine is a Detroit Diesel 6-71 Series with a Twin Disc reduction gear. Electrical power is supplied by two Lima 174-kw generators driven by two Detroit Diesel 8V-71 Series engines.

Her balconied main dining room features a winding staircase as well as custom-made etched glass panoramas depicting scenes of New York Harbor.

### TREASURE QUEEN Freeport Shipbuilding

Freeport Shipbuilding & Marine Repair, Inc., Freeport, Fla., delivered the 550-passenger excursion boat Treasure Queen, one of five passenger vessels delivered by the yard last year.

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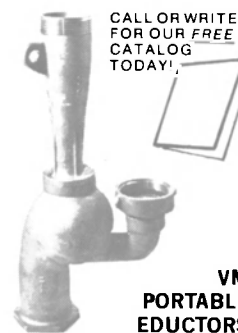


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The Treasure Queen, which is operated in the Abaco Islands of the Bahamas, is powered by twin Caterpillar 3306 diesel engines, each rated at 190 hp at 2,000 rpm. She has an overall length of 92 feet, breadth of 32 feet and draft of 4½ feet.

The Treasure Queen features three passenger decks, two enclosed and one sundeck. She is able to seat more than 200 people for dinner.

Freeport Shipbuilding specializes in custom designing and building all types of steel, U.S. Coast Guard-approved passenger vessels.

delivered the 156-foot riverboat Twilight to her owners, River Cruises, last year.

The all-steel hulled Twilight is an authentic replica of a Mississippi riverboat. She is equipped with a diesel electric system that drives two 46-inch-diameter, five-bladed Columbian Bronze propellers through a General Electric Model GE 752-E8 locomotive traction motor. It also operates a 60-hp electric motor-driven Schottel bow thruster. The diesel-electric unit consists of



## TWILIGHT Leevac Shipyards

Leevac Shipyards, Jennings, La.,

### TWILIGHT Equipment List

Main engines	.....	Cummins
Main generators	.....	Newage
Electric motors	.....	GE
Propellers	.....	Columbian Bronze
Bowthruster	.....	Schottel
Sanitary system	.....	Microphor

two Cummins KTA19-GC1 diesel engines coupled to Newage, Model SC53E, 300-kw generators. The steering system is a mechanical, cable over wheel design and the vessel is also equipped with a Microphor MC200 marine sanitary system.

The 149-passenger vessel incorpo-

rates the Victorian steamboat architecture of the 1800s which includes carved woodwork on the columns and arches, and stained glass skylights in the dining salons. Ornamental fretwork and balustrades enclose the outside promenades of all three decks.

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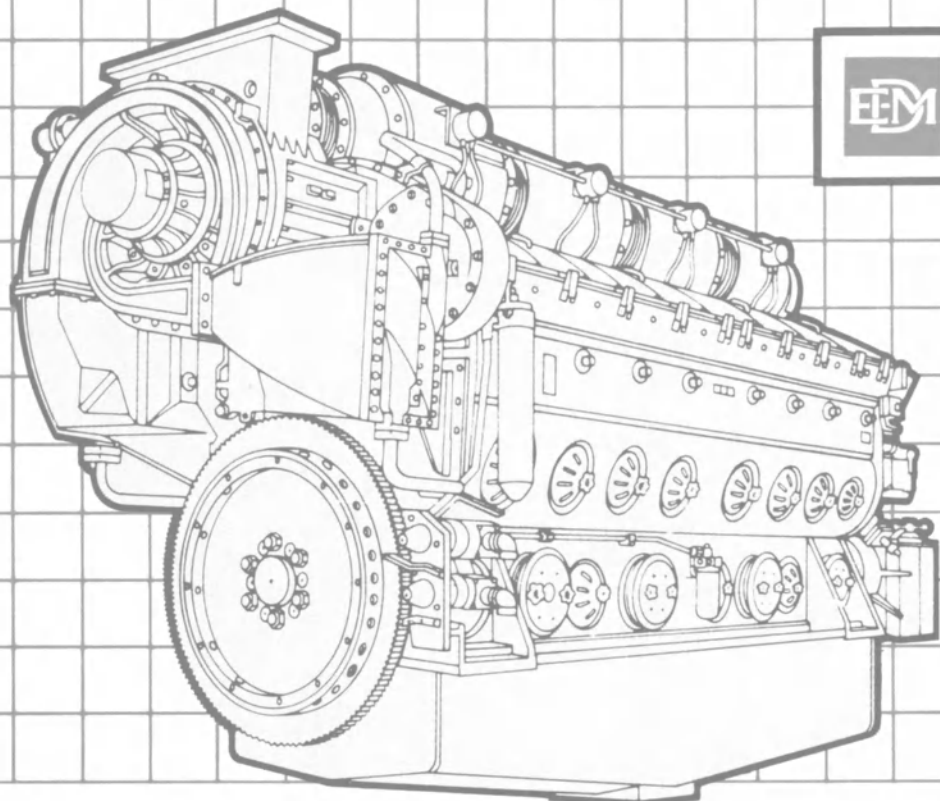
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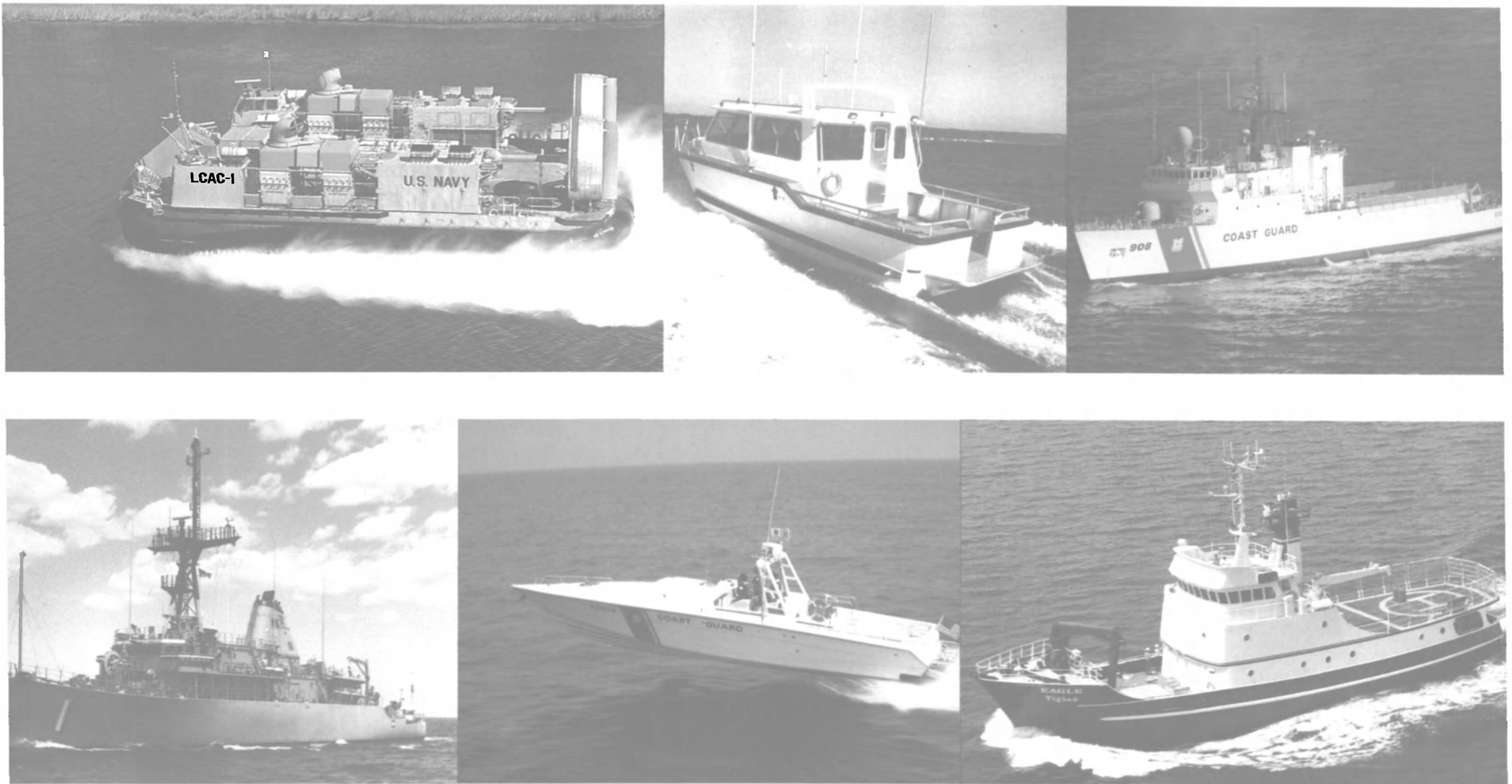
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## OUTSTANDING WORKBOATS & MILITARY SHALLOW-DRAFT VESSELS OF 1987

**A special review of some of the most notable and important inland and coastal workboats and shallow-draft military craft delivered during 1987—selected by the editors of Maritime Reporter and Engineering News for their high standards of design or performance.**

### AVENGER Peterson Builders

The USS Avenger (MCM-1), the lead ship of the Navy's newest class

**Photos** (top row from left): LCAC (Textron) Island Queen II (Munson); Tahoma (R. E. Derecktor); (bottom row from left): Avenger (Peterson Builders); East Coastal Interceptors (Tempest Marine); Eagle (Moss Point Marine).

of mine countermeasure vessels, was commissioned at the yard of her builder, Peterson Builders, Inc. (PBI), this year.

The Avenger Class MCMs are the Navy's largest wooden ships, measuring 224 feet long and 39 feet abeam. The Avenger is powered by four 600-hp Waukesha diesel engines with three diesel generators.

#### AVENGER Equipment List

Main engines	Waukesha
Electric motors	Hansome Electric
Reduction gears	IMO Delaval
CP propellers	Bird-Johnson
Shafting	Bird-Johnson
Bowthruster	Omnithruster
Ship service generators	Tech Systems
Generator engines	Waukesha
Machinery control system	GE
Ship control system	Henschel
Switchboards	Nelson
Anchor windlass and capstan	New England Trawler
Steering system	Jered Brown Bros.
Anchor chain	Baldt
Minesweep generator	Siemens-Allis
Minesweep machinery	A.C. Hoyle
Sonar system	GE
Navigation system	Magnavox
Mine neutralization	Honeywell

She displaces 1,300 tons and carries a crew of 81 officers and enlisted men.

The introduction of the new Avenger Class into the Navy's active fleet will greatly enhance its surface minehunting, minesweeping and mine neutralization capabilities due to the vessel's sophisticated mine-warfare equipment, which was supplied by Honeywell. A.C. Hoyle supplied the vessel's minesweeping machinery and Siemens-Allis, her minesweep generator.

#### BLAIR MCCALL Gulf Craft

The 155-foot aluminum crewboat Blair McCall was delivered last year by Gulf Craft, Inc. of Patterson, La., to McCall Boat Rental, Inc. of Cameron, La. According to Gulf Craft president **Scott Tibbs**, the Blair McCall is the world's largest aluminum crewboat.

The unique, five-screw Blair McCall, which has a beam of 30 feet and loaded draft of 8 feet, is powered by five Cummins KTA 1150M diesel engines that develop a total of

3,400 horsepower. She is U.S. Coast Guard-approved to carry 92 passen-

#### BLAIR MCCALL Equipment List

Main engines (5)	Cummins
Reduction gears	Twin Disc
Propellers	Columbian Bronze
Shafts	Aquamet
Generator	Detroit Diesel
Clutch	Twin Disc
Generator controls	Power Panels
Steering	Charlynn Orbitrol
Engine controls	Kobelt
Radar	Furuno
Loran & VHF	Raytheon
SSB	Stephens Engineering
Depth sounder	Data Marine
Compass & autopilot	Comp-Nav
Stuffing boxes	Gulf Craft
Keel coolers	Split Pipe
Freshwater pressure set	Sears
Bilge pump	Barnes
Fire pump	Berkley
	Crane-Demmings
A/C & heating	Carrier
F/O transfer pump	Roper
F/O transfer meter	Tokheim
Air compressors	Quincy
Anchor winch	McElroy Machine
Horns	Buell-Air
Search lights	Carlisle & Finch
Running lights	Perko
Lifesaving gear	Billy Pugh



gers and is able to carry 190 tons of deck cargo.

The five Cummins engines allowed Gulf Craft to design a more maneuverable vessel by locating a rudder behind each of the three aft propellers. This allows the captain to safely position his vessel around rigs for the purpose of loading/unloading operations.

The owner of the new crewboat, **Norman McCall**, commenting on the Blair McCall's five-engine installation, said: "It has been my philosophy to provide the most advanced and dependable vessels for the offshore oil industry."

### COMMODORE Marco Seattle

Last year, Marco Seattle christened the 109-foot joint venture trawler F/V Commodore, built for the Storm Petrel Partnership. She is being used in fishing operations off Alaska.

The Commodore incorporates some features not usually found on a vessel her size. She features a bulbous bow and the patented Fulton articulating stern ramp first used on the 123-foot Storm Petrel. The ramp, which fully encloses the stern when nets are not being hauled, enhances crew safety.

The deck machinery package on the Commodore also includes three Marco net reels (two on the stern gantry and one at the forward end of the working deck), Gearmatic Model 35 and 44 gilson winches, and a Marco JO117 line hauler.

Power for the Commodore comes from a 1,810-hp Cat 3516 diesel. The engine drives an 85-inch, five-blade Coolidge prop set in a fixed nozzle for increased thrust. Auxiliary power comes from Cat and Cummins diesel generator sets which, along with the main engine, also provide hydraulic power.

#### F/V COMMODORE Equipment List

Main engine	Caterpillar
Reduction gear	Caterpillar
Propeller	Coolidge
Steering	Wagner
Radars	Furuno/Raytheon
Echo sounders	Simrad
Gyrocompass	Sperry
Steering	Sperry
Radiotelephones	Raytheon/ICOM
Loudhailer	Raytheon
Alarm	RDI
Line hauler & net reels	Marco
Winches	Gearmatic
Automated trawl system	Marco

### EAGLE Moss Point Marine

The 121-foot wildlife refuge support vessel Eagle was delivered by Moss Point Marine, Inc., Escatawpa, Miss., to the U.S. Fish and Wildlife Service, last year.

Operating out of Homer, Alaska, the Eagle serves the Alaska Maritime National Wildlife Refuge, a chain of islands and sea cliffs covering 3,500 miles of the Alaskan coastline to the middle of the Bering Sea. She is used for bird, mammal and marine life research.

The \$3.7-million vessel is powered by two Caterpillar 3412TA diesel engines driving through Twin Disc MG530M fixed/variable reduction gears. She is capable of 12 knots but will cruise at 8 to 10 knots.

Bristling with sophisticated electronic equipment, the Eagle is well equipped to track life on, above, and

(continued)

#### EAGLE

#### Equipment List

Main Engines	Caterpillar	Airhorn	Kahlenberg
Reduction Gears	Twin Disc	VHF Transceivers	Motorola
Propellers	Columbian Bronze	Cranes	Slattery
Shaft Bearings	Johnson Rubber	Winches	Gearmatic
Propulsion Control System	Hynautic	Anchor Windlass	Marco
Gensets	John Deere	Water Systems	Jacuzzi/Flomax
Steering	Tenfjord		/Atlas-Danmark
Radars	Furuno	Fuel Systems	Roper/Alfa-Laval
Depth Sounder	Furuno	Hydraulic System	Vickers/Aeroquip
Autopilot	Wagner	Fire Pump	Marlow
Gyrocompass	Sperry		

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below the sea. Some scientific equipment aboard includes a recording thermosalinograph, water temperature sensor, and water quality monitor.

Also complementing the vessel are wet and dry laboratories, specimen freezers, a high-pressure air compressor for Scuba tanks, and the capability to land and fuel helicopters.

### FAST COASTAL INTERCEPTOR Tempest Marine

Last year, the U.S. Coast Guard took delivery of the first four of a new series of Fast Coastal Intercep-

tors (FCI), 43½-foot offshore, high-speed chase boats, from Tempest Marine, Inc., of North Miami Beach, Fla.

The FCI craft, which will be used by the Coast Guard to fight illegal immigration and drug smuggling in the Florida coast area, feature a proven T-Torque drive system, which was developed by Tempest Marine specifically to furnish reli-

able surface-piercing drive that would be able to withstand the tremendous torque developed by their Caterpillar diesel engines during high-speed offshore operation. Each FCI is powered by a pair of turbocharged and aftercooled Caterpillar 3208TA diesel engines, which produce a combined 750 hp at 2,800 rpm. The FCI can reach a top speed of more than 43 knots.

The specially designed FCI boats provide the Coast Guard with the ability to maintain high speeds in extremely adverse offshore conditions. This ability combined with the craft's long range provide a definite advantage in pursuit, rescue and other patrol situations.

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#### FCI Equipment List

Main engines	Caterpillar
Reduction gears	Twin Disc
Bearings	BFGoodrich
Propellers	Record
Shafts	Aquamet
Rudders	Phillip Rollar
Steering system	Hynautic
Starters	Delco-Remy
Engine controls	Morse
Alternators	Motorola
Instruments	VDO
Raw water pump	Jabsco
F/W separators	Racor

#### FINLANDIA

##### Cantieri Navali Ferrari

The 88½-foot harbor tug Finlandia was commissioned last year by her Italian owners Rimorchiatori Riuniti (RR) SpA, after her delivery by the La Spezia shipyard of Cantieri Navali Ferrari SpA (CNF). She is the first of a series of six vessels ordered from the yard by RR.

The tugs built by CNF in La Spezia are the first in the Mediterranean Sea to be equipped with an Aquamaster rudder propeller system. The main and auxiliary engines were supplied by Motoren-Werke Mannheim AG (MWM). MWM supplied 12 type SBV6M628 engines. These six-cylinder diesels are designed for a maximum power of 1,185 kw at 1,000 rpm. For operation in the RR's harbor tugs, the turbocharged and charge air-cooled diesels will provide 1,030 kw. With a total of 2,060 kw delivered by the twin-engine installations, the tugs will provide a static bollard pull of at least 40 tons.

Onboard power supply is provided by two Industrie Meccaniche Lombarde-built sets, which are equipped with KHD Deutz air-cooled engines of the FL 912 series, and rated for an output power of 48 kva each. IML is an MWM sales company.

#### ISLAND CLASS PATROL BOAT

##### Bollinger Machine

Bollinger Machine Shop & Shipyard, Inc., Lockport, La., completed a 16-vessel contract last year, when they delivered the final Island Class

Circle 316 on Reader Service Card



improved U.S. amphibious capabilities. The craft gives the amphibious task force commander the flexibility to deploy heavy armor and equipment ashore from over-the-horizon at high speeds.

Weighing almost 150 tons, the LCAC is 88 feet long with a beam of 47 feet, and is capable of speeds in excess of 40 knots, depending on sea state and payload. Four Avco-Ly-

coming TF40B gas turbine engines, rated at 3,955 shaft horsepower, drive four 63-inch-diameter centrifugal lift fans to produce the cushion of air inside the craft's rubberized nylon skirts, and two four-bladed 11.75-foot-diameter reversible variable pitch propellers are used for propulsion.

(continued)

patrol boat, WPB-1316, to the U.S. Coast Guard.

The 110-foot patrol boat, with a beam of 21 feet and depth of 7.3 feet, is powered by a pair of 16-cylinder Paxman Valenta diesel engines. The main propulsion engines drive through ZF reverse/reduction gears. She has a continuous operating speed of more than 26 knots.

Electrical power for the craft is provided by two 99-kw generators driven by Caterpillar 3304T diesels.

The Island Class patrol boat is based on a 110-foot hull design from Vosper-Thornycroft, UK, which was modified to meet the Coast Guard's needs and specifications.

#### ISLAND CLASS PATROL BOAT Equipment List

Main engines	Paxman Valenta
Reduction gears	ZF
Generator engines	Caterpillar
Radar, ARPA & Loran C	Raytheon
Omega receiver	Tracor
Doppler log, gyrocompass & autopilot	Sperry
HF transceiver & receiver	Sunair
VHF transceivers	Triton
VHF transceiver	Regency
Direction finder	Si-Tex
Boat davit	Appleton
Boarding boat	Avon

#### ISLAND QUEEN II

##### Munson Manufacturing

Last year, Munson Manufacturing delivered the 36-foot workboat Island Queen II to the National Park Service's Fire Island National Seashore off Long Island, N.Y.

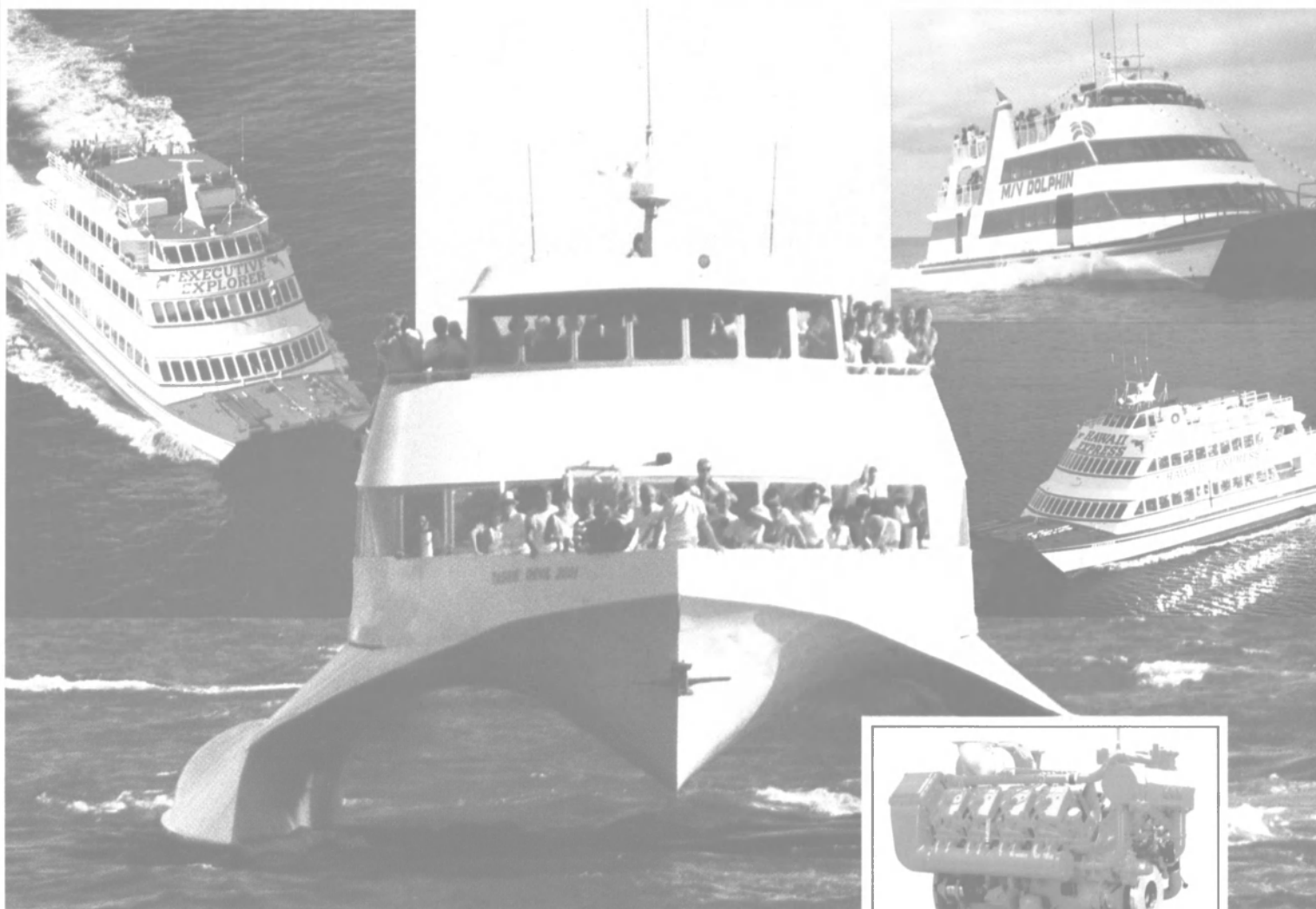
The boat is powered by twin VT-555 Big Cam engines supplied by Cummins Engine Company. The engines are each rated at 320 hp at 3,000 rpm. The vessel occasionally functions as a patrol boat, but her primary mission is to ferry and support Park Service personnel and divers involved in beach erosion research.

