

# MARITIME REPORTER

AND  
ENGINEERING NEWS

## 1992 NAVY ANNUAL



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### MEGA YACHTS

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### SEALIFT SHIP- BUILDING PROGRAM

The latest developments and plans for a new fleet of sealift ships. The Navy plans \$11 Billion in spending over the next six years . . .

...SEE INSIDE!

### CANADIAN SHIPBUILDING and OFFSHORE CONFERENCE

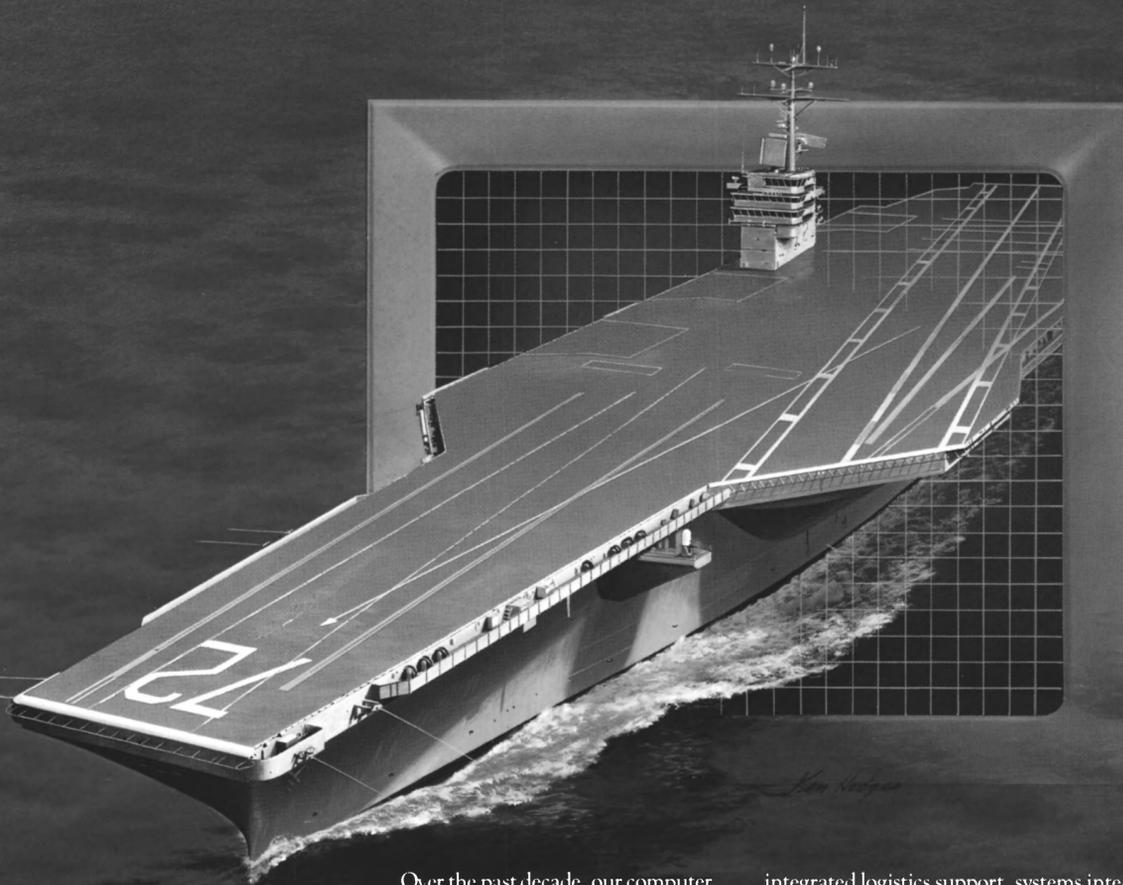
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# A GUIDE TO U.S. MARINE SALES IN THE NEXT FIVE YEARS

NEW 1992 EDITION

## FIVE YEAR OUTLOOK FOR THE U.S. MARINE INDUSTRY

*An Assessment of Ship Construction and Major Modification Prospects Available to Shipbuilders,  
Equipment Manufacturers and Other Suppliers*

Report No. 7119 - \$575.00 per copy

The totally new, 1992 edition of IMA's marine industry outlook has just been published. Under one cover is a totally objective, in-depth assessment of the business outlook for the entire U.S. marine sector. The report documents the size and composition of 24 individual market segments, analyzes underlying market drivers, forecasts construction and modification activity over the next five years, identifies regulatory and legislative actions likely to affect future suppliers.

### REPORT OUTLINE

1. EXECUTIVE SUMMARY
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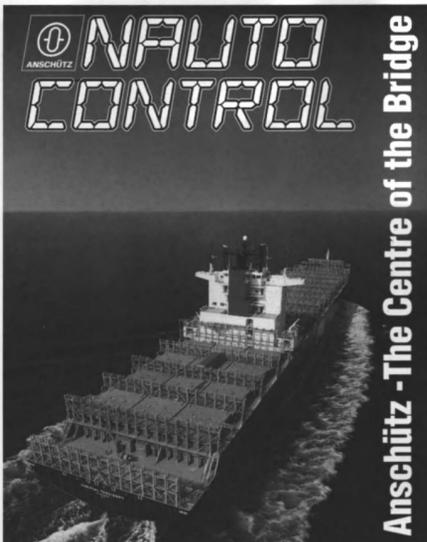
Subscribers will receive the 190 page report immediately -- plus a market update in April 1992.

The report is available for \$575.00 per copy. To order please contact: IMA Associates - 600 New Hampshire Ave., NW - Suite 140 - Washington, DC 20037 USA - Telephone: 202-333-8501 - Fax: 202-333-8504. An order form is enclosed for your convenience. Telephone or fax orders will be accepted. The report will be sent the day your order is received.

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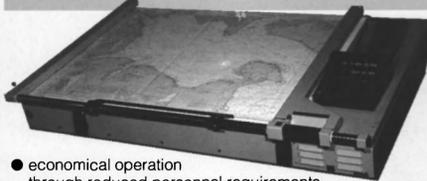
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## ON THE COVER

Photos, from top: Oceanographic ship USNS Relentless, built by Halter Marine, Inc., Trinity Marine Group; artist's conception of the megayacht Intrepid, under construction at Swiftships; and the Maritime Preposition ship PFC Oregon, built by NASSCO.

Navy cover: Maritime Preposition ship Pvt. Harry Fisher, converted by BethShip Sparrows Point.

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### Sumitomo Receives Order For IMC Bulk Carrier

Japanese shipbuilder Oshima Shipbuilding Co. a unit of Sumitomo Corp., recently received an order from bulk shipping operator International Maritime Carriers (IMC) for a handysize 40,000-dwt bulk carrier.

The ship, valued at \$25 million, will be delivered in mid-1994. The order for the vessel was placed by Panama-based Laverton Navigation Co., a subsidiary of IMC Holdings Ltd. The bulk carrier is the fourth new ship order placed in a matter of a few months for the IMC fleet.

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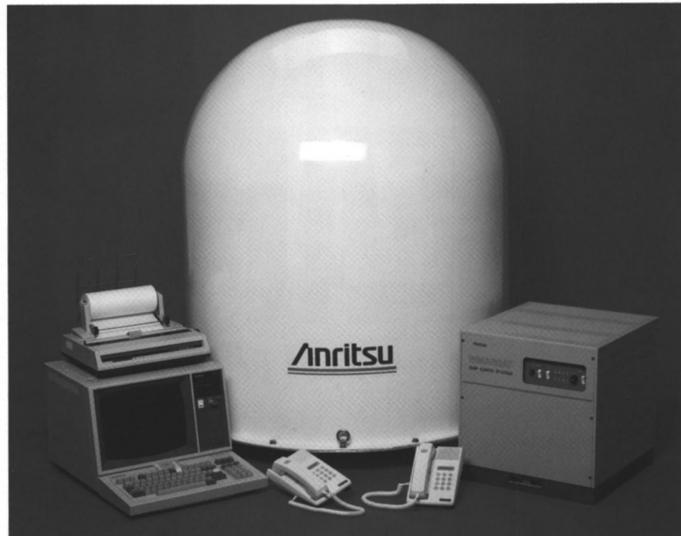


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**Circle Seal Offers Brochure  
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Circle Seal Controls, Inc. of Anaheim, Calif., is offering an eight-page condensed brochure that provides technical data and specifications on Circle Seal Controls' standard line of pressure and back pressure regulators.