An unusual feature of the Island Queen II is her specially designed deicing system, something seldom found on a vessel of this size. The sea chest deicing system, operated with recirculating engine exhaust water, is designed for operating the boat when the bay freezes in the winter.

#### LCAC

##### Textron Marine

The addition of the LCAC (Landing Craft, Air Cushion) has greatly



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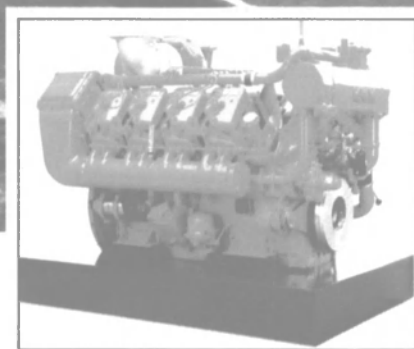
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**KHDI**

January, 1988

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The LCAC can carry 60-ton equipment loads plus troops across reefs, or through underwater obstructions, shallow water, surf, beach-silted channels, etc.

Textron Marine Systems, New Orleans, La., recently delivered the first LCAC to an East Coast Naval base in Little Creek, Va. Six other LCACs are deployed to the West Coast Assault Craft Unit.

## MATT S Marine Builders

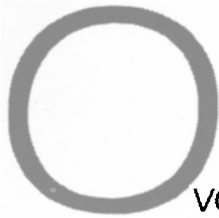
The new harbor switchboat Matt S was delivered by Marine Builders, Inc., Utica, Ind., to Marine Transportation Co., the sister company of Marine Builders, last year.

Named for the son of Marine Transportation's president David

A. Evancyk, the Matt S is 52 feet long, 22 feet wide and 7 feet 6 inches deep. It is the design of Marine Builders, who specialize in this type vessel, but are also known for the construction of excursion, passenger type-vessels. The vessel's two four-blade, 54-inch diameter Columbian Bronze propellers are powered by twin Cummins NTA-855-M marine diesels through Twin Disc MG-



514B reduction gears at a 5.16:1 ratio. A 35-kw Lima generator driven by a Cummins 4B3.9 diesel provides the electrics. All the engines were supplied by Cummins Cumberland, Inc., of Louisville, Ky.



Over the past 100 years, Split has established a worldwide reputation for building and fitting out all types of vessels as well as constructing a wide range of special purpose off/on shore drilling platforms and other marine equipment, including diesel engines under the M.A.N. – B & W licence. Over 260 vessels totalling almost five million dwt. have been delivered. Over 90 per cent to overseas buyers.

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MATT S Equipment List	
Main engines	Cummins
Reduction gears	Twin Disc
Propellers	Columbian Bronze
Generators	Lima
Generator engines	Cummins
Rudder & stern tube bearings	Thordon
Radar	Furuno
Hydraulic winch	Tulsa
Keel coolers	Johnson

## OSPREY CLASS PATROL BOAT Danyard

Last year, Danyard A/S of Denmark delivered the first of four Osprey 55 Class fast offshore patrol boats.

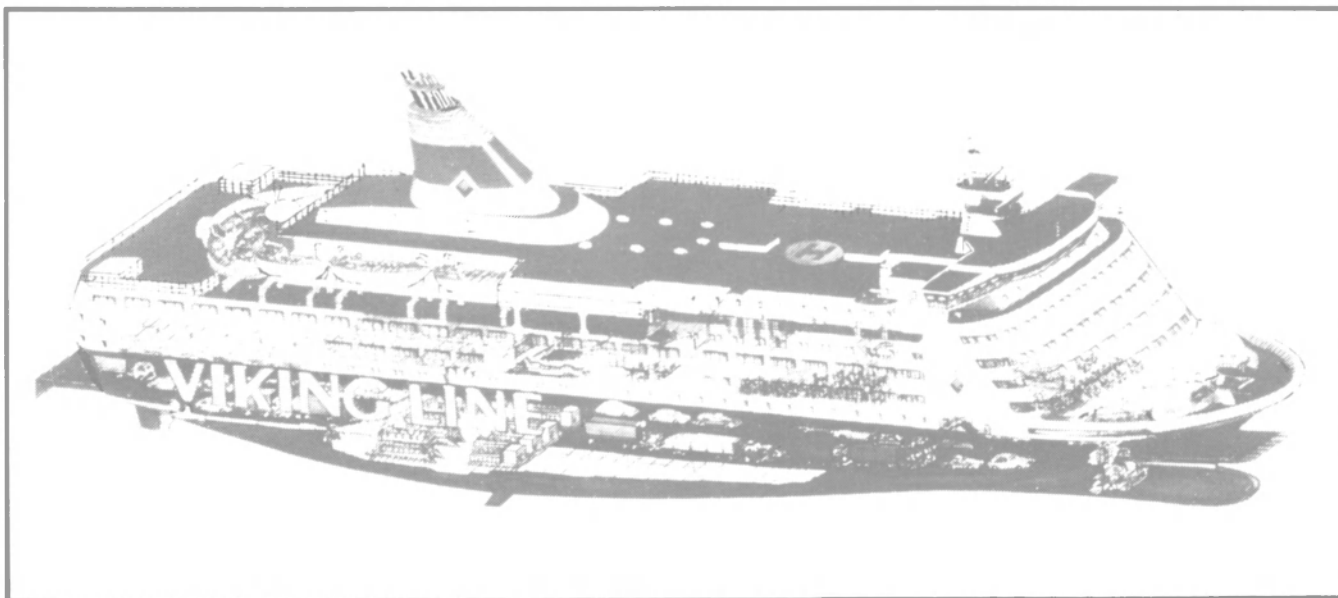
The new patrol boat is powered by two MAN B&W Diesel 12V 23/50 diesel engines, which were supplied by Alpha Diesel, Frederikshavn, Denmark, with 23VO20 reduction gears, controllable-pitch propeller equipment and Alphasonic remote control.

On sea trials, the speed of the Osprey 55 Class craft was 20.2 knots. The engines were installed in the vessel, which is a new version of the Osprey 50 Class patrol boat, at an inclination of 7 to 8 degrees to accommodate the 7-foot, four-bladed CP propeller. This was necessary because of the long flat buttock run of the craft.

The 12V 23/30 was developed by Alpha Diesel from its V23L engine and the compact in-line L23/30 engine. Cooperation between the design engineers at Danyard and Alpha Diesel led to an optimum usage of engine room space, while retaining easy access to the engines and gearboxes.

## PT CLASS PATROL BOAT Singapore Shipbuilding

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first of a series of seven PT Class patrol boats to the Government of Brunei Darussalam for the Royal Brunei Police Force.

This 48-foot fast patrol craft has a 14-foot breadth and a draft of 4 feet. She is powered by twin MAN B&W D2840 LE diesel engines rated at 635 hp at 2,300 rpm, and can obtain speeds of 33 knots. She has a range of 310 nautical miles at a speed of 22 knots.

SSE has designed the PT Class patrol boat to operate in rough sea conditions with good stability. This type of craft is excellent for coastal surveillance, enforcement patrols and other coast guard-type applications.

Normally operated with a crew of seven, the PT Class fast patrol boat has a single chine planning hull incorporating a deep-Vee forward and a moderate dead rise aft. The hull is of all-welded aluminum construction with close framing.

### SIR SEWOOSAGUR Jansen Werft

Jasen Werft of West Germany delivered the versatile tug Sir Seewoosagur to the Mauritius Marine Authority, last year. At present, she is operating around the small islands of the Mauritius archipelago.

The Sir Seewoosagur has an overall length of about 96 feet, breadth of 31½ feet, and draft of 15½ feet. Main propulsion is by two K.H.D. type of SBV 6 M 628, engines with an output of 1,000 kw each at 900 rpm, running through two Voith-Schneider propellers.

The tug will also be operated as a firefighting vessel, and therefore a corresponding system of pumps, monitors, etc., is installed. In addition, the vessel carries extensive antipollution equipment.

### SMIT-LLOYD 56 De Groot en van Vliet

The Smit-Lloyd 56, one of the first of a new class of tug/firefighting/supply boats to enter service, was delivered last year by the Rotterdam yard of De Groot en van Vliet. She is presently supporting activities on the Dutch Continental Shelf under a two-year contract with NAM.

The multipurpose tug features a four-engine main propulsion layout—two Wartsila 1,500-hp engines and two 1,100-hp engines. They have a bollard pull of 70 tons and have a total horsepower rating of 5,200.

This 50 Series vessel has two 400-hp bowthrusters, a 400-hp stern thruster and Class 1 firefighting outfit.

Multipurpose tanks enable the Smit-Lloyd 56 to carry muds, brine, fuel, drill water and a variety of cargoes. The tanks are fitted with self-cleaning devices, and advanced electronic systems provide for full remote control from the engine room of all loading/discharge operations.

### ST. DAVID Gladding-Hearn

Last year, Gladding-Hearn Shipbuilding, The Duclos Corporation of Somerset, Mass., delivered the 53-foot steel and aluminum pilot/

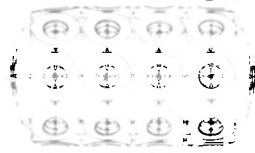
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Right, Smit Lloyd 56



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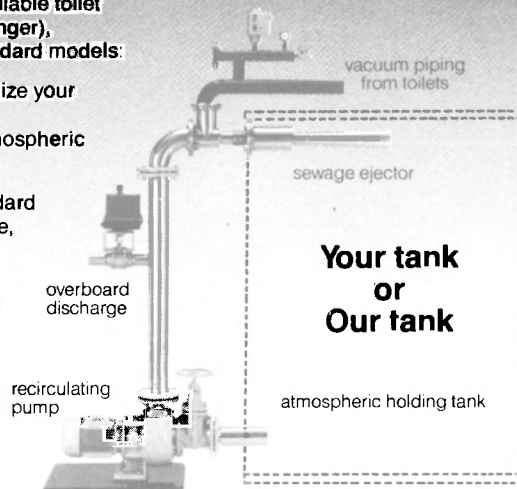
Both models have the same standard design and components; therefore, you do not pay for special design engineering. You do receive high quality components with a proven history of reliability.

EVAC vacuum toilet systems already exist in over 2,000 ships worldwide. Model 0111 and Model 1111, with one or two pumps, are available from stock to expedite delivery.

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- toilet vents eliminated

**EVAC** ENVIROVAC SYSTEMS

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St. David

search and rescue boat St. David to the Government of Bermuda in Hamilton.

The vessel features a Corten-steel hull and deck, with an aluminum alloy deckhouse. Crafted for rescue and boarding operations in severe weather conditions, the St. David is capable of withstanding a 360-degree rollover. Her rescue speed of 18 knots is provided by twin GM Detroit Diesel 12V-71N engines, each delivering 480 shaft horsepower at 2,300 rpm. The central helm features an elaborate array of electronics, offering the latest in navigation, radio, and depth-sounding equipment.

The St. David is equipped with Columbian Bronze propellers, Aquamet propeller shafts, Wagner steering and Morse controls.

#### TAHOMA

Robert E. Derecktor

Robert E. Derecktor of Rhode Island, Middletown, R.I., delivered the 270-foot medium endurance class cutter Tahoma (WMEC-908) to the U.S. Coast Guard, last year. She is the fourth vessel completed under a nine-ship contract with the USCG.

The mission of the Tahoma, like her sister ships, is to perform multi-task duties including search and rescue, law enforcement, marine environmental protection and military preparedness. The cutter features sensors to detect, track and identify vessels at long range and has flight decks for helicopters, thus increasing the vessel's range and versatility.

The Tahoma is powered by two 3,500-hp Alco diesel engines, and has a maximum speed of 19.5 knots. The ship's service electricity is provided by two 475-kw Caterpillar gensets. With a displacement of 1,780 tons, the Tahoma has a beam of 38 feet and draft of 14 feet.

#### THERMOLINER Westamarin

The 164-foot-long all-aluminum refrigerated catamaran Thermoliner was delivered last year by Swede Ship's Norwegian yard, Westamarin A/S of Mandal, to her shipowner Godstrans A/S, Honefoss. The reefer boat is used for the transportation of fresh fish from Scandinavia to ports on the English Channel, with return cargo of frozen food, fresh flowers and vegetables, etc.

This new concept catamaran, which was developed in close cooperation between the owner and Westamarin, offers a viable alternative to truck and air-freight carriage for coastal and feeder traffic to continental ports. Low crew costs, large and easily accessible cargo spaces, high speed, limited draft and on-board loading/unloading equipment are just a few of the reefer's advantages.

Main propulsion machinery for the Thermoliner are two MTU 16V 396TB84 diesel engines, each rated at 2,040 kw, driving two Speed Setter propellers.

#### TORPEDO WEAPONS RETRIEVER

Marinette Marine

The Torpedo Weapons Retriever (TWR) Class vessel is a totally new design developed by Marinette Marine Corporation, Marinette, Wis., for the U.S. Navy. The Navy uses these TWRs to recover spent torpedoes, missiles, small drones and mobile targets fired or utilized during weapons system tests of all submarines and combatant ships.

The TWR craft deck arrangement has been designed to facilitate rapid recovery of spent torpedos with an effective deck crane, aft ramp and torpedo transfer system. This arrangement can accommodate the storage of all types of Navy torpedoes.

The TWR has an overall length of 120 feet, breadth of 25 feet and molded depth of 12 feet. Her displacement is 174 long tons.

If needed, this versatile craft can function as a coastal or river patrol craft. With speeds in excess of 16 knots, and the addition of light armament, the TWR could be a formidable naval patrol boat.

#### USCG PATROL BOAT

MonArk Boat

Last year, the United States Coast Guard took delivery of a new twin-screw, high-speed patrol boat designed and built by MonArk Boat Company's Workboat Division in Monticello, Ark.

The 28-foot all-aluminum craft is powered by twin Volvo Penta diesel AQAD41/290 engines, each rated at 200 hp at 3,800 rpm. The vessel is capable of speeds of about 38 knots.

Main Engines	Volvo Penta
Stern Drive	Volvo Penta
Steering (hydraulic)	Teleflex
Compass	Ritchie
Radar	Furuno
VHF Radio	Icom
Depth Sounder	Lowrance
Controls	Morse
Bilge Pump	Rule
Navigation Lights	Aqua Signal
Searchlight	Jabsco
Horn	AFI
Ship to Shore	Marinco
Battery Charger	Marinco
Wipers	American Bosch
Fendering	Johnson Rubber
Seating	Garelick
PA System	Whelen
Revolving Lights	Whelen

#### OUTSTANDING WORKBOATS & MILITARY SHALLOW-DRAFT VESSELS 1987

BOAT	YARD	MAIN ENGINES
Avenger	Peterson Builders	Waukesha (4)
Blair McCall	Gulf Craft	Cummins (5)
Commodore	Marco Seattle	Caterpillar
Eagle	Moss Point	Caterpillar (2)
Fast Coastal Interceptor	Tempest Marine	Caterpillar (2)
Finlandia	Cantiere Navali Ferrari	MWM (2)
Island Class Patrol Boat	Bollinger	Paxman Valenta (2)
Island Queen II	Munson	Cummins (2)
LCAC	Textron Marine	Avco-Lycoming (4)
Matt S	Marine Builders	Cummins (2)
Osprey 55 Class Patrol Boat	Danyard	MAN B&W (2)
PT Class Patrol Boat	SSE	MAN B&W (2)
Sir Seewoosagur	Jansen Werft	KHD (2)
Smit-Lloyd 56	De Groot en van Vliet	Wartsila (4)
St. David	Gladding-Hearn	Detroit Diesel (2)
Tahoma	R.E. Derecktor	Alco (2)
Thermoliner	Westamarin	MTU (2)
Torpedo Weapons Retriever	Marinette Marine	—
USCG Patrol Boat	MonArk Boat	Volvo Penta (2)
Yard Patrol Craft	Marinette Marine	Detroit Diesel (2)

The patrol boat is used for patrol, search and rescue missions on Lake Champlain.

Her cabin is 8 feet by 12 feet and includes a forward berth and stowage area with ventilation provided by a 20-inch tinted transparent escape hatch. Cabin outfitting includes a pedestal mounted pilot's seat, a 36-inch bench stowage seat, chart/work table, full instrumentation, combination red/white interior lights, and cabin heat.

#### YARD PATROL CRAFT

Marinette Marine

The 108-foot Yard Patrol Craft (YP), built by Marinette Marine Corporation, Marinette, Wis., for the U.S. Navy is used for the training of midshipmen in seamanship, navigation and marine engineering at the Annapolis Naval Academy in Annapolis, Md. and the Merchant Marine Academy in Newport, R.I.

The wooden hull of the YP is constructed of Douglas Fir, Alaska Yellow Cedar, Southern Yellow Pine, White Pine and Mahogany and has an aluminum superstructure. She is powered by two Detroit Diesel 12V-71N diesel engines, rated at 437 bhp each. Her maximum speed is 12 knots. Her molded beam is about 22 feet 9 inches and full load draft is 5 feet 9 inches.

The craft is fitted with two Detroit Diesel DDAD 3-71 diesel generator engines with two 50-kw International Electric E-7168 generators. The vessel also is equipped with an EPSCO Loran C and EPSCO plotting system, as well as a Magnavox SatNav/Omega system.

#### YARD PATROL CRAFT Equipment List

Main engines	Detroit Diesel
Generator engines	Detroit Diesel
Generators	International Electric
Loran C & plotting systems	EPSCO
SatNav/Omega System	Magnavox



Thermoliner

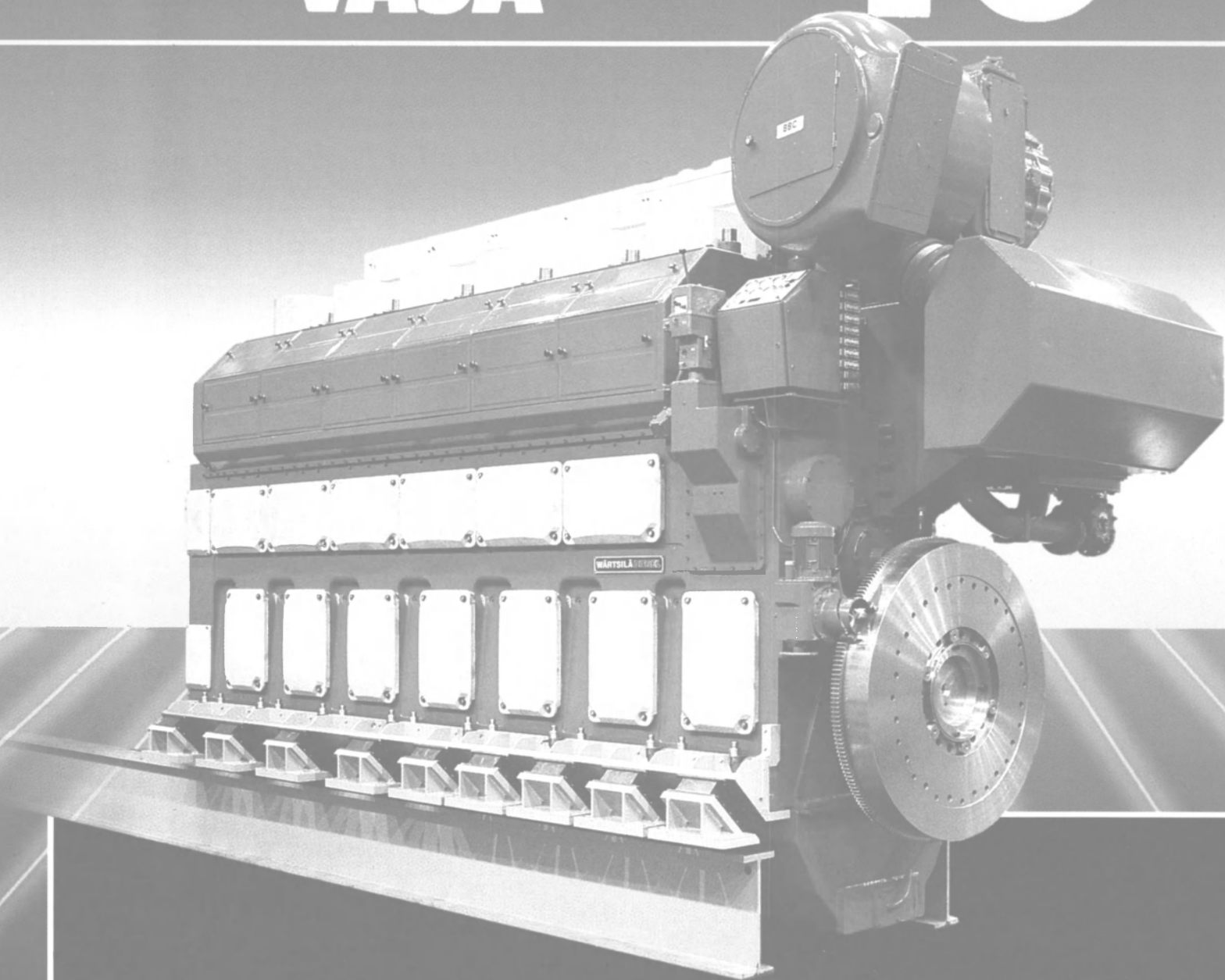


Torpedo Weapons Retriever



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Telecopier (203) 661-4174

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Tel. (504) 341-7201  
Tlx. 810-951-6386 wartsila marr  
Telecopier (504) 341-0426

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730 North Post Oak Road, Suite 400  
Houston, TX 77024  
Tel. (713) 957-2539  
Tlx. 794224 mempark hou  
Telecopier (713) 681-2096

An aerial, black and white photograph of a large shipyard. In the foreground, a large ship is under construction, its dark hull and complex superstructure clearly visible. The ship is positioned in a wide, shallow basin of water. In the background, the shipyard extends across a large area, with numerous other vessels and structures visible. The sky is overcast, and the overall scene conveys a sense of industrial scale and maritime activity.