Circle Seal regulators are available with outlet ranges up to 10,000 psi in 1/4-inch to 1/2-inch pipe sizes. The regulators come in a variety of configurations to meet different application requirements.

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For further information regarding special regulator configurations, Circle 82 on Reader Service Card

**KHI To Invest  
\$15.5 Million Yearly  
To Automate Yard**

Japanese shipbuilder Kawasaki Heavy Industries (KHI) is expected to invest \$15.5 million annually over the next four fiscal years in its Sakaide Works, developing it into one of the most highly automated shipyards in the world.

Beginning in fiscal year 1992, which runs from April 1992 to March 1993, and running through fiscal year 1995, KHI will introduce automatic steel cutting and process lines of section steels at the yard. Additionally, the number of seven-shaft multi-joint welding robots for assembling of blocks for hulls will be doubled to 12. The additional robots will not only shorten working time, but also reduce the number of workers needed, creating an automatic cutting line by combining robots with belt conveyors.

Another improvement at the shipyard, which is engaged in the construction of VLCCs and LNG carriers, will include the addition of a steel conveyor and automatic arc welding machine at the indoor plant for handling the manufacture of components for the main assembling work after processing steel materials and subassembling them.

**French Company Receives  
Orders For New  
Quadrimaran**

A French team of engineers headed by Daniel Tollet of FC4 International has received orders for two 26-meter Quadrimarans, a new generation high-speed, planing surface effect vessel design.

FC4's first commercial customer is a consortium of French banks,

lead by Credit Agricole, which ordered two 26-meter Quadrimarans, for use in Martinique for delivery in June 1992.

A 190-foot vessel capable of speeds in excess of 70 knots is currently under construction at the company's yard outside Marseilles in France. After a year of promotional activities visiting Europe, the U.S. and Asia, the 1992 Summer Olympics in Barcelona and the World's Fair in

Seville, the vessel will be launched in June 1992 and used as a 700-passenger ferry.

FC4's main development partners are Sollac S.A., the world's second largest steel producer, and Societe General, a major French bank.

The company also recently announced that it had entered into an agreement with a shipping syndicate for a 122-meter container vessel.

The Jonathan Corporation, a Norfolk-based engineering company which owns shipyards, is assisting FC4 International S.A. in establishing the Quadrimaran concept on the U.S. market.

The Baltimore Steam Packet Company, Williamsburg, Va., is marketing the vessel in the U.S.

For free literature detailing the new Quadrimaran design,

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**YOU'VE GOT TO SOLVE YOUR  
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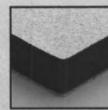
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February, 1992

### MarineSafety Conducts Cruise Ship Simulation For RCCL

MarineSafety International (MSI) recently conducted a series of simulator tests for Royal Caribbean Cruise Line (RCCL) of Miami, Florida. The tests were aimed at determining safe operating conditions for the cruise ship "Song of America" in St. George's Harbor,

Bermuda. Under the supervision of **Captain Aage Lindstad** of RCCL, realtime simulation tests were conducted for inbound and outbound runs through Town Cut, and docking and undocking at wharfs under various wind and current conditions. Bermuda pilots **Keith Battersbee** and **Romeo Pitcher** alternately handled the cruise ship during controlled tests. Vessel trajectory track plots and data obtained were used to define the combination of environmental conditions

under which the cruise ship could safely enter and depart the harbor.

In addition to ship and harbor simulations, MarineSafety offers 3- and 5-day simulator training courses for cruise ship Captains and Chief Officers and for various pilot organizations. MarineSafety operates maritime simulator centers at Kings Point, New York, and Newport, Rhode Island. A new maritime simulation center to serve the European Community will be opened by MSI in Rotterdam at the beginning of

1993. For further information on the services of MarineSafety International,

Circle 104 on Reader Service Card

### MMC Introduces New Hand-Held Tank Gauging Tape

A hand-held tank gauging tape that keeps noxious and toxic fumes under control has been announced by MMC International Corp. By keeping these substances from escaping, this unit not only gives greater protection to workers but is also aimed at meeting vaporless loading and greenhouse effect regulations.

This instrument is designed to fit securely into an MMC vapor-control valve which is permanently mounted on each storage or cargo tank. This tape and valve combination constitutes a completely closed tank gauging system that forms a tight barrier against toxic fumes and prevents them from entering the atmosphere.

Designated the Flexi-Dip closed model, it is the latest in a series of portable and transportable gauging tapes offered by MMC, the country's leading manufacturer of these products.

For complete information on the new MMC tank gauging tape,

Circle 161 on Reader Service Card

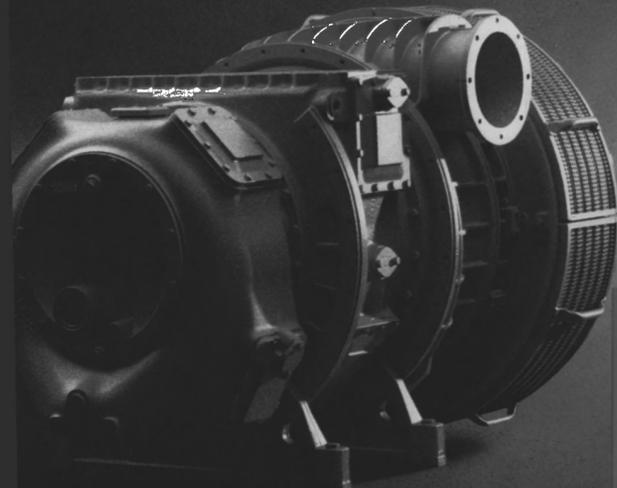
### 'Ocean Producer' Begins Production Offshore West Africa

The 'Ocean Producer' floating production, storage, and offloading (FPSO) system, owned by Oceaneering International Services Limited (OISL), Houston, Texas, recently began production in the Gombe-Beta field offshore Gabon, West Africa. The ship is a 78,000 dwt tanker which was converted into a production system and installed in the field by Oceaneering Production Systems (OPS) and OISL, who will continue to operate the system for the duration of the contract for Amoco Gabon Gombe Marine Company, a subsidiary of Amoco Production Company.

The Ocean Producer is able to process up to 15,000 barrels of fluid per day and uses produced gas to fuel the process and marine support requirements.

The FPSO is located in 50 feet of sea water and utilizes a disconnectable spread mooring and flexible flowlines. Oceaneering is providing the FPSO, flowlines, and shuttle tanker mooring system, as well as all operational personnel on the day-rate contract.

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### NRC To Participate In Rule Development For Spill Response Plans

Officials at the National Response Corporation (NRC), Calverton, N.Y., were recently informed by the U.S. Coast Guard, Rear Adm. **Eugene Henn**, that NRC has been selected to participate in the Negotiated Regulation process for development of regulations for vessel response plans and carriage of response equipment aboard tank vessels as per the rulemaking requirements of the Oil Pollution Act of 1990.

**Mark Miller**, president of the NRC said: "The admiral's decision to include NRC on the Neg/Reg Committee is indicative of the tremendous recognition, momentum and support we have garnered since our announcement of formation on November 1, 1991. With the Coast Guard's selection of the NRC, we believe that our viability as an alternative means for the industry to meet compliance has been recognized."

Miller said **Jim O'Brien** of O'Brien's Oil Pollution Service, an oil spill manager, has agreed to participate in the technical development of NRC's business plan. In addition to working on the outfitting and retrofitting of the fleet of supply ships and work vessels, Mr. O'Brien will be active in the development of the NRC training program, shoreline protection plan, and act as the firm's spill manager in the event of a member client's spill.

NRC is in the final stage of development of a cost structure for member clients. The pricing formula will include coverage for both U.S. domestic and foreign-flagged tank vessels as well as shoreside facilities.