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As a shipowner, it's no news for you  
that the world wide shipbuilders crisis  
has left you with all the odds on your side.

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And you can count them with the fingers of your hands. But if you are after an specific project, probably just one hand will be enough.

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*check on us*



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28006 Madrid  
Tel. (341) 435 78 40  
Telex. 27648 ASTIL-E  
Fax. (341) 276 29 56





## 1988 NAPVO Annual Convention Washington, D.C., January 10-15

The 16th annual convention of the National Association of Passenger Vessel Owners (NAPVO) will be held in Washington, D.C., January 10-15. Over 200 NAPVO members from across the country are expected to attend.

The group's kick-off address will be given by Rear Adm. **Clyde T. Lusk**, Chief of Staff, United States Coast Guard. Admiral **Lusk**, who is scheduled to speak on Monday, January 11, will provide his perspectives on the role of the small passenger vessel in the maritime industry. He is also expected to discuss some of the possible future directions for the U.S. Coast Guard.

Also among the many convention highlights will be a luncheon address by Rep. **Walter Jones** (D-NC), chairman of the Merchant Marine and Fisheries Committee, who will speak on Wednesday, January 13 at the Loew's L'Enfant Plaza, where the meeting will be held. Another plenary session will feature a panel of Coast Guard experts addressing T-boat regulations, bareboat charters and manning. This will be moderated by Rear Adm. **William Kime**.

"This 1988 NAPVO Convention is yet another sign of our growth and increasing strength within the marine transportation industry," remarked **Jim Cross**, NAPVO president and owner/CEO of Island Queen Excursions, Riviera Beach, Fla. "The wide-range of workshops and plenary sessions reflects the enthusiasm and interest of our growing membership in dealing directly with the variety of issues affecting us today."

One much-discussed topic during the 5-day event will surely be the issue of illegal "bareboat" charters. "It's important for all those within maritime transportation to realize the impact that such illegal operations can have," noted **Alan Bernstein**, NAPVO vice president and general manager of BB Riverboats in Cincinnati. "Over half of our new membership has been in business for two years or less." Mr. **Bernstein** continued. "They often feel the pinch of such illegal operations

first. We must all address the problem, however."

Some 40 exhibitors will participate throughout the convention.

NAPVO is the nation's largest independent trade association for the owner/operators of dinner ships, sightseeing/excursion boats, car ferries, paddlewheelers and windjammers across the country. Over 300 separate members operate within 40 states, including some of the country's largest metropolitan areas. An estimated 30 million vacationers, business executives, conventioners, restaurant goers and others make use of NAPVO affiliated vessels throughout the year.

From 1986 to 1987, the membership of NAPVO has increased about 50 percent. Mr. **Cross** attributes part of this growth to the increased visibility of the passenger vessel industry to the public.

Some of the key benefits of NAPVO membership include qualification for discounted insurance programs, receipt of the Foghorn, a monthly report on U.S. Coast Guard and Congressional activities that relate to the passenger vessel industry, and an invitation to the annual NAPVO Convention.

As membership increases, so does NAPVO's impact on legislation that affects the passenger vessel industry.

For those interested in joining NAPVO, or learning more about their activities, contact: NAPVO National Headquarters, **Eric Scharf**, executive director, 1511 K Street, N.W., Suite 314, Washington, D.C. 20005; telephone: (202) 638-5310.

### NAPVO CONVENTION

#### Sunday, January 10

Noon-2 p.m.-Board Meeting  
3-6 p.m.-General registration  
6-8 p.m.-Reception

#### Monday, January 11

8 a.m.-5 p.m.-Registration/Information Center open.

8-9:30 a.m.-Breakfast and introduction of new members.

9 a.m.-5 p.m.-Exhibitor trade show

9:30 a.m.-10:30 a.m.-Plenary session with Rear Adm. **Clyde T. Lusk**, Chief of Staff, USCG.

10:30-10:45 a.m.-Break

10:45 a.m.-noon-Regional meetings

Noon-1:30 p.m.-Lunch with exhibitors

1:45-3 p.m.-Workshops  
"Legislation and Regulatory Policy—What's Hot in Congress."

"New Food and Beverage Service Ideas."

"Advertising and the Boat Operator."

3-3:15 p.m.-Break

3:15-5 p.m.-Business meeting

6-11 p.m.-Dinner cruise to Mount Vernon aboard the M/V Spirit of Washington.

#### Tuesday, January 12

8 a.m.-5 p.m.-Exhibitor trade show

8-10 a.m.-Breakfast with exhibitors

10 a.m.-noon-Plenary session  
Insurance company panel-representatives of Marsh & McLennan Association buyers group-**Jim Rooney**

Noon-1:30 p.m.-Lunch with exhibitors

1:30-2:45 p.m.-Workshops

"Employee Relations Seminar"

"Belonging to the National Restaurant Association—How it Benefits You."

"Building Profit Through Gift Shops."

2:45-3:15 p.m.-Break

3:15-4:45 p.m.-Workshops

"Accident Prevention—How Risk Management Services Work to Save You Money."

"Incorporating Wine Into Your Profits."

"Federal Public Health Service Regulations: How They Affect You on the Local Level."

#### Wednesday, January 13

8-9 a.m.-Breakfast

9-10:30 a.m.-Plenary session

"What's Current at the Coast Guard"

"Licensing Issues"

"Changes in the T-Boat Regulations"

"Life Preservers"

10:30-10:45 a.m.-Break

10:45 a.m.-noon-Plenary session

"Employee Motivation—Techniques that Work," by **Sally Perz**, president, the Perz Group.

Noon-2 p.m.-Congressional luncheon  
Congressman **Walter B. Jones**, chair, House Merchant Marine and Fisheries Committee will be the guest.

2:15-3:45 p.m.-Workshops

"How to Attract the Press: When You Want Them."

"Issues Facing the Restaurant Industry."

"Designing a Cost-Effective Diesel Maintenance Program."

3:45-4 p.m.-Break

4-5 p.m.-Regional meetings

5:30-9 p.m.-Reception and dinner aboard the M/V Chesapeake, courtesy of Chesapeake Shipbuilding.

#### Thursday, January 14

8-9 a.m.-Breakfast

9-11:30 a.m.-Business meeting

11:30 a.m.-1:15 p.m.-Lunch break, luncheon cruise aboard the Cherry Blossom (optional).

1:15-2:45 p.m.-Members' New Ideas Roundtable

"Paints, Pumps and Motors"

"New Food and Beverage Ideas"

"Sales and Marketing Ideas"

"Employee Incentive Ideas"

2:45-3 p.m.-Break

3-4:30 p.m.-Workshops

"Making Washington Work For You—Successful Advocacy Strategies."

"Innovative Financing for New Boats."

"Alcohol Server Intervention Training—Protecting Your Liability."

7 p.m.-Closing Banquet/Dance

8-10 p.m.-Dinner with speaker to be announced.

#### Friday, January 15

9 a.m.-noon-Board of directors meeting

### NAPVO EXHIBITORS

Company	Booth
Albar Restaurant Equip.	17
American Digital Systems	32
Arthur J. Gallagher Insurance	14
Association Buyers Group	36
Caterpillar	19
Chesapeake Shipbuilding	20/21
Comet Products	5
Cummins Engine	10/11
DeJong & Lebet	31
Devoe Marine Coatings	8
Directions In Design	7
Ecklund & Assoc.	25/26
Fionor	35
Freeport Shipbuilding	22
Judson Marine	29
Loomis & LaPann	2
MAN B&W Diesel	18
Manco Associates	1
Marsh & McLennan	12
Microphor	13
Morrison Printing	37
Perz Group	6
Service Marine	15/16
Skipperliner Shipyards	34
Stimson Lane Wine & Spirits	28
USCG	3
Weisman Novelty	33
Western Shirt Line	27
ZF of North America	9

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**MMC Offers Free Literature  
On Improved 'Flexi-Dip'  
Portable Electronic Tape**

MMC International Corp., a tank gauging manufacturer whose products incorporate a measuring tape for definite, accurate readings, has announced improvements to their Flexi-Dip® portable electronic tape.

The new model has been specifically developed to work in open tank situations, with single tank insertion measuring ullage (outage), interface, and temperature individually, in any dual combination, or all three functions.

Flexi-Dip operates in tank depths up to 100 feet (30 meters) giving readings accurate to  $\pm \frac{1}{8}$ " (-3mm). Measurable to within  $\frac{3}{8}$ " of tank bottom, Flexi-Dip offers a

repeatability of  $\pm \frac{1}{16}$ " ( $\pm 2$  mm) on linear measurement, with temperature readings to  $\pm 0.5^\circ\text{F}$  ( $\pm 0.2^\circ\text{C}$ ) and repeatability to within  $\pm 0.1^\circ$ .

FM and BASEEFA approved as intrinsically safe, the completely self-contained Flexi-Dip features 33'-100' (10M-30M) antistatic tape, locking thumb screw, digital LCD readout at the hub, and mode select switch for ullage (outage), interface and temperature.

The newest model features square barrel with "Z" hooks for open tank gauging, mechanical tape (feet/inches one side, metric on the other), and a plastic lined shoulder carrying bag for convenience.

Flexi-Dip is one of several portable liquid measuring tapes manufactured by MMC, and designed for tank and groundwater well monitoring.

For additional information and free literature from MMC,

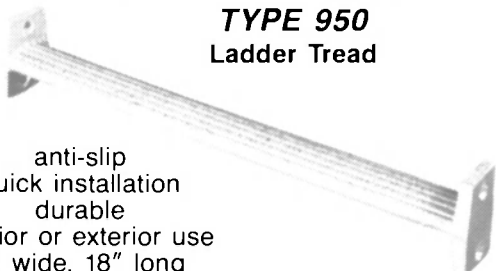
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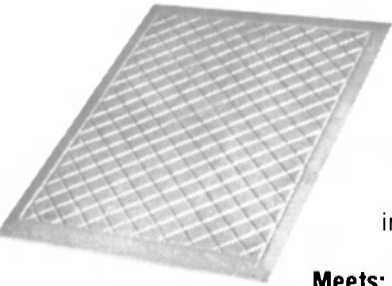
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Meets: USPS-W-489 (RE)  
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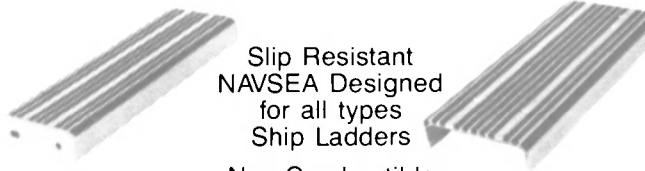
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durable  
anti-slip surface  
variable sizes  
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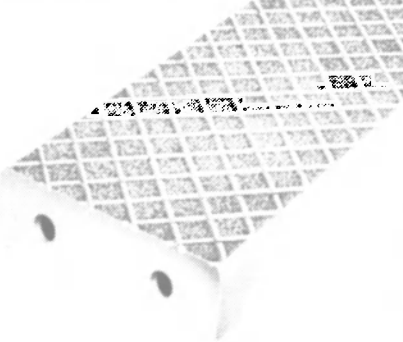
**TYPE I FULL TREAD  
TYPES 841, 861, 891**

**TYPE II CAP TREAD  
TYPES 842, 862, 892**



Slip Resistant  
NAVSEA Designed  
for all types  
Ship Ladders  
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Meets: MIL-T-24634 (SH)  
Treads, Compound-Filled for Inclined Ladders

**TYPE 117-A  
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anti-slip  
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Meets:  
F.S. RR-T-650 class 3

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Safety Surface**



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ready to use  
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**SAFE-STRIDE  
Safety Paint**



fast installation  
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integral grit  
interior, exterior use  
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**TYPE 500  
Renovation Safety Tread**



quickly installed  
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abrasive filler  
colors available  
permanent safety  
Meets: FS RR-T-650C Comp. C  
Treads, Metallic and Non-metallic,  
Skid Resistant

**Sperry Marine Announces  
New General Manager**



C. R. Kenney

C. R. (Dick) Kenney has been elected vice president and general manager of Sperry Marine Inc., Charlottesville, Va. He succeeds David R. Brickner, who resigned to join another company.

Mr. Kenney has been employed by Sperry Marine for 25 years. Most recently he served as vice president, defense systems marketing. Other positions he has held include electronics engineer; director, European marketing; and plant manager.

He is a member of the Navy League, the Naval Submarine League and the National Ocean Industries Association.

**Fincantieri Orders  
4 MAN B&W Engines  
—Literature Available**

The Italian shipbuilders Fincantieri, Trieste, have ordered four MAN B&W 8L 58/64 marine diesel engines and one 9L 25/30 auxiliary diesel engine for the diesel-electric propulsion and on-board power supply of a large cruise liner. The engines will deliver a total output of approximately 55,300 hp (40,700 kw). The order is worth approximately DM 20 million (about \$12.3 million).

The four-stroke engines are for the third newbuilding in a series of luxury cruise liners ordered by Sitar Cruises of Los Angeles, Calif.

For the previous newbuildings in this series, both the French shipbuilders Chantiers de l'Atlantique and then Fincantieri had ordered the same propulsion system from MAN B&W Diesel in September 1986 and April of last year, respectively.

For free literature giving complete details on MAN B&W,

Circle 39 on Reader Service Card

**WP** **WOOSTER PRODUCTS INC.**  
1000 Spruce Street, P.O. Box 896 Wooster, Ohio 44691  
In Ohio, Phone Collect: (216)264-2844  
Outside Ohio, Call Toll Free: 800-321-4936  
FAX (216) 262-4151

Circle 163 on Reader Service Card



## Marathon Relocates Engineering Group To Houston

According to an announcement by **Ray R. Seegmiller**, president and chief operating officer of Marathon Manufacturing Company, the firm's design engineering group has relocated to Houston from Brownsville, Texas.

The new address of the Marathon LeTourneau Marine Company's Design Engineering Group is 922 Holmes Road, Houston, Texas 77045; telephone: (713) 665-6064.

Marathon is a Penn Central company. Penn Central manufactures products and supplies services in the areas of telecommunications, defense and energy.

## PME Offers Eight-Page Brochure On Babbitt Bearing Repair Service

Plant Maintenance Engineering (PME) of Cincinnati, Ohio, is offering a free eight-page brochure that covers the services offered by PME with regard to their babbitt bearing repair service.

The brochure covers PME's capabilities (babbitt, centrifugal casting, static pouring, metalizing, and tig welding) and discusses the difference between merely pouring babbitt in a bearing, and completely repairing, refurbishing and precision machining a babbitt bearing.

Additional capabilities are listed as mechanical cast iron repair, complete field machining, and in-house apparatus service.

Under the heading "PME is at your service," the publication lists the addresses and phone numbers of PME's babbitt bearing repair centers, which are strategically located throughout the U.S. All of their facilities are equipped and staffed to meet the needs of their customers. PME's plants are available 24 hours a day, seven days a week for around-the-clock service.

General maintenance tables are included that list babbitt composition and give recommended clearances for babbitt bearings.

For additional information and a free copy of the brochure from PME,

Circle 33 on Reader Service Card

## Megasystems Introduces New Product—DOT // PC—Literature Available

Megasystems of Boca Raton, Fla., is offering free literature on a new product, the Direct Optical Tuning // PC (DOT // PC), to provide marine operators with a simple, straightforward means of tuning diesel engines and maintaining engine status documentation toward dual goals of reducing fuel costs and detecting operating problems before damage occurs. The DOT // PC represents the third generation of Megasystem engineered combustion

analyzers. The company's first system was introduced in 1976. The new product incorporates significant features and advances which are discussed in the free literature offered by Megasystems.

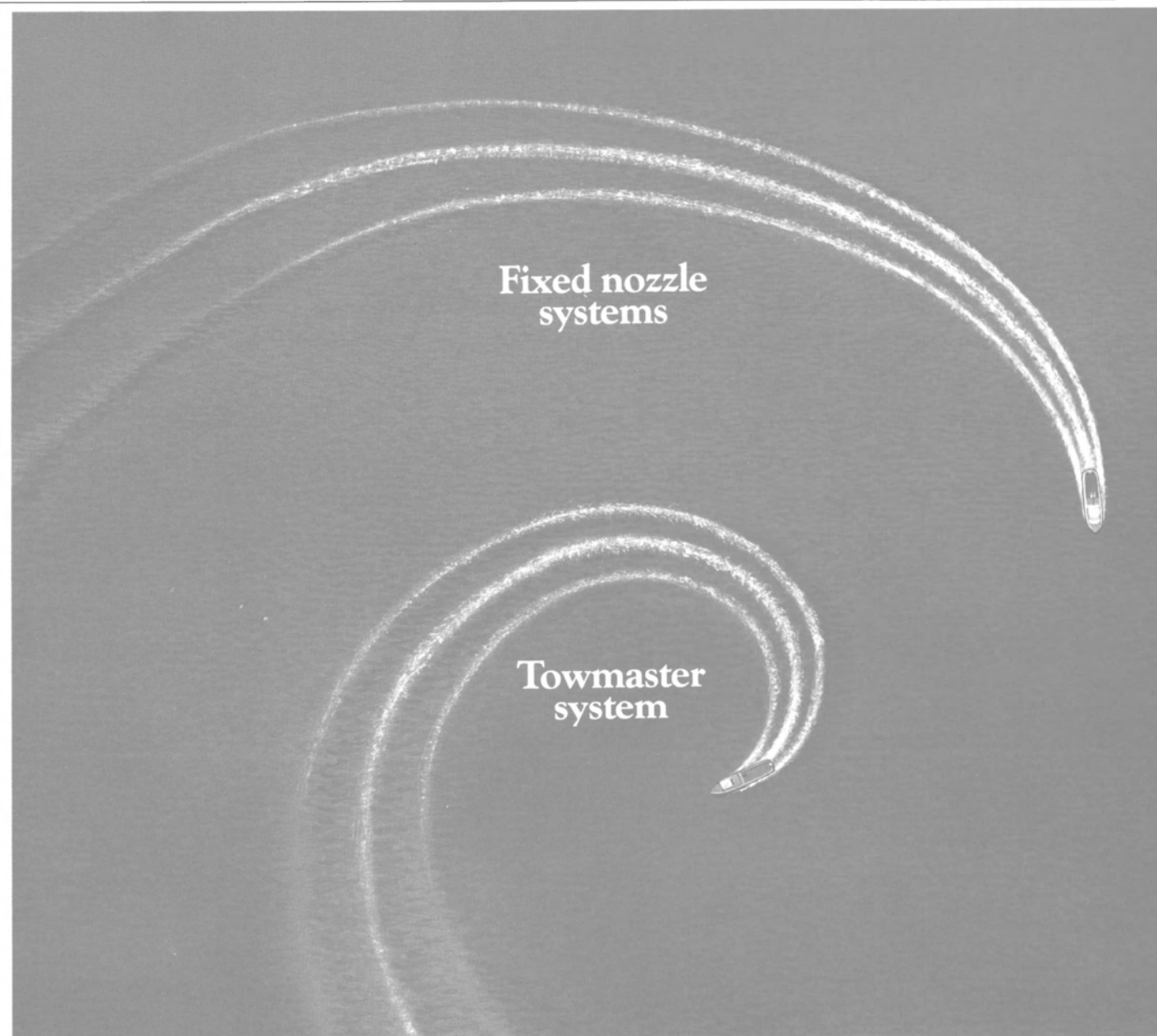
The ability to precisely regulate combustion timing results in considerable fuel savings. Further, keeping the engine balanced reduces stress and vibration and distributes the heat evenly over the engine, reducing thermal stress. Preventive main-

tenance can be scheduled based on actual conditions rather than time intervals. Also, Megasystems points out that early detection of faulty fuel injectors, worn piston rings, faulty exhaust valves, and cylinder liner problems result in reduced maintenance, less downtime, and overall life extension of the engine. As Megasystems outlines, this versatile instrument can be configured to perform as a combustion analyzer, a peak pressure alarm unit, or a

combination instrument capable of including other engine parameters for monitoring such as exhaust gas and lube oil temperatures. In addition, other IBM compatible programs can be run using the same instrument.

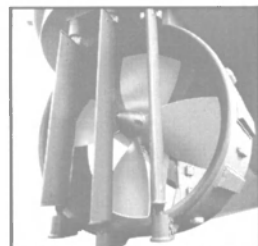
For more information and a free copy of the new literature from Megasystems,

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## The Towmaster™ Nozzle/Rudder System can cut your turning circle by 70%

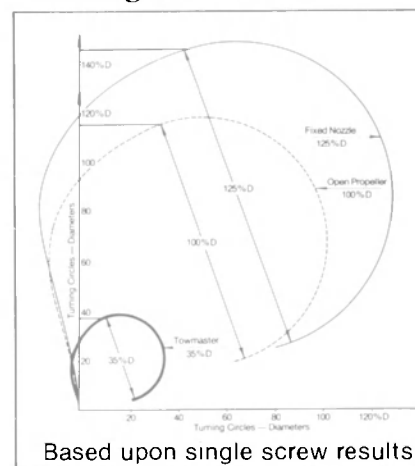
If your vessel has a ducted propeller system, Michigan Wheel's Towmaster Nozzle/Rudder System can give you a dramatic improvement in maneuverability and turning efficiency. In fact, if your vessel presently has a fixed nozzle system, tests prove the Towmaster Nozzle/Rudder System could reduce your turning circle by 70%. If yours is an open propeller system, you can expect an improvement of up to 60%.