Miller said: "The pricing/coverage structure was designed to be as flexible as possible without becoming too confusing or cumbersome in figuring what a specific company's cost will be. We believe the maritime and petroleum community will be pleased with the pricing format we've designed."

### New Offshore Services Company Established

Deepsea Development Services, Inc. has been formed as a subsidiary of Sachse Engineering Associates, Inc. (S.E.A.). The new company incorporates all of S.E.A.'s existing offshore services personnel and assets.

**Dan White** has been named President, Deepsea Development Services, Inc. The main office is in San Diego and a branch office is in Houston. Operations managers are **Ed Saade** and **Jan Viecek** (San Diego) and **Bob Holloway** (Houston).

Deepsea continues to provide offshore services including ROV (Recon IV, Hysub, and RCV-225) and survey operations, coastal engineering and differential GPS (COMSAT).

Its state-of-the-art equipment includes the Subsea Crawler and

the Laser Survey Vehicle.

### Robertson Disc Navigation To Be Displayed At ECDIS '92

The first symposium and exposition for Electronic Chart Display and Information Systems - ECDIS '92 - will be held at the Omni Inner Harbor Hotel, Baltimore, Maryland, February 28-29, 1992. Robertson

Marine Systems, Inc. will show its latest Disc Navigation system which they believe to be the state-of-the-art in ECDIS design.

As a leading supplier of vessel dynamic positioning (DP), autopilots, trackline control systems, surface and underwater gyrocompasses and inertial platforms, Robertson has applied this acquired vessel control expertise to expand the ECDIS application.

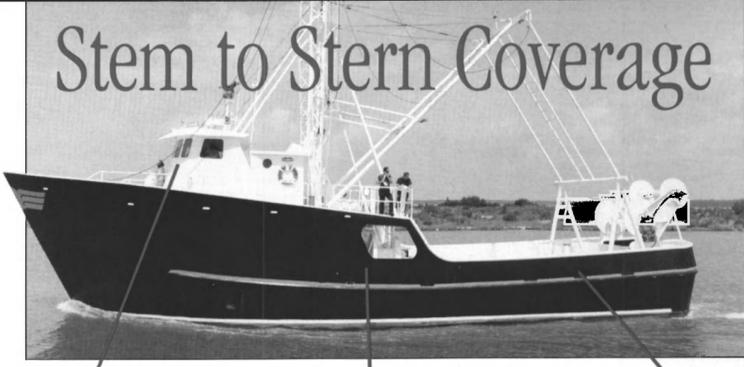
ECDIS in its own right will revolutionize the vessel bridge, but

Robertson plans to offer its ECDIS as a building block for practical ship-board innovation.

Robertson will exhibit their integrated navigation and electronic chart display of Disc Navigation System with the joystick and DP controls of its RMP ROBPOS at ECDIS '92. This represents only one dynamic application Robertson envisions for ECDIS.

For more information about Robertson Marine Systems, Inc. Circle 103 on Reader Service Card

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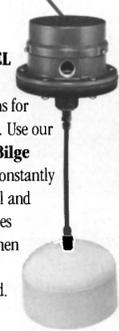
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Ad No. 203A



### Barge Industry Very Optimistic As Rates Rise

The barge industry is extremely optimistic about 1992, as the combination of strong coal exports and a better-than-expected grain harvest kept demand for equipment high and pushed rates up dramatically in the second half of 1991.

Spokesmen for Ingram Barge Co., Nashville, Tenn., and Ohio River Companies, both major inland river coal haulers, anticipate 1992 will be a better year than 1991, based on the strong second half of this year.

Craig Philip, senior vice president, Ingram Barge Co., said, "We haven't seen this kind of run-up in recent years. The trade generally believes that the strength of the export coal market pulled everything up."

Operating about 1,500 barges on the nation's inland river system, Ingram Barge gets about two-thirds of its revenue from hauling dry bulk and one-third from hauling liquid bulk cargoes. The Nashville company handles about 30 percent of the export coal shipped on the rivers.

According to Fred Raskin, Ohio River Companies, 1991 has been an excellent year for coal exports, and he expects next year to be even better.

"We'll have maybe a record next year on [coal] exports," stated Mr. Raskin. Low-sulfur coal originating in Montana and Wyoming, as well as West Virginia's Kahawha River Valley, is shipped to terminals on the Mississippi River near St. Louis, where it is then barged to Gulf ports.

A large percentage of the export market consisted of steam coal being shipped to European utilities.

"The European market, in general, is looking very strong," said Mr. Philip. He also said French and Italian buyers have also been in the U.S. market.

The rise in coal exports has tightened the supply of barges, and brought demand more in balance with supply.

Mr. Philip believes that, because of the equipment supply situation, commitments for barges will be made earlier in 1992. In addition, he also predicted that rates for next year will be up about \$1 per ton, or 15 percent higher than they have been.

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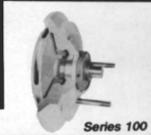
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### McDermott Awarded Exxon's 'Zinc' Contract

McDermott Marine Construction has received a contract from Exxon Company for the installation of three pipelines, two umbilicals and a template in the Mississippi Canyon area. The 6.1-mile flowlines will link the 'Alabaster' platform at Mississippi Canyon Block 397 to the ten-slot 'Zinc' subsea template at Mississippi Canyon Block 355.

McDermott pre-installed the piles for the Zinc project in 1991.

Installation will take place in two phases. Phase 1 will occur during the summer of 1992 with the laying of pipelines by McDermott's combination barge DB 28 from the Alabaster site in 468'WD to the Zinc site in 1,500'WD.

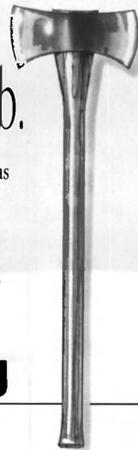
Phase 2 will follow in Fall, 1992 using McDermott's DB 50 to install the template and two umbilicals. Flowline tie-in will use the J-Tube method at the Alabaster site and the pipeline deflection method at the Zinc site.

### Lykes Charters Four Multi-Purpose Vessels

Lykes Bros. Steamship Co., Inc. has entered into an agreement with First International Leasing Corporation to time charter four multi-purpose vessels, two for an 8-year term and two for a 7-year term. At the same time, Alfred C. Toepfer Schiffahrtsgesellschaft m.b.H., of Hamburg, Germany, has been appointed by First International Leasing Corporation to manage the vessels on their behalf.

The first two vessels will be renamed the Doctor Lykes and the Joseph Lykes, and will enter the Lykes fleet in mid February 1992. Lykes will take delivery of the remaining two vessels in early 1993.

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Circle 219 on Reader Service Card

Maritime Reporter/Engineering News

### Liner 'Royal Odyssey' Successfully Upgraded In Sembawang Shipyard

Sembawang's reputation as one of the leading cruise vessel repair yards in the region received a further boost with the successful upgrading of the luxury liner Royal Odyssey.

The refit is in partnership with Lloyd Werft Bremerhaven of Germany and marks the first such cooperation between the two companies. For a month, experienced specialists from both yards worked round the clock to complete this contract.

Internally, all 410 passenger cabins have been refurbished, including all the passenger corridors, and the main stair-towers and aft staircase have been given a new look. Five lift cabins have also been renewed.

Other work included repairs on machinery, supply and discharge systems, steel renewal and internal piping. The vessel was also grit blasted and new coats of paint applied.

For free literature detailing the facilities and capabilities of Sembawang Shipyard,

Circle 63 on Reader Service Card

### Art Anderson To Do Economic Concept Study For Pierce County Ferry

Art Anderson Associates, Bremerton, Wash., is doing an economic and concept study for a new ferry under a contract recently signed by the firm's president, Eric Anderson, and the Pierce County Public Works Department.

Art Anderson Associates won the contract as a result of a competition with Naval Architecture firms from the area. The concept study follows recommendations outlined in the Waterborne Transportation Study which was completed in May 1989 by the Public Works Department.