The Towmaster can give you this kind of performance because of its unique triple-rudder design. Each rudder, by itself, produces a higher lift-to-drag ratio than conventional centerline rudders.

Together, they create a cascade effect that can allow 60° helm angles before rudder stall occurs.

### Turning diameter test results



Together, they create a cascade effect that can allow 60° helm angles before rudder stall occurs.

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And because the Towmaster also reduces rudder torque and makes more efficient use of propeller thrust, vessel operation is easier and less fatiguing.

The Michigan Wheel Towmaster Nozzle/Rudder System. It's proven its ability to increase maneuverability and overall operating efficiency in over 100 applications. To learn how it can do the same for you, contact Michigan Wheel for complete facts and the name of the distributor nearest to you.

**Michigan Wheel Corporation**

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Phone (616) 452-6941  
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# PROPULSION UPDATE

## The Repowering Of QE2— The Largest Diesel Power Station Afloat

*Editor's Note: This article is based on a paper presented by Werner Oehlers, senior engineer and sales manager-marine engines, MAN B&W Diesel GmbH, at a recent Society of Naval Architects and Marine Engineers-New York Metropolitan Section joint meeting.*

On April 25, 1987, the Queen Elizabeth 2 made history by becoming the biggest conversion job in merchant shipping annals. This historic date saw the completion of the conversion work at Lloyd Werft's Bremerhaven yard, the core of which constituted the replacement of the original steam turbine propulsion system by a state-of-the-art diesel-electric plant.

The aim of Cunard Line, the operator of the QE2, was to improve fuel economy, reduce maintenance and extend service lifetime.

The annual fuel consumption, resulting from a unique mix of short and around-the-world cruises and trans-Atlantic service, was the spur to a repowering assessment by Cunard. The aim was to maintain her high-speed operating viability for another 20 years. Techno-economic feasibility studies in four major phases were carried out over two and a half years. Alternative scenarios ranged from keeping the existing plant to retrofitting various other propulsion installations.

Around 70 percent of the owner's investment was allocated for the removal of the original 110,000-shp plant and its replacement by a 130,000-bhp diesel-electric installation. This diesel-electric installation was based on nine MAN B&W

9L58/64 medium-speed engines. The final result was: the world's most powerful merchant marine propulsion plant; the most powerful electric propulsion plant (44 mw per shaft); a maximum speed of over 33 knots; a direct resilient seating of all nine MAN B&W engines (220 tons each); a freshwater generation of 1,000 tons per day; an extensive waste heat recovery system with a total efficiency of 74 percent; and the economical generation of power for hotel services.

### Performance Specifications

In July 1983 at Southampton, England, Cunard called a meeting and invited virtually all engine designers with models capable of meeting the horsepower requirements as well as a group of yards with proven experience in passenger ship conversions.

Cunard's performance specifications comprised four basic elements: (1) the proposed propulsion plant was capable of meeting the operating profile of the ship (including a 15 percent sea margin) using no more than 85 percent of the mcr of the installed plant. The speed of 32.2 knots had to be maintained; (2) noise and vibration levels were not to exceed those of the former plant; (3) a fully automated and unmanned engine room design was required to ensure maximum reliability and maintainability; and (4) the maximum out-of-service time for the conversion project was set at seven months.

### How MAN B&W Met The Specifications



Executives from MAN B&W Diesel, a division of MAN GHH Corporation, at a recent SNAME joint meeting in New York, are (L to R): **Claus Windelev**, executive vice president and general manager, MAN B&W Diesel; **Werner Oehlers**, senior engineer and sales manager-marine engines, MAN B&W Diesel GmbH; **Edward A. Waryas**, director-business development, MAN B&W Diesel; and **Lars Krieger Thomsen**, sales manager-diesel service, MAN B&W Diesel. Mr. Oehlers presented a paper on "The Repowering of QE-2—The Largest Diesel Power Station Afloat" at the meeting.

The first requirement was fulfilled by MAN B&W by a multi-genset concept. This enables the owner to run the ship in the widest range of power requirement, starting from ship load only in port to maximum required service speed, at almost constant optimal efficiency of the power plant.

Extensive load profile calculations based on the ship's travel schedule proved the high efficiency of this nine-engine concept that utilized electric power transmission to the two new Lips controllable-pitch propellers.

To fulfill the second performance specification, resilient mounting of the diesel engines was a must. The MAN B&W engines were specially designed for direct resilient mounting on the ship's foundation.

The principle of effective resilient seating of the diesel engines consists of reducing excitations transmitted to the foundation. The excitations arise from both low-frequency forces and structure-borne sound present in the engine base in the frequency range of up to approximately 1,000 Hz.

Rubber elements arranged at an angle were deemed to be the most suitable for the resilient engine mounting.

Apart from the external couples and torque fluctuations, internal forces were also taken into account. In the case of the 58/64 diesel engine, MAN B&W has developed a rigid engine frame to keep the stresses resulting from internal moments within permissible limits. Extensive tests were performed by MAN B&W in 1985 and 1986 to

check the calculation of the notch stresses of the engine components. Significant improvements were achieved by adopting a better supporting structure design and by using layered rubber elements.

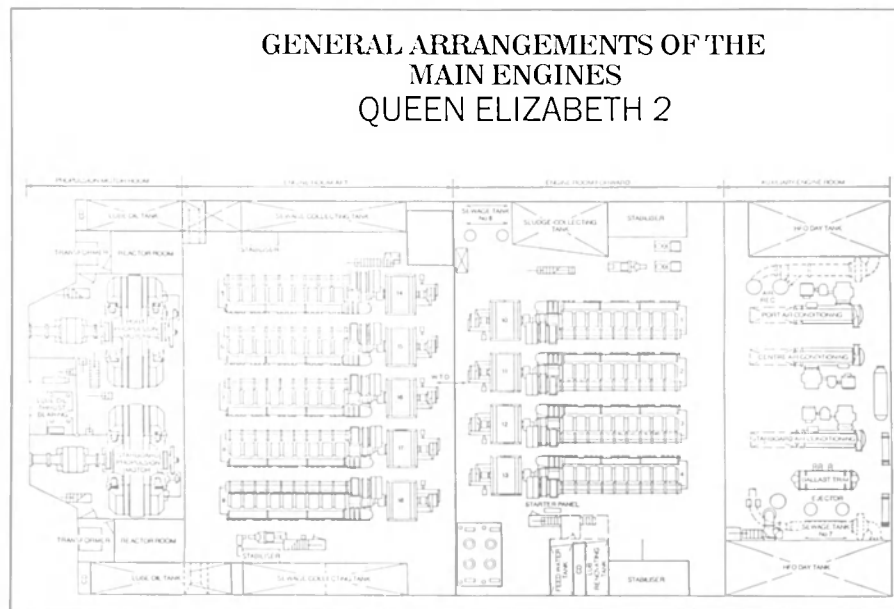
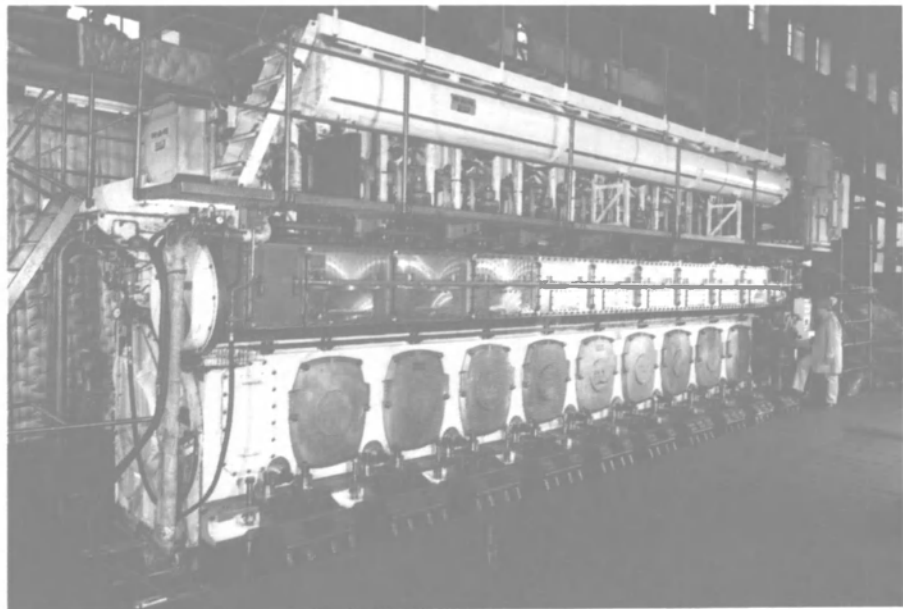
Extrapolation of the results of the MAN B&W experiments to higher cylinder numbers showed that stress levels were within permissible limits at those points where they are dependent on the internal moment and on the number of cylinders. The tests demonstrated the safe stress levels of the entire engine series with resilient mounting.

The third requirement, the total automated and unmanned engine room design, was met by the use of sophisticated control equipment provided under UMS specification of Lloyd's Register.

### The Refit Package

Since Cunard decided that the engine supplier was also going to furnish the complete accessory equipment for the propulsion system, MAN B&W received the order for the complete propulsion package.

The ship was fitted with nine diesel generator sets developing an aggregate output of 95,580 kw. The nine MAN B&W 9L58/64 four-stroke diesel engines feature low fuel consumption and easy maintainability. The engines can operate on heavy fuel oil according to the CIMAC K55 level of quality. The new propulsion plant achieves a daily fuel saving of around 250 tons at a service speed of 28.5 knots. Each of the nine engines is rated at 10,620 kw at 400 rpm and is capable of



## Repowering The QE2

(continued)

burning 700 cst heavy fuels.

Each engine is directly resilient mounted on the ship's foundation and flexibly coupled via Vulkan-Rato couplings to two-bearing totally enclosed, water-cooled, salient pole, three-phase, synchronous GEC alternators, each rated 10.5 MW, 10 kV, 60 Hz. Each alternator is rigidly mounted on the ship's foundation.

The power generated is supplied to a common 10-kV busbar system divided into two separate GEC main switchboards, installed in two separate compartments. Each of the main switchboards is again subdivided in two bus-sections allowing a variety of operating modes.

This common busbar supplies power at 10 kV directly to the two GEC 44-MW, 60-Hz synchronous motors running at 144 rpm. These motors are among the largest ever supplied for a marine propulsion plant, each weighing 340 tons with a length of 5.5 meters and a width of 8.5 meters. Electric power to all ship and domestic consumers are also supplied from the common busbar via two GEC liquid-cooled 10 kV/3.3 kV transformers of 11 MVA capacity each. With this arrangement a redundancy of 100 percent is available for the ship's load.

To allow the ship to operate a high efficiency even at low speed and during maneuvering, the normal constant propeller speed of 144 rpm can be reduced to 72 rpm. This is achieved by two GEC synchro converters of 11 MW each. These converters are also used for starting and speeding up the synchronous motors. The driving power of the synchronous motors is transmitted via a new twin shaft arrangement to two new 5.8-meter-diameter Lips five-bladed CP propellers.

### Optimized Auxiliary Systems

For the operation of this power plant, optimized auxiliary systems were installed. All engines per engine room have a common central cooling system. For example, two separate, independent central cooling systems were provided. This arrangement allows the heat to be dissipated from the engine jacket water and charge-air cooling to be utilized. This is accomplished by having two Serck (four in total) freshwater generators per engine room. This waste heat produces 250 tons/day fresh water per unit or 1,000 tons/day total.

At lower ship's speed, with a reduced number of engines in operation or at partial loads, the lack of waste heat supplied to the cooling system can be compensated for by one steam-heated booster heater per unit. This means that the total freshwater requirement can still be produced at sea.

The central cooling system is designed for 32°C seawater temperature and the low temperature circuit for 38°C. For each cooling system there are three two-speed seawater pumps, each with 50 percent of rated capacity. This arrangement,

combined with the Engard pump control system from Alfa Laval, provides huge energy saving potential. This is possible because the seawater quantity varies in a wide range depending on the seawater temperature, the total engine load and the degree of waste heat recovered. With this system, the capacity of seawater required can be matched optimally with the demand.

Similar to the cooling system, the fuel systems are also split into two

separate systems, one per engine room. These two fuel supply systems are designed to accommodate CIMAC K55 fuels with a viscosity up to 700 cst. The systems operate with fuel pressures of six to eight bar and a final fuel temperature before engine of 147°C.

Each engine has its own separate lube oil supply and treatment system with electrically driven lube oil pumps.

To meet the noise criteria, an

exhaust gas system with three Huss silencers per engine was supplied. Each exhaust gas system is equipped with a Sunrod exhaust gas boiler to use the exhaust gas energy.

The completion of the complex conversion, the largest ever undertaken by a German yard, by Lloyd Werft of Bremerhaven marked the culmination of a unique human and technical achievement and the be-

(continued)



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ginning of a new era for the QE2.

For complete information, including free brochures, on the full line of marine diesel engines offered by MAN B&W Diesel,

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### Parker Offers Literature On New General Purpose Packless, Bellows Valves

Parker Hannifin Corporation, Instrumentation Valves Division of Jacksonville, Ala., is offering free literature on 3/8- and 1/2-inch general purpose packless, bellows valves that are used in a wide range of applications requiring clean and safe service operation in the handling of high-purity gas or liquids in both vacuum and high-pressure systems. They are available in either manual or air-operated models.

Air-operated bellows valves are used in applications where a compact valve with remote actuation capability is required. Parker air-operated bellows valves are avail-

able in three operating modes: normally open, normally closed, or double acting.

Manually operated bellows valves offer a choice of stem tips: Kel-F® for soft seat positive shut-off, or all metal 316 stainless steel for elevated temperatures. Color-coded handles are available. Both manual and air-operated valves have smooth internal surface finishes to ensure clean service operation, externally pressurized bellows for increased strength and stability, positive stem retraction and no sliding stem seals.

For more information on 1/4-, 3/8-, and 1/2-inch Parker bellows valves,

Circle 60 on Reader Service Card

### \$12-Million Navy Contract Awarded Bath Iron Works

A \$12-million Navy contract to overhaul the frigate Koelsch (FF-1049) has been awarded to Bath Iron Works Corporation of Bath, Maine.

# ELECTRONICS UPDATE

## S.P. Radio Introduces New Low-Cost, High-Quality Compact Radiotelephone

—Free Literature Offered—

S.P. Radio A/S has just introduced a new VHF radiotelephone for the marine industry called the Sailor RT2048.

The VHF Sailor RT2048 is a simplex/semi-duplex station for ship-to-ship/ship-to-shore communication. It is equipped with all 55 international maritime VHF channels, U.S. channels, 10 private channels, scanning facilities, quick channel 16, dual watch, 25-watt output power, and built-in seacall as an option.

Due to the unique construction of its transmitter and heat sink, the RT2048 is able to operate with a continuous output power of 25 watts on all possible channels in the frequency range 154.40-163.75 MHz. The unit also offers a choice of 30 additional private channels or scanning facilities.

The Sailor RT2048 is prepared for connection to 12V DC or 24V DC (by means of a Sailor N420 Power Supply). The set has an extremely low power consumption. In the standby mode, the power consumption is less than 0.1 a.

The new compact state-of-the-art VHF is fully transistorized and equipped with a synthesizer and microprocessor. Its compact cabinet houses both transmitter, receiver and a large, powerful 6-watt loudspeaker, which reproduces the signal loudly and clearly—even at great distances. Furthermore, the



The new VHF radiotelephone, the Sailor RT2048, is a simplex/semiduplex station for ship-to-ship and ship-to-shore communication. It will be available in March 1988.

built-in audio amplifier is capable of delivering an additional 6 watts into an external loudspeaker.

And although the Sailor RT2048 is compact (height-104 mm; width-228 mm; and depth-169 mm), it is easy to service, since the set consists of four easily replaceable modules.

This high-quality, low-priced unit is easy to operate, even in bad weather, due to a button for continuous turnstyle operation of squelch and AF levels. All controls are easily accessible on the front plate with pushbutton keyboard, LED display and nighttime illumination.

For free literature on the new VHF Sailor RT2048 from S.P. Radio,

Circle 10 on Reader Service Card

### ZF Of North America Introduces ZF-FPM IRM-350 Marine Gear

ZF of North America recently announced the introduction of the model IRM-350 Reverse/Reduction Marine Transmission which complements the already extensive line of deep ratio, cast iron ZF transmissions for continuous duty applications. The MPM Division of the ZF Group manufactures and produces this model which is targeted for the commercial fish boat and work boat markets.

A continuous duty rating of up to 409 bhp at 1800 rpm is available depending upon reduction ratio. The maximum reduction ratio is 6.45:1. Identical ratios and full power capability in either output shaft rotation direction allows the use of identical marine transmissions and standard rotation diesel engines.

Transmissions are normally supplied with a highly elastic torsional coupling. An optional rubber block drive is available where torsional

vibration is minimal and of no major significance.

The transmissions are produced with the highest precision possible, and utilize ZF/MPM designed helical gears which are carburized, hardened, and ground. The units employ modulated clutches for smooth and prompt engagement.

Positive lubrication of the clutches, gears, and bearings is assured by the heavy-duty main pump, which utilizes a suction side filter and a discharge side filter.

Clutches and gears are easily inspected by removal of the large inspection cover. Oil changes are more easily accomplished by offering two drain plug locations on either side of center. A heavy-duty bayonet-type dipstick is provided.

The compact size has been achieved through the use of rationalized engineering techniques and Cad-Cam computer-aided design programs.

Accessory groups are available with the IRM 350.

For more information and free literature from ZF of North America,

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## NKF Engineering Awarded \$8.5-Million Contract

The naval architecture and marine engineering firm of NKF Engineering, Inc., Reston, Va., was recently awarded a three-year, \$8.5-million Naval Sea Systems Command contract to provide engineering and technical support to the Submarine Monitoring, Maintenance and Support office.

Under the contract, NKF and its subcontractors will develop and apply systematic improvements to submarine maintenance and monitoring. NKF's tasks will comprise analyzing maintenance problems associated with propulsion, air, hydraulic, ship control, seawater and freshwater submarine systems.

## New Capac System Brochure Offered By ElectroCatalytic

ElectroCatalytic, Inc., Union, N.J., recently made available their newest publication on their Capac system, which is used for extended, cost-effective corrosion protection in ship hull applications.

The brochure describes the Capac system, including such benefits as extended drydock intervals, reduced hull maintenance, reduced fuel costs, proven 20-year life, fully automatic operation and a network of worldwide service and manufacturing facilities.

In addition, the brochure highlights several system configurations available from ElectroCatalytic. Both diver serviceable, flush-mounted and icebreaker type anodes are featured along with a description of Capac's automatic control components and power supply.

For a free copy of this brochure from ElectroCatalytic,

Circle 28 on Reader Service Card

## Organizational Changes At Wagner Company

The Wagner Engineering Group, a 50-year-old company that designs and manufactures marine hydraulic steering systems and automatic pilots for worldwide distribution, recently announced a major reorganization as part of a comprehensive plan to streamline operations.

At Wagner Engineering Ltd. in North Vancouver, **Dal Wagner** was named senior vice president for engineering, and **Paul Wagner** senior vice president for advanced technologies and defense systems. **David Roach** was appointed vice president for manufacturing. A dedicated Product Support Group was identified to provide focused attention to the needs of Wagner's customers and dealer network; **Tony Moniz** was appointed to manage this function.

**Nick Baker** was appointed senior vice president, international marketing, responsible for sales and marketing activities for all the Wagner group of companies. He is also president of Wagner Marine

(USA), which operates out of the Kirkland (Seattle), Wash., office. **Jim Nicholson** was appointed as general manager of that office. In addition, **Carol Pardon** recently joined Wagner Marine as director of corporate communications, operating from the Arlington, Va., office.

For more information and free literature on Wagner Engineering,

Circle 23 on Reader Service Card

## McAllister Feeder Service Announces 3 Appointments

McAllister Feeder Lines recently announced the following three new appointments.

**Thaddeus J. Chmiel** has been named vice president, general manager. Prior to this position he was vice president of Hamilton Truck-

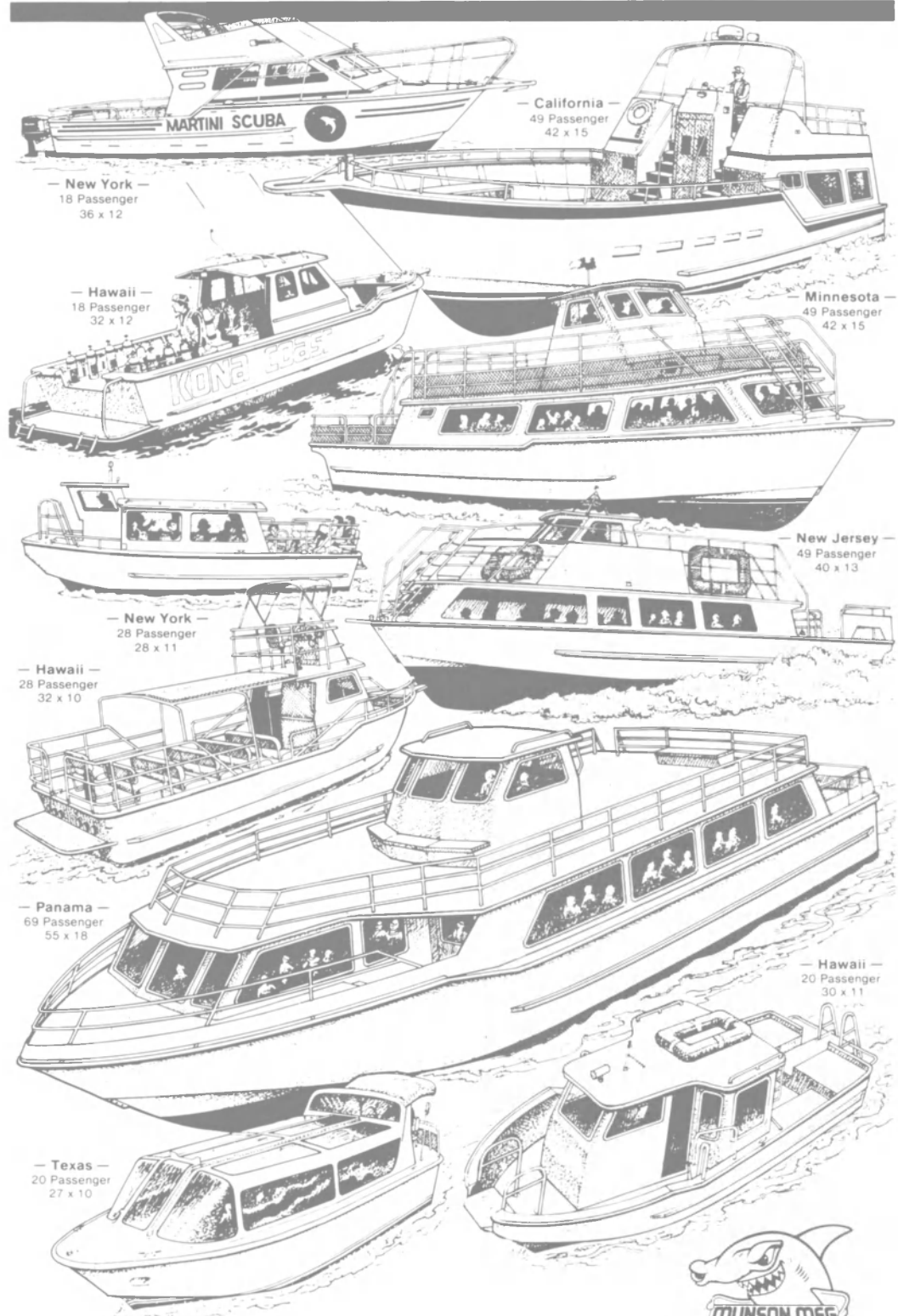
ing, a subsidiary of Hapag Lloyd America.