After the county accepts a concept, Art Anderson Associates will carry out engineering work on behalf of Pierce County, leading to a new construction contract. After a contract is awarded, Art Anderson Associates will then serve as the owner's representative for liaison with the shipyard.

### Enviro-Air Control Forms Marine Division

Environment Control Systems Corporation of Houston, Texas, long a leader in the development of proprietary equipment used to control relative humidity, temperature, and particulate matter of the air in enclosed industrial areas recently announced the formation of a marine division.

As of January 1, 1992, the corporate name became Enviro-Air Control Corporation.

February, 1992

Joe C. Eller, president, said "This name change will more accurately describe our corporate mission in the solution of problems associated with the environmental control market of the '90s."

For further information on Enviro-Air Control Corporation,

Circle 64 on Reader Service Card

### MTU Supplies CODAG Propulsion Plant For 331-Foot Car Ferry

MTU Friedrichshafen has been awarded the contract to provide the complete power plant for a new 331-foot-long car ferry, "Aquastrada", to be built by Rodriguez Cantieri Navali. The CODAG propulsion system will consist of a gas-turbine module based on the LM 2500 from General Electric, plus two MTU 16V 595 TE70 engines. The LM 2500 gas turbine has an output of 27,880 HP, and the total power of the two diesels is 9,700 HP.

A corresponding propulsion module for the LM 2500 is presently being built at MTU. This gas turbine has already been installed over 400 times in naval vessels, for the most part by the manufacturer, GE; in some cases, MTU has also sold the LM 2500 as general contractor for the complete power plant.

The module which MTU is now building for commercial vessels weighs only 16 tons, making it 6.5 tons lighter than the military version with the same dimensions. MTU has already developed the corresponding ECS GT 25 electronic monitoring system and has installed it for several plants. This system controls and monitors the LM 2500 gas turbine.

The reduction gears for the diesels as well as for the gas turbine will be supplied by Renk Tacke GmbH. The reduction gears are noise optimized, taking advantage of the company's considerable experience in the manufacture of naval equipment. The aluminum housings provide a major reduction in weight.

The "Aquastrada" will be 331 feet long with a beam of 47.5 feet and will have a 991 dwt. She will carry between 400 and 500 passengers plus 20 crew members, and have space for 90 to 120 vehicles. The service speed of the ship when fully loaded will be about 40 knots for a range of 400 nautical miles with the standard fuel tanks, or 780 nautical miles when the supplementary tanks are filled. The customer already has an option for an additional two vessels of this type from Rodriguez.

For complete literature describing MTU's CODAG system,

Circle 166 on Reader Service Card

### Van Der Vleit Engineering Appoints Klattenburg As U.S. Sales Agents

Patrick A. Sparrow, director, Van Der Vleit Engineering Ltd., U.K., recently appointed RR

Klattenburg Marine Agency as sales agents for their products in the United States.

Van Der Vleit offers pressure tubing and parts for boilers, including membrane (welded-wall) panels, and economizers; boiler mountings; as well as shipbuilding plates and non-ferrous tubing and piping.

The Klattenburg appointment also includes Van Der Vleit International Ltd. which can undertake all necessary boiler surveys and repair work.

Van Der Vleit has been in existence for about 22 years, and the current directors, Malcolm Hart and Sparrow, having been associated with Babcock and Foster Wheeler, are experienced in the repair of main boilers and the fitting of retrofit backend waste heat recovery equipment.

For more information on products and services offered by Van Der Vleit,

Circle 165 on Reader Service Card

### STEEL-SPRING FLEXIBLE COUPLINGS

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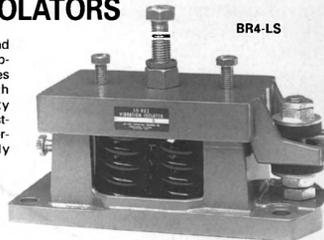
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LO-REZ helical steel-spring couplings, with their low, constant and accurately-controlled torsional stiffness factors, provide excellent torsional characteristics for geared marine reciprocating propulsion systems, engine and reciprocating compressor drives of many varieties, locomotive drives, etc.