Capt. **Patrick Kinnier** has been named director of sales. Captain **Kinnier** has been with McAllister for five years.

**Richard Leach** has been named director of operation. Mr. **Leach** has served as operations manager for McAllister Feeder Lines since their inception.

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The listings above are an editorial service provided for the convenience of our readers.

## New Company, C-Lan Marine, Will Deal In Inflatable Boats, Sales And Service

The formation of a new company that deals in inflatable boats, sales and service, C-Lan Marine of Riverview, Fla., was recently announced by **Jim Pixton**, owner and operator.

C-Lan Marine will market and service all major lines of inflatable boats, including Avon, Viking, Zodiac, etc., and will offer compass repair as well as boat accessories such as anchors, inflatable pumps, motors, rope, and safety equipment.

For more information and free literature on C-Lan Marine,

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## Railway Drydocks Designed By Crandall Recently Completed And Now In Operation



The Crandall Dry Dock-designed 4,000-ton railway in Punta Arenas, Chile, showing vessel on transfer car.

The construction of three modern, highly efficient, low-cost marine railway drydocks designed by Crandall Dry Dock Engineers, starting with the 4,000-ton railway at Jacksonville, Fla., followed by a 3,000-ton at Pago Pago, American Samoa, then another of 4,000-ton-capacity at Punta Arenas, Chile, and finally the enlargement of the railway drydock at Pictou, Nova Scotia from 2,000 to 3,000 tons, demonstrates the acceptance by shipyards of the durability, reliability and economy of railways, especially when their modern design is found quite acceptable to the environmental authorities. Also, U.S. naval authorities have granted 100 percent of their commercial capacity in their certifications of these.

The railway drydock, due to its extensive underwater track, is limited in most shipyard

sites as to size and capacity, but when a virgin site is chosen whose open water space is not limiting, they can be economically built up to 10,000 tons. This is the situation at Atlantic Dry Dock, Dartmouth Marine Slips and Pictou Industries where deep water was available just offshore.

Today, there are several engineering developments making the larger railways more attractive.

1. Welded chain with a factor of safety of 4 can be produced in either class 3 quality or the new class 4 quality, making it possible to haul 4,000- to 5,000-ton ships with only two chains versus the old four-chain and six-chain docks using cast steel chains.

2. New two-way steel track, fabricated in sections 40 to 60 feet long and supported on high-capacity steel piles lends itself much better to heavy waterfront construction methods and the finished product is free from marine borer attack and, with proper paint, is very durable under water.

The well-proven transfer systems adjacent to the cradles enable shipyards to use their transfer area for long duration repairs or new vessel construction at a very modest cost and the system does not require a wasteful cross-transfer area when real estate is at a premium.

In spite of its perception as an old type drydock, the railway of today is a modern, well-designed and constructed facility. It can be made with declivities that suit natural shore conditions and has a superb record of safety in that the vessel is supported at all times and survives remarkably even when overloaded, neglected and abused. Its inherent durability in the harsh environment of the sea makes it very attractive in its capacity range of 100 to 10,000 tons.

For free literature giving complete information on Crandall Dry Dock Engines,

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Maritime Reporter/Engineering News



# ELECTRONICS UPDATE

## SPD Technologies Develops New Advanced Computerized Battery Monitoring System

—Free Literature Offered—

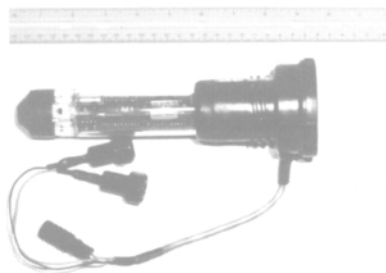
SPD Technologies, headquartered in Philadelphia, Pa., has announced the development of a new advanced computerized all-cell battery monitoring system designed for use on diesel and nuclear-powered submarines and other battery power applications.

Designated the BMS-100, the new system is an advanced model of SPD's NS9055 battery monitoring system, which has been proven in submarine applications over the past three years.

The Mil-Spec battery monitoring system offers a combination of functional and cost efficiency for submarine use, where precise measurements of power status is critical.

The BMS-100 offers a new digital battery cell probe together with additional hardware and associated proprietary software packages to provide a new standard in data acquisition, prediction, reliability and ease of operation.

Included among the major features of the new BMS-100 battery monitoring system are: *comprehensive monitoring*—reports temperature, specific gravity, cell voltage and electrolyte level from a single probe; also electrolyte leakage detection and loss of air agitation can be added; *enhanced predictive capability*—automatically calculates need to recharge, and remaining off for a given operational output, adding to safety as well as contributing



SPD Technologies' BMS-100 is a computerized battery monitoring system for use on diesel and nuclear-powered submarines and other battery power applications.

to elongated battery life; *ease of maintenance*—new transponder probe is flush with the top of batteries, simpler and more compact, eliminates other outside wires and/or mounted apparatus on top of batteries; provides built-in diagnostics to eliminate manual checking on system status.

The company offers computer demonstrations of the BMS-100 system upon arrangement.

SPD Technologies is a leader in the design, development and manufacture of circuit breakers, switchgear and other electrical systems protection equipment for military applications.

For free literature on the new computerized battery monitoring system from SPD Technologies,

Circle 12 on Reader Service Card

## Detection And Classification Of Fish Schools Is Easy With C-Tech CAS 36 Omni Sonar

C-Tech Ltd. has introduced the CAS-36 Omni Sonar® which makes the detection and classification of fish schools at both long and short ranges easy.

The 13-inch eight-color monitor displays clearly the size, position, and density of fish schools and indicates significant characteristics of the sea bottom in an area 360 degrees around the vessel.

Display flexibility is optimized with a choice of six video display modes and simultaneous audio. The bearing, distance and depth of any targets are quickly and accurately determined and displayed with temperature at the top of the video picture. Simultaneous audio at bearing

selectable by operator is standard.

The patented scan and interpolator design assures continuous rapid, information update and superior image definition. Noise reduction mode provides display smoothing. Operator controls minimize background noise.

A preset control memory permits storage of control settings for each range scale. A motion compensator system aids the operator in tracking targets in rough seas.

For additional information and free literature on the C-Tech Omni Sonar Model CAS-36,

Circle 17 on Reader Service Card

## Knut Kloster Project To Build \$800-Million Cruise Ship Close To Becoming Reality Japanese Yards May Build 250,000-GRT Liner

The \$800-million project to build the world's largest and most luxurious cruise liner, the Phoenix, appears to be nearing reality.

The project, which is being undertaken by the World City Corporation A/S, which was founded by Norwegian shipowner **Knut Ulstein Kloster Sr.** to build the Phoenix, involves the construction of a 250,000-grt, 5,200-passenger luxury cruise liner. The ship would be larger than the S.S. Norway, QE II and Sovereign of the Seas combined. The Phoenix's passenger capacity would be twice that of the 2,600-passenger Sovereign of the Seas, which was just completed in December 1987.



Shipowner **Knut Ulstein Kloster Sr.** with a model of the proposed cruise ship Phoenix.

(continued)

# MAN POWER

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Circle 15 on Reader Service Card

## Kloster Project

(continued)

According to recent reports, three Japanese shipyards—Ishikawajima-Harima, Mitsubishi Heavy Industries and Nippon Kokan K.K.—have the inside track on the contract.

Indications are that one Japanese yard would build the hull, a second

its accommodation and superstructure and a third of its propulsion equipment.

As to whether the Phoenix would be built as a joint venture by three Japanese shipyards, Mr. Kloster replied, "By joining forces and forming the so-called 'World City Club of Japan,' these three yards have shown a positive interest. As a group, they are presently very strong candidates."

The Phoenix will be 1,263 feet long, with a beam of 252½ feet, and will have three 8-story hotels on her deck, with palm trees, swimming pools and sandy beaches. Indoors, the ship will house a theater/concert hall, casino, shops, restaurants and cafes. The ship will also have a marina in her stern, where four 400-person cruisers will shuttle passengers to and from various ports of call and destinations within a 50-mile

radius. The Phoenix will have a complement of 1,800.

The construction of the Phoenix is expected to take three to four years.

## Lunetta Elected Chairman Of AAPA

The director of the Port of Miami, **Carmen J. Lunetta**, was recently elected the chairman of the American Association of Port Authorities (AAPA) during the organization's annual convention in Galveston, Texas.

The AAPA, founded in 1912, represents deepwater seaports throughout the U.S., Canada, Caribbean and Central and South America.

During his acceptance speech, Mr. Lunetta said he intends to make President Reagan's Caribbean Basin Initiative one of his top priorities, believing Miami's ties to the Latin American and Caribbean port communities would benefit the AAPA and increase the organization's visibility.

## Literature Available On New IMO® Screw Pump

IMO Pump Division, Imo Delaval Inc. of Monroe, N.C., has recently introduced a new series of low-pressure, positive displacement rotary screw pumps.

The new ACE Series combines an integral relief valve with a simple, compact pump design to reduce installation time and expense. Operational reliability is enhanced because the integral relief valve is exactly matched to pump flow characteristics, eliminating the need to separately specify, source and install individual components. Installation, periodic inspection and routine maintenance can be performed without disturbing existing piping systems.

ACE models are available for either face or foot mounting in five basic flow sizes. A choice of two different casing materials and mechanical seals is also offered. The series is engineered to provide excellent suction capacity over a wide range of fluid viscosities. Flow rates from 3 to 44 gpm are proportional to rotating speed when the pumps are operated within recommended pressure ranges not exceeding 150 psi.

ACE pumps are specifically designed for high performance hydraulic, lubricating and distillate fuel oil applications in which compactness, reliability and low maintenance are prime requirements.

IMO Pump Division is one of the world's largest designers and manufacturers of high quality rotary screw pumps.

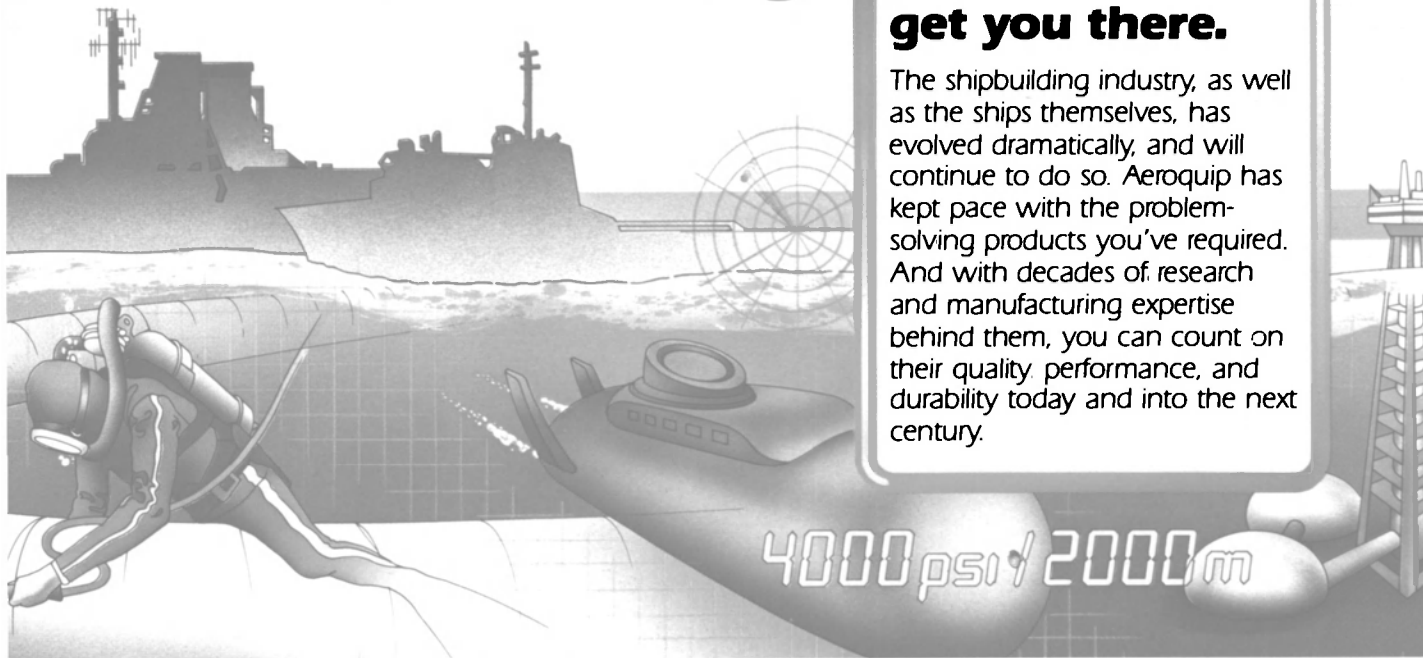
For more information and free literature from IMO,

Circle 36 on Reader Service Card

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### RISIC Couplings

Aeroquip RISIC 3 and 3 HT couplings provide superior sound and vibration dampening. RISIC 3 is approved on U.S. Navy surface vessels for water and lube oil service to 160°F; RISIC 3 HT for high temperature feed water service to +250°F.

Request Bulletin 8313

circle 101

### QDM® Early Failure Detection System

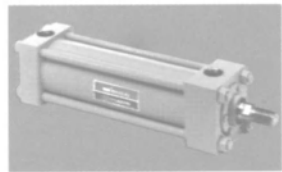
Tedeco's Quantitative Debris Monitoring system detects and trends failures of engine and gearbox lube system components in real time to give maintenance crews timely notice.

Request Bulletin QDM 84

circle 102

### T-J™ Cylinders

Series TG hydraulic cylinders are fully approved by the American Bureau of Shipping (ABS). Series TG cylinders handle pressures up to 3500 psi (5000 non-shock). They are available in 15 standard mounting styles.



Request Bulletin 4120

circle 103

### Suction to 5500 PSI

Aeroquip Teflon\* hose designs are unsurpassed for lightweight, fluid compatibility and flexibility. Operating from -100°F to +450°F, they are available in five different styles.

\*Teflon is a DuPont trademark

Request Catalog 306

circle 104



### Quick-Disconnect Couplings

Specify Aeroquip Quick Disconnect Couplings for hydraulic, pneumatic and fluid handling applications. We have hundreds of styles to choose from: steel, stainless and brass couplings up to 1½" diameters with pressure ratings up to 10,000 psi.



Request Catalog 258B

circle 105

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◀ For literature on the following Aeroquip products circle the appropriate number on the reader service card: RISIC Couplings—circle 101; QDM Detection System circle 102; T-J Cylinders—circle 103; Hose—circle 104; couplings—circle 105.





## Hitachi Zosen Delivers 48,000-Gross-Ton Car Carrier Overseas Joyce

The 48,000-gross-ton motor car carrier Overseas Joyce was recently completed at Hitachi Zosen's Ariake Works and subsequently delivered to the owner, OSG Car Carriers, Inc.

The vessel, which can carry a total of 5,300 cars, is designed to transport minibuses, large buses and forklifts, in addition to passenger cars and trucks. The ship has a total of 13 car decks, the seventh and ninth of which are liftable decks that permit height adjustment. On either side at the center and on the starboard of the stern, there is a shore ramp for loading and unloading vehicular cargo.

The Overseas Joyce has an approximate length of 590 feet, breadth of 106 feet and full load draft of 27 feet. The main engine is a Hitachi Zosen MAN B&W 6L60NC-type diesel en-



The Overseas Joyce has a total of 13 car decks and can carry a total of 5,300 automobiles.

gine (1 set) with a maximum continuous output of 13,150 hp at 111 rpm. Maximum trial speed was 20.29 knots. Classification is ABS.

For free literature containing full information on Hitachi Zosen,

Circle 49 on Reader Service Card

## Si-Tex Introduces Economical 85-Channel U.S./INT VHF/FM Radiotelephone With Scan

Operationally functional anywhere in the world the new Model 960 from Si-Tex features 55 transmit and 85 receive channels, including nine weather channels. All U.S. and international channels are accessed by simple touch-key controls on membrane-protected keypad.

The 960 also features automatic all-channel scanning at the rate of two channels per second and a hold time of four seconds of active channels.

Other features include: Channel 16 priority, touch-key HI/LOW (25/1W) power selection and output for additional speaker.

For more information and free literature from Si-Tex,

Circle 52 on Reader Service Card

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 Stauff Corporation, 21-23 Industrial Park, Waldwick NJ 07463  
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 Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202  
 Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark  
 Caterpillar Inc., Engine Division, 100 N E Adams, Peoria IL 61629  
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 Ulstein Propellers, N-6065 Ulsteinvik, NORWAY  
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 Hilman Inc., 2604 Atlantic Ave., Wall, NJ 07719  
 M.A.N.—GHH, Sterkrade Werfstrabe 112 D-4100 Duisburg 18, West Germany  
 MAN—GHH, P.O. Box 110240, D-4200 Oberhausen 11, West Germany  
 NEI Synchronlift, Inc., 8970 S W 87th Ct., Miami FL 33176  
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 Munson Manufacturing, 150 Dayton, Edmonds WA 98020  
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 Ryan Marine Inc., P.O. Box 400, Port Bienville Industrial Park, Pearlinton MS 39572  
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 Service Marine Industries, P.O. Box 3606, Morgan City LA 70381  
 Southwest Marine, Inc., P.O. Box 13308, San Diego, CA 92113  
 Sudoimport, 10 Usperiski Per., 103006 Moscow USSR  
 Todd Shipyards Corporation, One Evertrust Plaza, Jersey City, NJ 07302  
 Versatile Pacific Shipyards, Inc., P. O. Box 86099, North Vancouver BC Canada  
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 Chemiquip Products Co., Inc., 3 W. 18th St., New York, NY 10011  
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 Elliott Manufacturing Co., Inc. (Remote Valve Operating Equipment), P.O. Box 773, Binghamton, NY 13902  
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 Parker Actuator Division, 9948 Rittman Road, P.O. Box 450, Wadsworth, OH 44281-0450  
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 Nashville Bridge Co., P.O. Box 239 Nashville TN 37202  
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**Riley Joins Skuld  
As Claims Adjustor**



Frank A. Riley

Frank A. Riley has joined the legal department in the Skuld P&I Club in Oslo.

Mr. Riley is from the United States and is an attorney qualified to practice in California, Maryland and Washington, D.C. He has practiced in California and has studied maritime law at the University of Oslo.

Before joining Skuld, Mr. Riley was employed at the law firm of Wikborg, Rein & Co. in Oslo.

**American Abrasive Metals  
Now Offers Safety Coating  
For Marinas/Fishing Boats**

After two decades of proven reliability aboard flight decks of aircraft carriers, a general purpose, heavy duty, non-slip deck coating is now commercially available from American Abrasive Metals Company. The new abrasive coating known as Epoxo has wide application in marinas, floating slips, boat landings and on decks of commercial fishing boats.

Formulated with epoxy resins to give maximum adhesion to steel and concrete, Epoxo is unaffected by salt water and is resistant to most solvents, gasoline, fuels, oil, grease and hydraulic fluids commonly associated with marina service areas and docking facilities. For commercial fishing boats Epoxo provides anti-slip protection on decks where fish oil, chum and seawater can cause slippery conditions.

Epoxo can be applied with a roller, trowel or spray over properly prepared metal and concrete surfaces including new concrete, and will hard-dry in 24 hours.

For more information on Epoxo and other non-skid safety products from American Abrasive Metals.

Circle 63 on Reader Service Card

**TTS Installs Wartsila  
Computer-Assisted  
Manufacturing System  
—Literature Available**

Total Transportation Systems (International) A/S (TTS) in project cooperation with Wartsila-Turku shipyard of Finland have installed at the yard the first produc-

tion system of its kind to provide computer-assisted manufacturing of shipbuilding subassemblies.

The system developed for the welding of stiffeners to steel plates, permits fabrication by direct input from Wartsila CAD/CAM computer design facility and represents, says TTS, a breakthrough in the link between computing capacity and physical fabrication.

TTS have also developed a soft-

ware package that makes it possible to operate the system with the same type of data input as a normal C.N.C. gas cutting machine.

According to TTS, the introduction of this method of production means that subassemblies can be manufactured quickly and highly cost effectively to very high standards of accuracy which eliminate welding distortion, thus reducing subsequent assembly cost.

The contract for the Wartsila computer-assisted production lines has resulted in the development of new equipment and technology which has applications for many other metal fabrication industries where speed, accuracy and high levels of automation are required.

For more information and free literature,

Circle 41 on Reader Service Card

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Circle 292 on Reader Service Card

# ELECTRONICS UPDATE

## Furuno Introduces New Compact VHF Radiotelephone And LP-1000 Loran/Plotter

Furuno U.S.A., Inc. of South San Francisco, Calif., recently introduced a new compact VHF radiotelephone as well as a new LP-1000 Loran/plotter.

Furuno's new compact VHF radiotelephone, FM-2510, is an advanced all-channel, fully synthesized VHF/FM radiotelephone featuring 25W output and packaged in a compact, splashproof diecast aluminum cabin. It covers all U.S. and international channels, 10 U.S./Canadian weather channels, and has provision for full scan, 10-channel memory scan, and dual watch for 16 and any other channel.

The large LCD displays operating mode, selected channel and memory in use; a four-step dimmer controls LCD and touchpad backlighting.

A built-in backup battery protects all data even when the radio is turned off and optional telephone handset and external speaker are available.

The FM-2510 is the perfect full-



The new LP-1000 Loran/Plotter.



Furuno's new VHF/FM Radiotelephone.

featured VHF radio for bassboats to big boats.

For additional information and free literature on the FM-2510,

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Furuno's new LP-1000 combines

a high-precision loran C receiver with a 7-inch-high resolution 512 x 400 pixel video plotter in a single, very compact cabinet. Presentation is North-Up Mercator with scaling from 1/2,000 to 1/5,000,000. The plot area can be easily expanded or contracted and memory capacity includes a 3,600-point course line and 100 points for waypoints and events. A ROM card stores four pages of 500-point electronic plots, equivalent to a whole day's trip for many commercial or sport fishermen.

Ten unique routes of 10 waypoints each can be memorized and a

course line can be entered into memory simply by sampling any 10 waypoints (defined by L/L, TDs, range/bearing, events, or cursor mark). Plot intervals can be set at 5 seconds, or as any integer-5 multiple of time or distance. The LP-1000 easily accepts input from external receivers, speed logs and heading sensors, and it has outputs for autopilots and printers.

For free literature giving complete information on Furuno's new LP-1000 loran/plotter,

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## Moss Point Acquisition By Trinity Will Consolidate Shipbuilding Functions, Improve Efficiency

Trinity Industries, Inc., of New Orleans, La., recently announced the acquisition of Moss Point Marine, Inc., a Mississippi Gulf Coast shipbuilder. The acquisition gives Trinity the largest production capacity of its type of commercial vessels in the United States.

That judgement is the assessment of John Dane III, former owner and president of Moss Point Marine, Inc., and now president of the Trinity Marine Group which encompasses Trinity's shipbuilding and ship repair operations. Mr. Dane began his career in shipbuild-



John Dane III

ing at Halter Marine, Inc., in New Orleans in 1974 after receiving a

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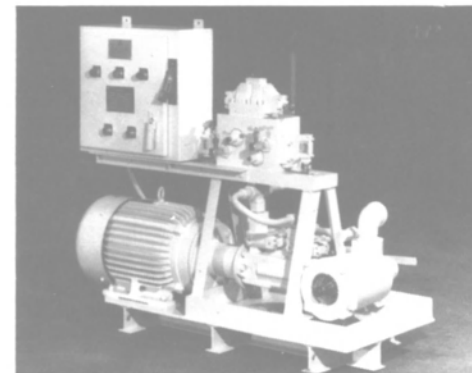
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Ph.D. in civil engineering from Tulane University.

The Trinity Maine Group includes Moss Point Marine's shipyard in Escatawpa, Miss., Halter Marine's shipyards in Moss Point, Miss., New Orleans, and Lockport, La., and Gretna Machine and Iron Works, Inc., in Harvey, La.

Mr. Dane said he will consolidate and centralize many dual and overlapping functions including sales, estimating, personnel, purchasing, engineering, production control, quality control, safety, and accounting.

"These changes will streamline operations, make us more responsive to our customers, lower overhead, and improve efficiency, quality and productivity," he remarked.

From its founding in August 1980, by Mr. Dane, Moss Point Marine has delivered 80 vessels, including offshore supply boats, RO/RO ships, fireboats, pilot boats, barges, research vessels, and a variety of boats for military use including barges and landing craft for the Navy.

In addition to other contracts, Moss Point Marine holds a \$40.8-million contract for the construction of four 273-foot logistics support vessels (LSV) for the U.S. Army.

Halter Marine is currently building six, 225-foot T-AGOS antisubmarine ships for the U.S. Navy.

"We plan to win additional government contracts and bring needed employment to our area. Our bidding capacity has been greatly improved by the resources of Trinity Industries," Mr. Dane said.

The new Trinity manager said he will also expand Moss Point Marine's production and marketing efforts of a series of high-speed, fiberglass catamaran boats for government and pleasure use. The Interceptor 41, first in the series, recently topped 70 mph with its two, 600-hp engines.

For free literature fully detailing the shipbuilding, ship-repairing and converting capabilities and facilities of the new Trinity Marine Group,

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### South Korea Leads Japan In Largest Volume Of Shipbuilders Orders

During the third quarter of 1987, new shipbuilding orders placed with South Korean yards increased sharply, contributing to a rise in the global orderbook for new ships.

The volume of tonnage on order worldwide increased by 489,398 gross tons to 21,834,914 tons during the three months ended September 30, according to figures published by Lloyd's Register of Shipping.

Japan has been overtaken by South Korea as the country with the largest volume of tonnage on order. Shipbuilding orders were up by 388,506 tons to stand at 5.46 million tons in the period. Of this total, 80.6 percent is for export.

The orderbook for Japan grew by 157,252 tons during the quarter to reach 5.45 million tons, of which 67 percent is destined for foreign owners.

### Parker Hannifin Offers Free Literature On Union Bonnet Valves

Parker CPI union bonnet valves for process, power and instrumentation systems are designed for positive shut-off, reliability and long service life in severe service applica-

tions. Pressure rated to 6,000 psig these stainless steel valves handle a wide range of corrosive media.

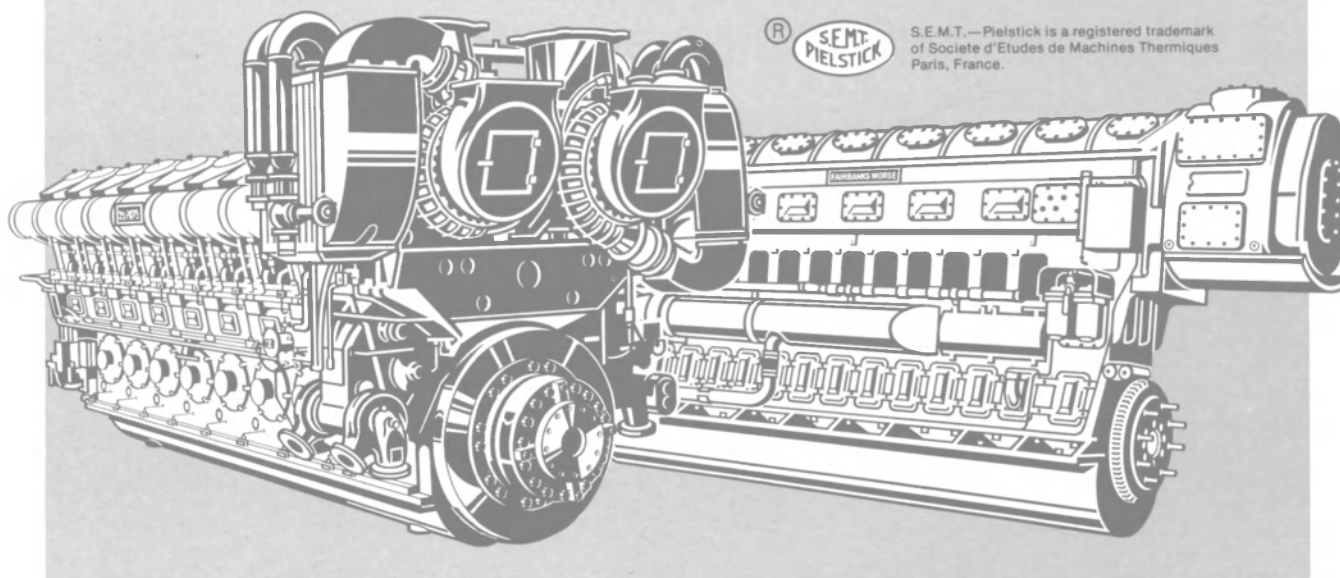
Stem swivel above packing eliminates entrapment area and adds to packing life. Lube seal above power threads eliminates the possibility of external contamination. Packing below the threads allows full lubrication. Valves are available with F/Grafoil® packing (-65 to 700°F)

or, F/Teflon® packing (-65 to 450°F). Orifice range is from 0.156 to 0.312 (3.96 to 7.92mm). End connections (1/8 thru 1/2-inch) include availability of CPI and A-lok tube, female NPT, Weld-lok, and automatic butt weld.

For more information on CPI union bonnet valves from Parker Hannifin,

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**Sea-Tex Introduces New  
Color Video Tract Plotter  
—Literature Available**

The Sea-Tex CP-078 color video track plotter eliminates handling and filing of paper charts. And its crisp color presentations make single color plotters obsolete.



Sea-Tex CP-078 color video track plotter.

The CP-078 provides easy to read, seven color presentations on an 11-

inch diagonal screen. Built-in memory stores two track charts. And it is easy to use.

To expand its track memory to unlimited capacity, the CP-078 accepts compact discs which are programmable with the TDA-0501 data recorder. This unit is included as standard equipment. Each disc stores up to eight track memories, which means as many discs as neces-

sary can be used for as many track memories as needed.

Other features include quick, 10-second warmup. Optional pre-drawn video maps of selected geographic areas pop on screen quickly and automatically, as do plot line and indication of vessel's position. All of these drawings are displayed in a Mercator projection of lat/lon grids for areas selected in precise proportion to the map. There are also four selectable brightness levels to adjust the display to light conditions. Track plot color can be changed by touching a button. Event marks can be added and removed easily. Manual cursor can be used to plot points on screen.

In addition, there are two preset shift-selectable scales. Typically, the broad scale would be used en route to a destination. Upon arrival, the skipper would likely "zoom in" for a closer look on the second scale. Unlike some video track plotters requiring use of several buttons in sequence, the CP-078 can be shifted instantly by touching just one button.

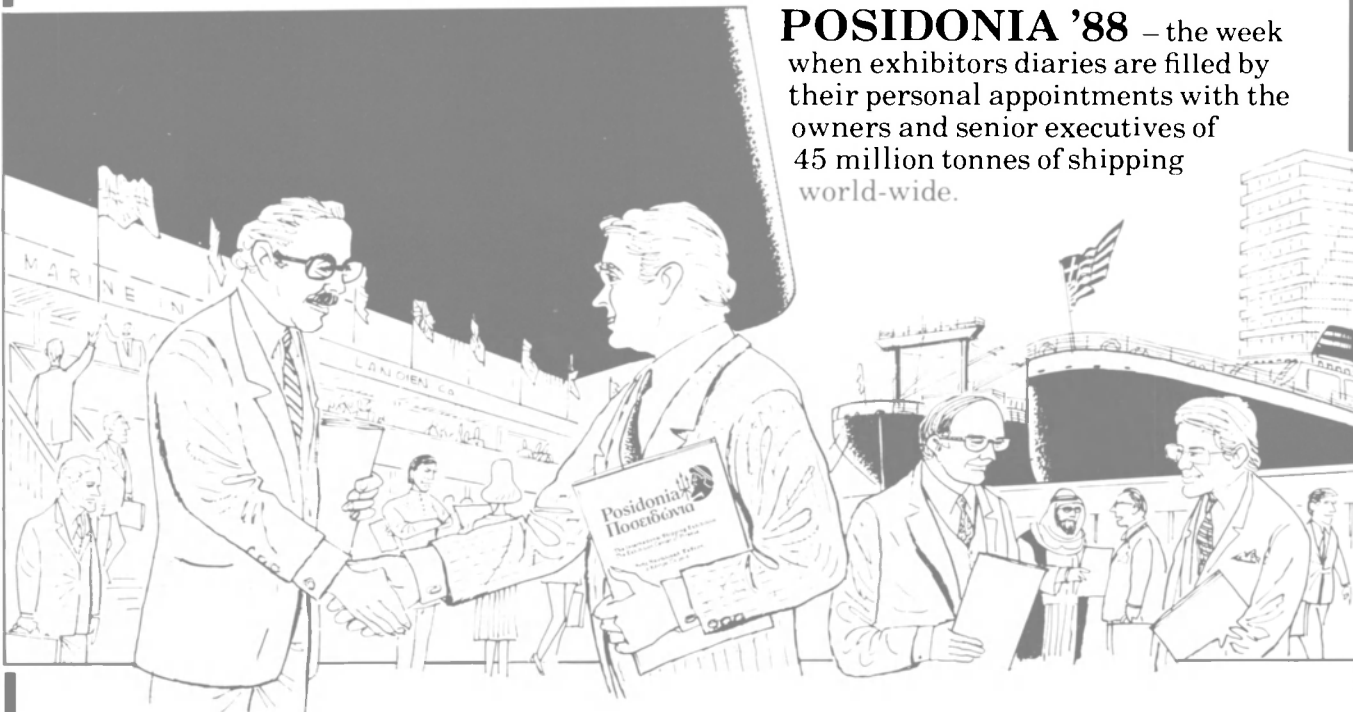
There is a wealth of course data and other information which can be summoned to the screen on command. This includes present position in lat/lon coordinates. Course to steer. Waypoint data. Average speed and heading. Time and distance to go. Crosstrack error. And speed in knots. Course and heading data can be corrected for magnetic variations.

There is also a cross track error alarm and a waypoint alarm. Both can be preset to parameters ranging from 0.1 to 9.9 NM.

For free literature containing more information,  
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**Whitey's Metal Seated  
Ball Valves Handle High  
Temperature Service**

Metal seated ball valves, featuring Grafoil stem packing and flange seals for high temperature service, are available from Whitey Co., Highland Heights, Ohio. The valves meet ANSI B16.104 Class VI specifications for leak-tight shut-off.

The design incorporates a hardened and coated 17-4PH stainless steel ball and high-strength Inconel X750 spring-loaded seats which resist abrasion. Other features include 316 stainless steel construction, quick ¼-turn actuation, and a blow-out-proof stem.

Available end connections are Swagelok® tube fittings, female NPT, ISO, BSP, DIN and JIS pipe ends, socket weld, butt weld and Cajon VCR® metal gasket face seal fittings. Sizes are ¼-inch to 2 inches.

Temperature rating is -65° to 850° F (-54° to 454° C). Pressure rating is 1,000 psi (6,800 kPa).

Application areas include heat transfer fluids, flue gas and other high temperature systems.

For more information and free literature on Whitey's metal seated ball valves,

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The M/S San Francisco's overall performance improved when it was repowered with two Detroit Diesel 16V-149TIB marine diesels.

## Repowering Of San Francisco Ferries With Detroit Diesel Engines Cuts Fuel Costs, Adds Performance

### —Brochures Offered—

The repowering of three of San Francisco's commuter ferries are saving their owner, Golden Gate Bridge, Highway and Transportation District, more than a quarter of a million dollars a year in fuel costs, according to their manager. The 725-passenger ferries each feature a new pair of fuel-efficient Detroit Diesel 16V-149TIB diesel engines.

The MS San Francisco, the first of the three ferries to be repowered, has been in service for two years. Two other ferries, the MS Marin and MS Sonoma joined her in service one year ago. Ferry manager

Eric Robinson has found "dramatically improved performance" from the repowered boats, leading to a savings in commute time as well as impressive dollar savings.

These savings are being achieved despite a reduction of propulsion power from an original 7,500 shaft horsepower to 3,100 shp with the new Detroit Diesel engines. The new engines are both quiet and reliable.

The economies gained from the repowering program, which was performed at Southwest Marine of San Diego, Calif., will show up in expanded service of the ferries, which

were built to relieve commuter congestion on the Golden Gate Bridge.

"This is a great help," reported Mr. Robinson in noting a 60 percent reduction in fuel consumption. "When the ferries were originally designed in the 1970s, fuel prices hadn't taken off. We have needed some more efficient power for a long time. Now we've got it."

The three ferries provide luxury passenger-only commuter service between the Ferry Building terminal close to downtown San Francisco and the port of Larkspur serving the residential communities of Marin County.

Fuel savings have already met the goals set for the repowering, and overall boat performance has exceeded management's expectations. Hourly full power total fuel consumption has averaged 170 gallons and one genset. Cruising speed of 20.5 knots has exceeded the boat's design speed of 20.2 knots, surprising in view of the great reduction in shaft horsepower.

A critical demand has been that ferry service be increased to meet anticipated ridership, and that the division's high level of on-time ferry departures and landings be maintained. The markedly improved performance of the boats at slow and intermediate speeds as well as improved maneuverability in the wind (the result of conversion to propeller propulsion) is already paying off in terms of time saving during docking and departures and has added an important margin of safety to ferry operation.

"When you're trying to save minutes in an operation like ours, docking time is one of the things you have to consider. We've shaved a couple of minutes per run. Currently we're making runs in 42 to 43 minutes instead of the scheduled 45 minutes," continued Mr. Robinson. "The key to it all, of course, is that we didn't sacrifice cruising time to get those big fuel savings."

The main engines were supplied by Sierra Detroit Diesel of Emeryville, Calif. Williams and Lane of San Leandro, Calif. supplied two Detroit Diesel 4-71T 100-kW gensets for each boat. They provide all ships' power.

For free brochures describing the full time of diesel engines from Detroit Diesel,

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## Sur-Loc Promotes Clark To National Sales Manager

Sur-Loc® Inc. of Fremont, Indiana, recently announced the promotion of Sharon A. Clark to national sales manager.

Company president William Swager's business since 1950 has been designing, fabricating and erecting tall antenna support towers, used in all types of communications throughout the world.

For free literature giving more information on the Sur-Loc shackle,

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## Government To Charge Cruise Lines For Sanitary Inspections

According to a recent report, beginning this month, charges from \$1,075 to \$4,300 will be levied by the U.S. Government for each required sanitary inspection of a passenger cruise ship.

Several cruise lines objected to the fees, contending that the charges violate international understandings and were unreasonably high. The lines even contended that the government lacked the authority to impose such fees, which are based upon a ship's gross registered capacity.

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## Rockment Unit Relocates Under Representation Of The Waugh Company

Rockment's Rockwool Joiner Systems has relocated to Jacksonville, Fla., under the representation of the Waugh Company.

The company's new address is: 5111-6 Baymeadows Road, Suite 394, Jacksonville, Fla. 32217; telephone: (904) 737-2866; and fax: (904) 737-2933.

Edward J. (Ted) Cope has joined the Waugh Company to support the firm's technical and sales efforts.

The Waugh Company custom designs and manufactures state-of-the-art seamless Acra-Mold Acrylic modular head units, which are fully equipped at the factory for quick installation. The Waugh units offer up to 35 percent in weight savings over conventional head units.

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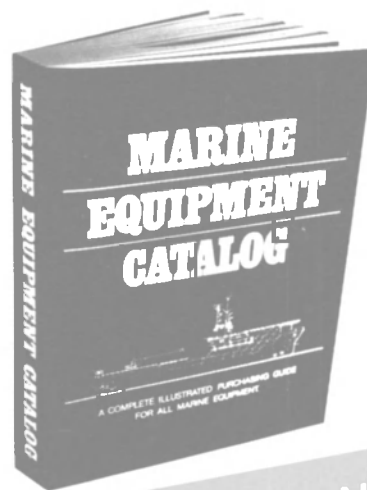
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Another important technical advance is the use of a single multiplexed coaxial cable to the antenna coupler, which eliminates the requirement for the usual multi-conductor control cable. This coax supplies electrical power to the coupler and also provides two-way digital communication between the coupler and transceiver. This saves time and money in installation and, more importantly, improves performance in the field.

The RF-3200 operates in the 1.6 to 30 MHz range. It can also be tuned to receive down to 500 KHz for monitoring Navtex broadcasts.

## Miller Electric Offers The Legend AEAD-200LE Welding Generator

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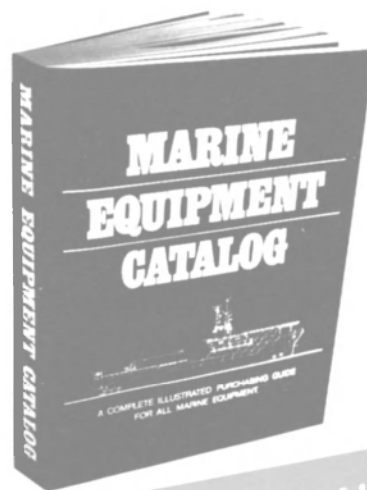
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## New Harris HF-SSB Radio Offers Operating Simplicity

The latest product from the Harris Long Range Radio Division is the RF-3200, a new generation HF-SSB radio that incorporates many technical innovations.

The outstanding difference between the RF-3200 and other HF-SSB radios is the operating simplicity of the Harris unit. A single convenient knob tunes all frequencies and channels. Pushbutton entries are kept to a minimum. It has nine different programmable scan groups, with no practical limit on the number of channels in each group. All data is protected in non-volatile memory so it is not necessary to reprogram or re-enter data every time power is disconnected.

Another important technical advance is the use of a single multiplexed coaxial cable to the antenna coupler, which eliminates the requirement for the usual multi-conductor control cable. This coax supplies electrical power to the coupler and also provides two-way digital communication between the coupler and transceiver. This saves time and money in installation and, more importantly, improves performance in the field.

The RF-3200 operates in the 1.6 to 30 MHz range. It can also be tuned to receive down to 500 KHz for monitoring Navtex broadcasts. Standard output is 125 watts. With the addition of an optional solid-state linear power amplifier, the unit can provide 1 kw power output.

For free literature giving complete details on the RF-3200,

Circle 66 on Reader Service Card





## World's Largest Aluminum Crewboat Features Five Cummins Engines

—Free Literature Offered—

Offshore oil and gas operations in deeper waters at greater distances from shore have led to the production of the world's largest crewboat. It is the 155-foot, all-aluminum giant, the Blair McCall, powered by five Cummins KTA-19M-680 HP diesels, whose combined 3,400 horsepower can push the boat to 27 knots.

Built by Gulf Craft, Inc., of Patterson, La., for McCall Boat Rental, Inc., of Cameron, La., the Blair McCall is now working for Mobil in

the Gulf of Mexico.

"Let's put this boat in perspective," said Calvin B. Klotz Jr., Cummins Mid-South Inc. (Metairie, La.), industrial and marine sales manager, and christening co-sponsor. "Just a few short years ago, the average steel supply boat was between 160 and 180 feet and could haul about 350 tons of cargo at a max of 10 or 11 knots. This aluminum crewboat which is almost as big, can transport 190 tons of cargo, 94 passengers, and do it in less than

half the time. What we have here is something that looks, acts, and costs like a crewboat, but is really a very fast supply boat."

While multiple engines are unusual, it is not rare for the McCall fleet. The 110-foot Elaine McCall has four engines, and the 125-foot Joyce McCall II and 145-foot Paula McCall both have five engines. There are 36 Cummins propulsion engines in McCall's 25-boat fleet.

The Blair McCall is 155 foot long, with a 30-foot beam, 12-foot depth, and eight-foot loaded draft. Her aft deck is 24 feet by 82 feet.

She can carry 12,500 gallons of

fuel, 34,000 gallons of fresh water, and 730 gallons of potable water.

The boat features high illumination Carlisle and Finch searchlights for night work, rescue equipment, and an aft-mounted fire monitor.

A partial list of the Blair McCall's navigation and communications equipment includes a Furuno radar, Raytheon Ioran and VHF radio, a Stephens Engineering SSB, and Comp-Nav autopilot and compass.

For free literature on the full line of marine diesel engines from Cummins,

Circle 71 on Reader Service Card

## Enrollment Open For Outside Plant Telecom Corrosion Testing Course

M.C. Miller Co. (MCM) of Ringwood, N.J., is offering another in its successful series of "Short Courses on Corrosion Testing." Structured to provide engineers, technicians, supervisory personnel and others an introduction to corrosion fundamentals and cathodic protection test procedures, this latest course is specifically directed to the telecommunications industry, or outside plant personnel.

Similar to Miller's current pipeline courses, this offering differs in that topics covered will also include instruction on routine cable-to-earth readings, cable entrance facili-

ty checks, testing in stray current areas, and more.

New facilities have been installed at the school to provide realistic simulation of field testing on underground cable plant. Reference cell readings, current flow, determination of the source of stray current, interference testing and numerous other subjects will be covered. Attendees may bring their own meters, or use those provided by M.C. Miller.

Four-day courses are being offered: April 25-28, June 6-9, September 12-15, and October 3-6. Enrollment is limited to eight students per course. Daily schedule is 9 a.m. to 5 p.m.

For more information and free literature from M.C. Miller Co.,

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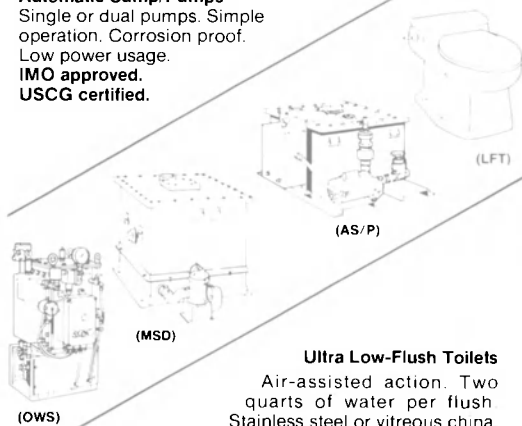
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**Miller Electric Offers  
The Legend AEAD-200LE  
Welding Generator**

The Legend AEAD-200LE engine-driven welding generator has a number of improvements and refinements at no added cost.

A new name mirrors its legendary

performance for over 40 years. A product of Miller Electric Mfg. Co., the unit has Miller's alternator design generator same as the giants that produce commercial electricity. It is powered by an Onan Performer 2-18XSL, a horizontally opposed, twin-cylinder gasoline engine with longer life features and smooth operation.

Highlights: Newly designed, streamlined framework protects the engine and makes servicing easier. Designed for Shielded Metal Arc (SMAW) welding at 225 amps AC, 200 amps DC, constant current, 100-percent duty cycle. Also performs short arc Gas Metal Arc (GMAW) and Gas Tungsten Arc (GTAW) welding with optional equipment.

Automatic idle for weld mode. Automatic low oil pressure shutdown. Seven position range switch with fine amperage control. As a generator, unit offers 1-KVA, 115-volt, 100-Hz AC while welding. 5-KVA, 120/240-volt AC with automatic voltage regulation when not welding.

Additional features include battery; solid state ignition; battery charging alternator, 20-amp, 12-volt, with solid-state voltage regulator that gives more than adequate power for frequent starts, especially in cold weather; 5-gallon fuel tank has easy fill service on side; battery is protected with easy access for servicing; chrome cover air cleaner has pre-cleaner for added life; welding output terminal studs are standardized, rugged, low in maintenance. Auxiliary power receptacles: two 120-volt, one 240-volt, duplex 60-Hz AC power at 1,800 rpm power speed. Remote controls are available options.

For more information and free literature from Miller Electric,

Circle 67 on Reader Service Card

**Lykes Names Amoss  
Director Of Traffic,  
Washington Division**

William P. Amoss was recently named director, traffic-Washington division for Lykes Bros. Steamship Co., Inc., it was announced by William V. Brierre, senior vice president-Washington division.

Mr. Amoss will be working with Roger Clark, assistant vice president-Washington division, and will be responsible for procurement of cargo for all of Lykes services as well as the maintenance of the necessary climate of cooperation with those civilian agencies charged with the administration of various cargo programs.

**New Voith Water  
Tractors In Operation**

The first Voith water tractor for Mauritius, constructed at the Martin Jansen shipyard, Leer/West Germany, has traveled to the Indian Ocean under its own power and is now in operation in Port Louis.

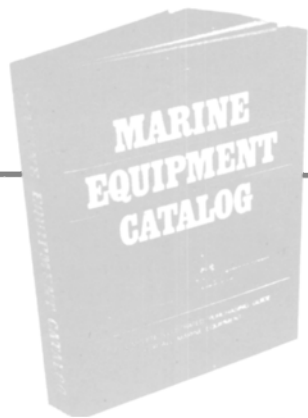
In addition, Port Services Corporation, Mina Qaboos, Sultanate of Oman, recently put two Voith water tractors into service. They were built by the Spanish yard of Astilleros y Talleres Celeya, Bilbao.

Unterweser Reederei (URAG) has ordered for the ports of Bremen a Voith water tractor for three-man operation from Detlef Hegemann Rolandwerft GmbH, Bremen.

Also, the Spanish Navy recently ordered the first Voith water tractor from the Spanish shipyard of Bazan.

For free literature giving complete information on Voith water tractors,

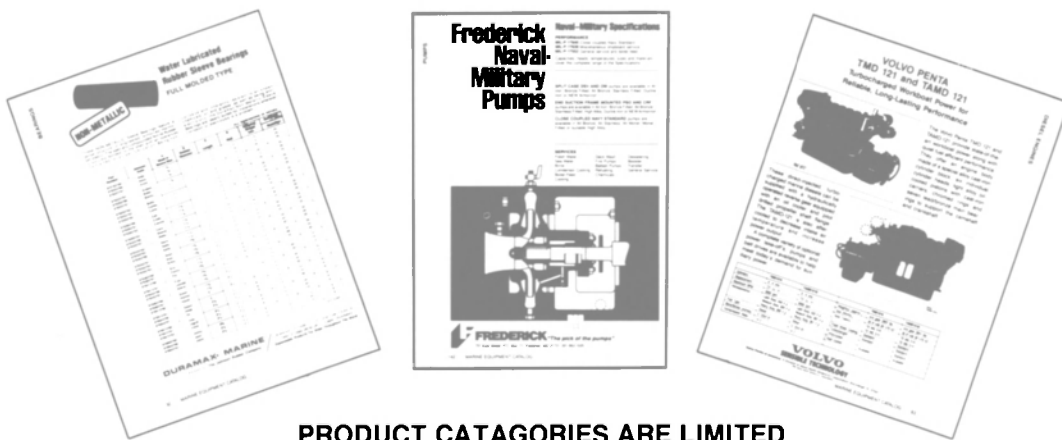
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(Last closing date for illustrations in the 1988 Annual is May 1, 1988)

**MES Delivers Car  
Carrier 'Maersk Sun'  
To Singapore Owner**

Mitsui Engineering & Shipbuilding Co., Ltd. (MES) recently completed the vehicle carrier Maersk Sun at the MES Tamano Works and delivered the vessel to her owner, Maersk Company (Singapore) Pte. She is the second of two sister ships ordered by the Maersk Company. The first of the two ships, Maersk Sea, was completed last year.

The Maersk Sun has an overall length of about 517 feet, molded breadth of 88½ feet, and draft (full load) of 23½ feet. The main engine is a Mitsui-MAN B&W 5L70MC diesel (1 set) with a maximum continuous output of 12,200 hp at 95 rpm producing a speed of 20.4 knots. Classifi-

cation is Lloyd's Register of Shipping.

For free literature giving complete information on MES,

Circle 53 on Reader Service Card

**Arneson Marine Relocates  
Eastern Regional Office  
To North Miami Beach, Fla.**

Arneson Marine, Inc. (AMI) of Corte Madera, Calif., a leader in surface piercing propulsion, recently announced the relocation of their Eastern regional office to North Miami Beach, Fla. AMI's new 4,800-square-foot facility is located at 2850 N.E. 187th Street, North Miami Beach, Fla. 33810.

This facility will be Arneson Marine's primary Eastern sales and support facility. Arneson Ma-

rine, Inc. manufactures and markets Arneson Surface Drives™ (ASD), a marine propulsion system, to builders of commercial, pleasure and military craft. The drives provide increased efficiency and fuel economy for all types of vessels up to 150 feet in length, using gasoline, diesel and turbine engines up to 5,000 hp.

The new office will enable AMI to increase sales and support to the Eastern and Southeastern regions of the U.S.

AMI's North Miami office is also responsible for racing activity worldwide. **Fred Hood** is the Eastern regional manager, and **Keith Sparks** is in charge of high performance sales. Mr. **Sparks** is in charge of high performance sales and is also responsible for AMI racing support and sales, worldwide.

For additional information and free literature on Arneson Marine,

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# PROPULSION UPDATE

## Schottel Rudderpropeller Systems Provide Excellent Maneuverability For New Class Of RO/RO Ferries

—Free Literature Offered—

Schottel-Werft, Spay/Rhine, West Germany, recently received an extensive order from the British shipbuilding group North East Shipbuilders, Ltd. of Sunderland for SRP 350/350 Rudderpropellers, and SST-612 DST steering systems with Copilot 2000. The Schottel equipment is to be installed aboard 24 RO/RO ferries being built in the U.K. for the Danish trading company PZ Trading A/S.

Each of the 2000 Superflex ferries being built will feature four Schottel Rudderpropellers. The Schottel units were selected because they feature flexible, reliable, economical and efficient operation. The Superflex 2000 vessels, which will be operated and chartered throughout the world, are designed for all-year, 24-hour operation.

Built under special survey from Lloyd's Register, the ferries are approved for unrestricted operation in international routes. Particular attention was paid to the development of the ship's lines and propulsion efficiency. Extensive tests performed at Versuchsanstalt fur Binnenschiffbau in Duisburg resulted in a hull shape for which the power

input to all four propellers is independent of the direction in which the ship is moving. This means that the fixed-pitch propellers at both the bow and stern can develop full thrust in both directions of vessel motion without to match the motor speed. This concept has made it possible for a fixed-pitch propeller installation to be employed, which is capable of performing like a controllable-pitch propeller in varying service conditions.

The design of the Superflex 2000 ferry makes it possible for all propulsion components to be readily exchanged and for service and repair work to be carried out without impeding the operation of the ships. This was the reason behind the choice of a diesel-electric propulsion system. Both the standard diesel engines driving the generators and the electric motors powering the Schottel Rudderpropellers run at a speed of 1,800 rpm. In order to achieve maximum propeller efficiency, the straightforward configuration of the entire propulsion system necessitates Rudderpropellers with a high reduction ratio and maximum propeller diameter.

The installed Schottel SRP 350/350 systems have a reduction ratio of 5.02:1 and a propeller diameter of 1,700 mm. All four identical Rudderpropeller units can be interchanged diagonally across the length of the ship. Like other components in the ferry propulsion system, they can be installed and removed with simple equipment on board.

An electrohydraulic Schottel SST 612-DST steering system with a Copilot 2000 was chosen for vessel navigation. With this steering system, the azimuth speed of the Rudder-

propellers is proportional to the given azimuth angle. This means that the azimuth speed is low when the angle is small and high when the angle is large.

The hull design and the Schottel propulsion systems provide the Superflex ferries with outstanding maneuverability, an important asset when operating in narrow waters and harbors.

For free literature fully detailing Schottel Rudderpropeller systems,

Circle 47 on Reader Service Card

## PSRY Offers Shipbuilding Capabilities Brochure

The Portland Ship Repair Yard (PSRY), Portland, Oregon, is offering a fully illustrated brochure describing their shipbuilding capabilities.

Diagrams in the brochure illustrate the yard's transfer and launch operation. The procedure utilizes an in-place land-level bridge for barge loading of large industrial fabrications and oilfield modules. Instead of a sealift barge, PSRY Drydock No. 3 obtains a land-level position in PSRY Drydock No. 4 at any river stage.

Although the illustrations in the brochure depict a trawler-processor ship, the system can also handle naval oceanographic ships, minesweepers, SWATH vessels, tugs, patrol craft or virtually any hull form up to 15,000 tons.

For a free copy of this shipbuilding capabilities brochure from PSRY,

Circle 32 on Reader Service Card

## Burmeister & Wain Opens Seoul Branch Office

Burmeister & Wain Shipyard, Copenhagen, Denmark, has opened a branch office in Seoul, South Korea, to act as a purchasing establishment for the company in South Korea. Additionally, the office will establish new business connections in shipbuilding for Scandinavian companies wanting to export to South Korea and vice versa.

The new office will be under the management of **Kew-uck Chee**, former managing director of Samsung Shipbuilding & Heavy Industries.

To coordinate transactions between the new Seoul office and Copenhagen, Burmeister & Wain has established a new division, Burmeister & Wain Trading, in Copenhagen. The two offices will work in close cooperation.

For information on the shipbuilding and ship-designing services of Burmeister & Wain,

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The twin-screw, 360°-rotating-nozzle, ship-docking tug Sally is powered by two G.M. Detroit Diesel Allison engines rated 900 shp at 2,400.

## Powerful Docking Tug Delivered By Gladding-Hearn Shipbuilding

Gladding-Hearn Shipbuilding of Somerset, Mass., recently launched the twin-screw ship-docking tug Sally for delivery to Wilmington Tug and Launch, Inc. of Wilmington, Del.

The tug is powered by two G.M. Detroit Diesel Allison 12V-149TI engines rated 900 shp at 2,400. She has an overall length of 70 feet, beam on deck of 30 feet and draft of 12 feet 6 inches. Described as having "the power of a bulldozer and the maneuverability of a sports car," the Sally will handle vessels with deadweights anywhere from 50,000 to 125,000 tons.

Like her sister boat Tina, delivered in 1977, she does not employ a conventional rudder with fixed propellers. Rather, she has a pair of independent, high-thrust, fully rotatable propulsion/steering units that can be operated individually or together in any direction to put maximum power exactly where it is needed.

The Sally's pilothouse, high above the deck,

offers unobstructed views in all directions. The helm station features dual unilever-type controls and a functional console with all necessary instrumentation. The tug is fitted with 12-inch bow and 16-inch aft towing bits, two 40-ton hand-operated barge winches, and a hydraulic vertical capstan which is incorporated into the aft towing bitt. She is capable of a bollard pull of some 80,000 pounds. Schuyler 6-inch and 11-inch fendering borders the deck edge, and 9-inch-thick fendering provides gripping action during ship-handling operations.

For ease of service and maintenance, the Ulstein angle drive units, including propellers and Kort nozzles, can be lifted through deck hatches without drydocking the vessel.

Crew's quarters, directly below the pilot-

Main engines	G.M. Detroit Diesel Allison
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house, include a two-man stateroom on the starboard side, a fully equipped gallery with a spacious dining area portside, and a toilet and shower compartment.

For more information and free literature on the facilities and capabilities of Gladding-Hearn Shipbuilding,

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## Soundcoat Offers Free Technical Paper On Vibration Damping For Shipboard Vibration

Frank Kirschner, vice president of engineering of the Soundcoat Company, Deer Park, N.Y., recently presented a paper titled "Vibration Damping for Shipboard Vibration and Noise Control" to the Institute of Noise Control Engineering (INCE).

The technical paper describes in detail the noise and vibration problems on a gas turbine-powered tanker and research vessel. For example, the major noise source in the gas turbine-powered tanker was transmission of structure-borne vibration from the gas turbine generator room to the living quarters through the deck plates and bulkheads and reradiation of airborne sound from these plates.

To obtain a free copy of the paper from Soundcoat,

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The Department of Civil Engineering and the Department of Naval Architecture & Offshore Engineering at the University of California at Berkeley are seeking applications for a tenured faculty position (Associate Professor; Professor) in the area of coastal and offshore engineering. The position will be a joint appointment in the two departments.

Applicants must show an outstanding record in research and in attracting and administering research funded by industry and government. It is expected that the appointee will take an active role in the interdisciplinary Ocean Engineering Program in the areas of analysis and design of floating and fixed offshore structures and coastal structures. Some knowledge of the construction, installation and maintenance of these structures is also appropriate. An earned doctorate or equivalent experience is required.

The successful applicant is expected to teach at both the undergraduate and graduate level within the two departments and in the interdisciplinary Ocean Engineering program. Additionally, the appointee is expected to have a demonstrated capability to attract, perform and supervise research in the area of Coastal and Offshore Engineering.

Applicants should have a strong background and practical experience in at least two of the following specialty areas: marine environmental loading (wind, waves, currents, ice and earthquakes), motions and loadings of floating systems, analysis and design of marine structures (including pipelines, platforms, coastal structures, port structures, offshore facilities, subsea systems), construction and installation of marine structures; underwater robotics, computer-aided design, and reliability of coastal and offshore structures.

The position is open from the beginning of the 1988-1989 year. Send resume or make inquiries to the Chair, Coastal and Offshore Engineering Search Committee, Interdisciplinary Studies Center, 230 Bechtel Engineering Center, University of California, Berkeley, California 94720. The closing date for the applications is March 1, 1988. The University of California is an Equal Opportunity Affirmative Action Employer.

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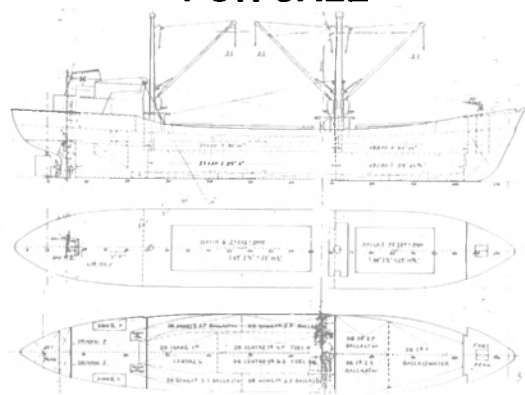
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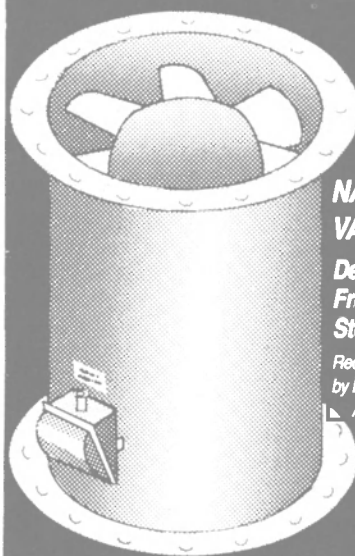
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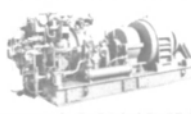
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FULL INVENTORY IN TWO OF THE WORLD'S LARGEST WAREHOUSE FACILITIES FOR IMMEDIATE DELIVERY. FULLY GUARANTEED. IF WE DON'T HAVE IT, IT DOESN'T EXIST. (WE HAVE ACQUIRED THE ENTIRE INVENTORY OF PHILIP S. DEY CO. — SUPPLIER INVENTORY CO. — SEE LISTING PAGE 10) THESE ITEMS ARE JUST A PARTIAL LIST OF WHAT WE HAVE AVAILABLE.




**TURBO GENERATOR**

**750 KW A.C. TURBO GENERATORS**  
 Ex-USN — GEI-16846 — type FN3-FN24 — seven stage — 10033 RPM — typical serial #49351 or 61718. Single helix reduction gear — 10033/1200 RPM — type S-187 GENERATOR: 750 KW — 6-pole 0.8 P.F. — 450/3/60/1200. EXCITER: 10KW — 120 volts. Steam inlet flange 2 1/2" — exhaust 17 1/2" x 25 1/2" rectangular. Overload 25% 2 hours. Units can be upgraded to 1250 KW for USN applications. Complete with throttles, etc. 8 Available



**L.P. 450 KW A.C. TURBO GENERATORS**  
 Suitable for waste heat turbo generators on motor ships. 175 PSIG — D&S — 27 1/2" vacuum. GENERATOR: Westinghouse 450KW — 563KVA — 450/3/60 — 1200 RPM. GEAR: 6097/1200 RPM. TURBINE: 175 lbs/D&S — 27 1/2" vacuum. Other pressures — temps: 250° @ 40°C — 27 1/2" vacuum. Turbine serial #7801-7802. OAL 13' 1-3/16" — OAH 5' — OAW 5 3/4". Total dry wt. 17,100 lbs. Plans on request.



**1500 KW TURGO GENERATOR SET**  
 11-Stage turbine — FN4 — 8145 RPM — 3 1/2" steam — 525# — 825" TT. GEARS: 195-8145-1200 RPM. GENERATOR: 1500KW — 450/3/60/3600 RPM — 2405 amps — 0.8 P.F. EXCITATION 13.2 KW — 120 volts DC. Weight 36,000 lbs — exhaust flange 18" x 38".

**TURBINE HIGH PRESSURE**  
 (2) High pressure 25,000hp General Electric Steam Turbines, manufactured 1980, 1400# inlet pressure 950°, 85# discharge pressure 8900 rpm. Brand New. New Cost \$1,000,000 each. Make an offer.

**GENERAL ELECTRIC TURBINE ROTORS**  
 We have the largest stock of main turbine and auxiliary turbine rotors in the United States: including:  
 32,000 HP  
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**FOR THE AUXILIARY TURBOGENERATORS:**  
 6-stage 750 KW  
 6-stage 600 KW  
 5-stage 500 KW  
 3-stage 500 KW  
**FOR THE CARGO PUMPS OR AUXILIARY TURBINE ROTORS WE HAVE:**  
 DR 125  
 DP 125  
 DR 120  
 DP 120  
 DP 114

**NEW GR3 CHAIN**

We are authorized distributors for a major steel chain company. We stock in our Jersey City warehouse, the following lengths of new GR3 chain

(12) Shots - 2 1/2"	(12) Shots - 3-5/15"
(12) Shots - 2 3/4"	(12) Shots - 3 3/4"
(12) Shots - 2 3/4"	(3) Shots - 4 1/4"
(12) Shots - 3-1/16"	(1) Shots - 4 3/4"

**WE ALSO HAVE ANCHORS WITH ABS CERTIFICATES FROM 5,000# TO 44,000#**

All above material available for immediate delivery. Call us for your chain and anchor requirements.

**TWO (2) NEW PACKAGE TYPE DUNHAM BUSH REFRIGERATION UNITS**

Complete with condenser, receiver and panel mounted on common frame, manufactured 1981. Original Cost: \$10,000 each.


OUR PRICE: \$2,500 each

**TWO (2) NEW VERTICAL WORTHINGTON 6LRV16 SALT WATER SERVICE PUMPS**

800 gallons at 100#. Requires 75hp motor. New Price: \$35,000 each.

OUR PRICE: \$7,500 each

**100,000 LB. ALMON JOHNSON Constant Tension Mooring Winches**  
 In very good condition. Series 232 mooring & anchoring winches. Automatic self-tensioning. Wide range from 100,000 lb. line pull @ 10 FPM to 26,000 lbs. @ 400 FPM. Gypsy line pull @ 12,000 lbs. @ 25 FPM. Drum de-clutchable through spiral jaw clutch for free spooling. Driven by 50 HP 230 VDC motors — Westinghouse CK — 575 RPM — 1/2 hour — 75°C rise — stab shunt — 181 amps. Max. RPM 1900 — Cutler-Hammer brake — 18" type NM. Complete with magnetic control panel, resistor banks & remote control pedestal and mounted master switch



**LARGE STEAM TOWING ENGINE 9x10 TWIN ENGINE DRIVE**  
 Air or Steam — 125/250 PSI Heavy duty Clyde with 36" diam. x 51" Face single drum. Flanges 68" CAPACITY: up to 2800' of 2" wire rope. Normal line pull 40,000 lbs @ 50 FPM. Steam or air pressure required 125 to 250 PSI. Can be adapted to electric drive or increased steam or air pressure to a capacity of 82,000 lbs @ 20 FPM. Pawl holds 270,000 lb pull from any angle. Equipped with level wind device. Approx wt 300,000 lbs. DIMENSIONS: 126" wide — 66" high. Write for details. ALSO AVAILABLE: Large towing ring — 36" diameter



**UNUSED STEAM WINCH FOR MOORING & CARGO SERVICES**  
 Lidgerwood 10x12 — with Morse controls. 10,000 lb line pull — de-clutchable gypsy — hand compression brake.



**DOUBLE GYPSY BOAT WINCH**  
 mfg. by Lakeshore duty: 2500 LBS @ 125 FPM — 15 HP — 230 VDC — 1780 RPM. \$2250

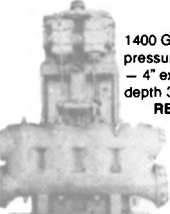
**3-YORK MODEL MTC59 150 TON AIR CONDITIONING UNITS**  
 Motor - Serial #2761385, Mod - LAYD, 3-phase, 440 Volts Frequency - 60, Full load amp 171, Locked Rotor Amps 528 Refrigerating Condenser - Serial #23012 (Std Navy Stk) Contract #N140-131-74042BX 11 - Refrigerant Condensing Side - Test press - 30 PSIG Shell Dia. - 16 Tube Length - 7-6 No. Passes - 2 Waterside - Test Press - 225 PSIG Water Velocity - 64 Ft/Sec at 425 GPM Cooling Surface Sq. Ft. - 730 No. of passes - 2 Refrigerating Water Cooler - Serial #23012 Contract #N140-131-74042BX Refrigerant side - 11 Test press - 30 PSIG. Water Side Test press - 225 PSIG Refrigerating Water Cooler - No. of passes - 3 Water Velocity - 8.1 Ft/Sec at 360 GPM Cooling Surface - 725 Sq. Ft.

**25,000 CFM U.S. NAVY AXIAL FANS**

25000 CFM — A25A4W6 — 42 1/2" ID — 52" high P 25/14 HP — 440/3/60 — 1200/900 RPM P 36/24 amps. 4 Available. 5000 CFM — A5A4W6 — 23 1/4" ID — 29 1/2" high — 4 HP P 1150/1750 RPM Mfg by Joy



**30 HP — 440/3/60 — 2-SPEED A.C. MOTOR-DRIVEN CAPSTAN**  
 8500 lbs @ 90 FPM or 4250 lbs @ 180 FPM. Barrel size 15 Below-deck mounted motor — 31 HP — 440/3/60 — 42/3 amps — 820/1200 RPM. Squirrel cage — totally enclosed — watertight. Half hour duty 65°C. temp. rise. Base OAL 6' With magnetic brake, 2-speed control and master switch



**WORTHINGTON 16" x 14" x 1" VERTICAL DUPLEX STRIPPING**  
 1400 GPM @ 110 PSI — suction lift 11.5 ft. pressure 15 lbs 14" Suction — 10" discharge — 4" exhaust. Overall width 6'8" — overall depth 3'9 1/2". Wt. approx. 10,000 lbs. RECONDITIONED 1980 ABS — REAL

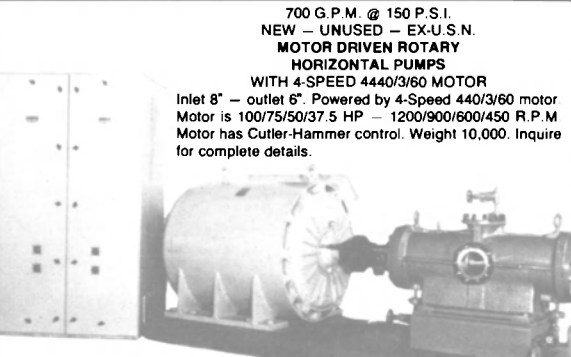


**FAIRBANKS-MORSE 750 GPM — 125 PSI STAINLESS STEEL CENTRIFUGAL SEA WATER FIRE & FLUSHING PUMP**


NEW UNUSED  
 EX U.S.N.

125 PSI (281 Ft.) total head. Suction lift none (flooded) RPM. With Falk #8F coupling — flexible, all metal, eroded. MOTOR: Reliance type T — 100 HP — 1750 RPM amps — 230 volts DC — Frame 503AS. Pump has 5" tion — 4" discharge. Pump & Motor mounted on base wide x 62 3/4" long x 30 1/2" high. Total weight 3348 lb


**NEW HIGH PRESSURE VALVES AT 25% LIST**  
 1 Powell 4" Globe 16 1/2 FF 600#, 1 Kerotest 5" Angle G 600#, 1 Edwards 3" Angle Lift Check 600#, 1 Crane Angle Globe 600#, 1 Powell 3" Angle Globe Reach operated 1500#, 1 Powell 3" Globe butt weld 1500#, 1 Crane 4" Globe 16 1/2 FF 600#, 2 Powell 3" Globe Stop-Check 1 1/2 side fl. 1 side butt weld, 3 Yarway 3" Impulse Steam T 1500#, 3 Crane 3" Globe 13-3/4 FF 600#, 1 Edwards 3" G 14 1/2 FF 900#  
 ALSO OTHER IN STOCK TO 28"




**700 G.P.M. @ 150 P.S.I. NEW — UNUSED — EX-U.S.N. MOTOR DRIVEN ROTARY HORIZONTAL PUMPS WITH 4-SPEED 4440/3/60 MOTOR**  
 Inlet 8" — outlet 6". Powered by 4-Speed 440/3/60 motor Motor is 100/75/50/37.5 HP — 1200/900/600/450 R.P.M. Motor has Cutler-Hammer control. Weight 10,000. Inquire for complete details.



**50 HP VARIABLE SPEED ELECTRO-HYDRAULIC CARGO WINCH**  
 Made by Lakeshore. DUTY: 7400 lbs SLP — 220 FPM — drum size 24" diameter — 15" wide. Complete with ratchet & pawl. CAPACITY: 600' of 3/4" wire. MOTOR: 50 HP — 440 volts — 66.3 amps — 3-phase 60 cycle — squirrel cage — 1200 RPM constant — Frame CC-445-N.



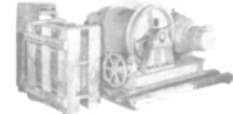
**36" x 48" — 24" x 36" DECK HATCHES**  
 has 10 brass dogs — 18" coaming. Coaming is 12mm — top is 11mm



**NEW BUFFALO 100 GPM — 56 FT. PUMP**  
 Bronze — 25 lbs or 56 ft head. 3 1/2" Suction — discharge. Flanged. 3 HP 440 volt AC 3500 motor with magnetic starter.

**NEW GEARS FOR DREDGES**


**UNUSED FARRELL-BIRMINGHAM MAIN PROPULSION REDUCTION GEAR**  
 Single reduction 1.81:1. Will handle up to 3200 HP input at 402 RPM. Complete with hydraulic coupling.



**GENERAL PURPOSE WINCH 3500 LBS AT 200 FPM**  
 New — Unused — Ex-USN A.C. Motor drive — 25/12.5 HP — GE 440/3/60 — 40°C AB — 1750 RPM — Type KR — full load amps 32. Motor drives winch through Falk reduction gear. Has compression hand brake.

**CRUCIFORM BITTS**  
 19 1/2" High - 18" across - 7" vertical pipe — 4 3/4" Horizontal caps - 8" tops - 9 1/2" crossways. Bolted base 11 1/2" x 11 1/2" x 9 1/4" centers.

**NEW — UNUSED DAVIDS BRONZE CIRCULATION P**  
 Type AONSIE — distiller — fresh w 347-3269. Single stage — close coupled lbs — 3500 RPM — 1 1/4" x 1 — Wt. 13 3/8" x 22 1/4".



**SMALL 4 x 6 WINCH**  
 STEAM OR AIR. DRUM: 20" Diameter x 23" width — 8" flange. Rated 2000#/90 FPM on 3rd layer of rope. 125# Steam or 3500 @ 90 FPM 150 PSI steam. 13,000 lb static load. Fitted with ratchet & pawl so drum can be locked in off and on position.

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**MARITIME**

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**NEW BUTTERFLY VALVES AT 35% OF NEW COST**  
2 Steel 36" Pratt Triton XL year 1981 Serial #7J05911-2 50# rubber Seat 134°F Body A-36 Seat A-240 W/316 edge service - PCP suction isolation 46" Flange 12" F/F 42-3/4" B/C 2 1/2" flange (32) 1-3/4" Bolts

**ACTUATOR - Limatorque Type H Size 2BC Order 3A3067B**  
Serial 318630 Rat-100.0 Valve B47257 Betchel 1.25 Pos A .33 HP 230/460V.

**3 Bronze BIF wafer-type 28" Model 0652 Design 120# 150°F**  
Ser #N-50919-3 1980 32 1/2" Flange 8 1/4" F/F Limatorque Type SMB Size-00 Order 3D1124A #310482 Valves 90635-13 Rat-94.0 Type H Size 3BC 460 volt.

**2 24" Butterfly Bronze Wafer-type BIF Model 0652 Des 150#**  
150°F Serial #N-50902-5 1980 28" flange 7" F/F Limatorque SMB Size-000 Rat-100.0 Order 3D1131A Valve 90642-13 Serial #312777 460 volt.

## STEEL WATERTIGHT DOOR & HATCHES

26" x 48"  
26" x 60"

### SIZES

26" x 66"  
30" x 60"

### CLEAN OPENING

### 6 STEEL DOGS

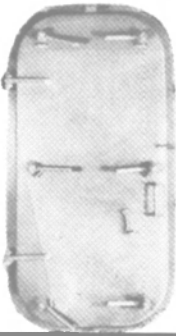
6-Dog right and left hand hinged doors with frames. Constructed of 1/4" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed.

### A.B.S. CERTIFICATES AVAILABLE

Hose Tested at 5 P.S.I.

at 1.5 to 3 meters from door. Doors are built according to approved drawings and technical requirements of A.B.S.

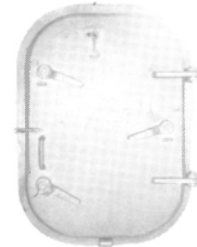
5/16" frame - 1/4" door panel



**6-DOG WATERTIGHT DOORS**  
32" x 54" Clear opening, 10" Deadlight. As carefully removed from Alcoa "Seaprobe."



**WATERTIGHT DOORS**  
24" x 36" — 3-Dog Right & Left Hand



back team 1/2" —



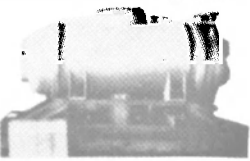
## NEW WORTHINGTON 300 GPM CENTRIFUGAL 150 LB HEAD FIRE PUMP

No. 1223620 — 3550 RPM — 5 1/2" suction — 4 1/2" discharge. Impeller diam. 10 1/2" — test pressure 225 lbs. MOTOR: G. E. model 115K1405Y — 60 HP — 400/60/3 — Frame 405 — Type K-72 — 3550 RPM.

## TWO NEW UNUSED 275 LB.W.P — PORT — VERTICAL SIMPLEX FEED PUMPS

16x10x24 WP 275 lbs — only by Union — 200 GPM — @ 350 PSI

## CONDENSERS — OIL COOLERS



## UNUSED ALCO MARINE CONDENSER

700 Sq. ft. — 2-pass — 3/4" CuNi tubes 0.049 (188WG) — 108" effective length — 476 tubes P shell & head hydro test 30 PSI. Empty weight 6350 lbs — 11,000 lbs filled with water — operating 7550 lbs — 2-Pass 9 3/4" inlet & outlet — length of condenser 156" — about 78" from exhaust flange to bottom of hot well.



## EX-LST-U.S.N. ROSS COOLERS

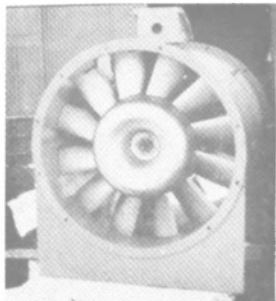
Copper shell-bronze heads-5/16" Cupro tubes.  
• 1 Model 1566 - Lub & Oil

## 12x10 ALLIS CHALMERS BRONZE CARGO OR BALLAST PUMPS

6000 GPM — 180 ft head — 1225 RPM

## EQUAL-TO-NEW DIESEL FIRE PUMPS

(4) Allis Chalmers type diesel engines—100 hp 1800 rpm driving all-bronze 1000 gmp at 280' 6x5 Gardner Denver type D horizontal centrifugal fire pumps. Replacement cost approximately \$25,000. Our price: \$5750 each.



## MARCH 1-84 WATERTIGHT DOORS IN STOCK—IMMEDIATE DELIVERY UNUSED WHEEL-OPERATED, QUICK ACTING WATERTIGHT DOORS—RT & LH AVAILABLE

IN STOCK  
26x48 - Right Hand only  
26x60 - 6 Right hand - 7 Left hand  
26x66 - 1 Left hand  
30x60 - 3 Right hand  
30x54 - 2

## U.S. NAVY DOORS

10 dog - 26x66 - LH  
3 dog - 26x60 - RH  
6 dog - 30x60 - LH  
3 dog - 26x66 - LH

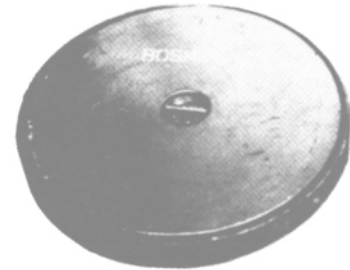
## NEW EQUIPMENT AT 1/3 OR LESS OF NEW PRICE

Hundreds of other new pumps, motors and other equipment at the same low prices. All located in our warehouse in Jersey City, New Jersey and available for your inspection and immediate shipment.

- (2) High pressure 25,000hp General Electric Steam Turbines, manufactured 1980, 1400# inlet pressure 950°, 85# discharge pressure 6900rpm. Brand New. New Cost: \$1,000,000 each. Make an offer.
- (6) New Ingersoll Rand Boiler Feed Pumps, stainless steel A487; manufactured 1981 Turbine: Turbo Dyne - Frame 284SWVK 1070hp #33530 #33535; Order #U-19964M 1370# 750°F 40# exhaust. Pump: Ingersoll Rand 3DM-4 700 gal. @ 4350' hydro- 2700# #0475-80. New Price: \$250,000 each. OUR PRICE: \$69,000 each.
- (3) New Forced Draft Fan Drives complete with reduction to 1800 rpm. Turbodyne Frame 284SWVK CCW #33540 685hp 5133/1780. Gear: form D-3 1370# 750° 40# exhaust. New Price: \$121,000 each. OUR PRICE: \$19,000 each. (This is less than the price of the turbine rotor).
- (2) New 100hp Buffalo Axial Flow Fans, stainless steel blades, 60" diameter, 120,000cfm at 3 1/2", driven by 100hp 440V Westinghouse explosion-proof motor; variable pitch blades. (shown below) New Cost: \$89,000 each. OUR PRICE: \$12,500 each.
- (10) New 15,000cfm at 3" Axial Flow Fans complete with 5-20hp 440V AC explosion-proof motors. New Price: \$6,700 each. OUR PRICE: \$1,500 each. New High Pressure Valves, 900#-1500# from 2" to 10", at 25% of List Prices.

## (3) INGERSOLL RAND AIR COMPRESSORS AT EXTREMELY LOW PRICES:

- (1) 600CFM at 120#, driven by 150hp 440V AC motor, Pac-Air package type. New Price: \$37,000. OUR PRICE: \$7,500.
- (1) 1200CFM at 125#, driven by 250hp 440V AC motor, Pac-Air package type. New Price: \$55,000. OUR PRICE: \$12,000.
- (1) 600CFM at 100# Gyroflo package Air Compressor, complete with 250hp 440V AC motor. New Price: \$40,000. OUR PRICE: \$6,500.



## NEW 18" & 24" HATCH COVERS

Flush mounting watertight hatch with machined steel mounting ring. T-Handle is recessed and hand tightens against a strongback across mounting ring. Approx. weights, including mounting ring: 18" 60 lbs — 24" 100 lbs.

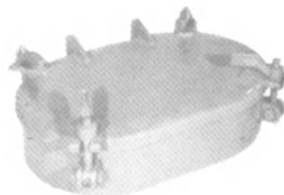
## TANKER EXPANSION TRUNK

36" Diameter — 26" coaming — 7-Dog drop-bolts. Drawing #36/26.



## QUICK-OPENING HATCH

Handwheel top & bottom. 4 Dogs. 16" x 24" with 5" coaming. Drawing #60-40.



## GENERAL PURPOSE HATCH

15" x 23" x 5" WITH 4 STEEL DOGS



## SEAGOING BARGE QUICK ACTING 4-DOG HATCHES

Heavily constructed. Handwheel operated, with handwheels top & bottom. Size B: 31" x 31" w/12". For ocean-going barges, etc.

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OPELLERS—ALL EQUIPMENT GUARANTEED  
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(2) Used, in excellent condition, WORTHINGTON 125-TON AIR CONDITIONING CHILLER UNITS, complete with 125HP Worthington turbine, 440#. New Cost of these units approximately \$125,000. Our Price: 6500 each.

Two (2) New 20-Ton Hose-Handling Cranes electrohydraulic rated 20-ton at 56", complete with all controls and motors, ABS and CG approved PRICE: 18,000 each.

***SUBSCRIBE NOW... TO THE ALL NEW '88***

## **WORLDWIDE MARITIME INDUSTRY CENSUS**

Order your copy now of the most complete and comprehensive census in our industry. Included in the census are details and statistics on vessel operations (ocean going, inland, harbor, offshore), offshore drilling, U.S. and foreign Navies, shipbuilding and ship repair (commercial and military). A review of the census reveals the major role played by the U.S. ship owners/operators and the U.S. Navy in our industry.

Months of research went into tracking down true ownership of the world's commercial fleet and as evidenced by the results of the census, U.S. corporations own and control the largest portion of the world's merchant vessels. Also examined by the census is the increasing role being played by the U.S. Navy as the industry's largest consumer of marine products.

In preparing this census, hundreds of reference sources were utilized, including **MARITIME REPORTER'S** Research Department and Circulation Data Base, U.S. and Foreign Governments, United Nations, Personal Interviews, Lloyd's Register, Industry Directories, etc. (Vital information not available anywhere else in the industry).

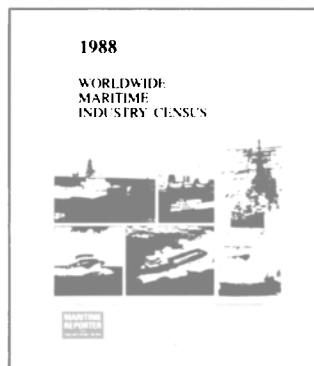
### **THE U.S. MERCHANT FLEET**

- Summary—All Vessels (1,000 gross ton and over) By ownership, status and area of employment.
- Subsidized Vessels—U.S. Merchant Marine.
- Distribution of oceangoing ship-board jobs.
- Foreign flag ships owned by U.S. companies or foreign affiliates of foreign companies.
- Size of major maritime fleets (true manager domicile and country of ownership).
- Operating—differential subsidy accruals and outlays.
- Federal ship financing guarantee (Title XI).

### **WORLD'S MERCHANT FLEET**

- Definition of Terms.
- World's Merchant Fleet.

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- Offshore mobile drilling units under construction-on order.

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- Merchant vessels 2,000 DWT and over (completed in U.S. shipyards).
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## SHE'S THE "M/V BAY LADY" AND SHE'S 140 FEET OF TOTAL LUXURY

Service Marine Industries, Inc. takes pride in tailoring each vessel to meet the exact needs of a particular operation as specified by the owner.

The sleek new M/V Bay Lady is a prime example. A dinner cruise boat now being built for Baltimore Harbor Bay Tours, Ltd. of Baltimore, MD, this unique 140-foot vessel is designed to provide the ultimate in luxury harbor cruising. It features every passenger

comfort and the finest appointments throughout. Custom bars with back lighting and polished brass fixtures are focal points on each deck.

Space is provided to seat 600 passengers in complete comfort for formal or informal dinners with ample extra room for moving about. The galley is the largest of any boat of this type and is fully equipped to prepare and serve the sumptuous menus for

which Baltimore Harbor Bay Tours, Ltd. is famous.

Sound proofed, insulated, air conditioned and heated for both Baltimore and Florida operations, the M/V Bay Lady boasts every passenger comfort.

We are building the M/V Bay Lady to do a particular job particularly well . . . backed by solid old-fashioned quality workmanship for years of dependable performance.

SERVICE MARINE INDUSTRIES, INC. IS A FULL SERVICE SHIPYARD — DESIGN, ENGINEERING, CONSTRUCTION, INTERIOR DECORATING — MODULAR DESIGN OR CUSTOM BUILDING TO YOUR SPECIFICATIONS.



## Service Marine Industries, Inc.

*Trust • Quality • Economy • Service*

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