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BR4-LS



LO-REZ manufactures a broad line of sturdy steel-spring vibration isolators. The BR series isolators (shown here) with their ample thrust capacity and rubber-cushioned, adjustable stops (to limit excess vertical excursion) are widely used for marine auxiliary, other mobile and seismic applications. No external chocks are required. BR-T series isolators have special spring-loaded thrust housings to carry the full propeller thrust effects, the full engine torque, and still provide excellent isolation. They are ideal isolation supports, also, for machinery rafts in ships.

With the growing demand for acoustical and vibration attenuation treatment in ships, the isolation of main propulsion engines is fast becoming a necessity rather than a luxury. LO-REZ has many years of experience in analyzing the dynamics of soft-mounted propulsion engines, and has the products to provide integrated isolation systems which include two-directional thrust-type RT flexible couplings for the gear output shaft.

### VISCOUS TORSIONAL VIBRATION DAMPERS

LO-REZ manufactures both the conventional untuned viscous dampers and its new patented mechanically-tuned viscous dampers. Extensive research has shown that the single and compound tuning methods, as developed by LO-REZ, reduce resonant amplitudes by some 40% and 60%, respectively, of the untuned values.



Aluminum alloy ribbed housings of robust design provide cooler operation with less variance between cold and hot performance. Dampers are bolted construction and are serviceable with factory rebuild program. LO-REZ forced-damped computer program handles very large and complex power trains and provides for optimization of damper size and characteristics. Standard damper sizes are available as well as custom-engineered models.

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### **Rebuilt 'Gulf Protector' Features Skum/In-Mar Firefighting Equipment**

Retrofitting existing vessels to adapt them to a variety of offshore support tasks has become customary during the past decade.

A typical such example is the M/V Gulf Protector, owned by Neches-Gulf Marine, Inc. It has been totally rebuilt and upgraded at Neches-Gulf Marine's Shipyard in Sabine Pass, Texas, and Burton Shipyards, Bridge City, Texas, to meet the newly developed lightering support design criteria as specified by her long term charterer, Skaugen PetroTrans, Inc., Houston, Texas.

The M/V Gulf Protector has—in addition to providing lightering support—been designed to support offshore oil and gas industry with state-of-the-art firefighting and oil spill response capability.

The vessel is to be permanently based offshore Galveston but its strategic location near the Louisiana border will make her able to respond quickly to any requirements offshore coastwise Louisiana, Mississippi, and Alabama.

The Caterpillar-powered Gulf Protector features a massive firefighting system built to Fi-Fi 1 class requirements. The owner chose Skum MK-250 EL remote-controlled fire monitors and a Fishcon fire pump package supplied by In-Mar Systems. The entire firefighting package meets the standards of Det norske Veritas and ABS for FIF-1.

Each Skum remote controlled fire monitor has a capacity of 5,284 gpm with a range of water stream of 425 feet.

The Fishcon engine/pump package is rated 10,568 gpm and includes a Detroit Diesel 16V149TI and an Ingersoll-Rand pump.

The firefighting system is also fitted with a Skum foam proportioning system that will supply a 3 percent AFFF foam solution to the fire monitors. Foam will be stored in converted 16,000 gallon tanks.

Skum/In-Mar Systems were first in the early 80s to supply large capacity monitors to American supply vessels and a number of these have been used in various offshore rig and shipboard fires in the U.S. Gulf, one of them being the Norwegian tanker Mega Borg.

For free literature detailing Skum/In-Mar Systems,

Circle 112 on Reader Service Card

### **Vecom USA Names Gaeta Manager Marketing & Sales, Northeast**

Douglas V. Gaeta has been named manager, marketing and sales, for the marine/industry, Northeast Region.

Headquartered in Vecom's New Jersey office, Mr. Gaeta will be responsible for managing all marketing and sales activity for the very diversified marine/industrial, chemical and equipment product line represented by the company.

Mr. Gaeta, a graduate of Kings Point, brings to Vecom 25 years of experience in sales, marketing and management in both the marine/industrial field.

Before joining Vecom, he worked with Gamlen, Rochem and, most recently, Unitor.

For complete information and literature describing its full chemical and equipment line of Vecom,

Circle 174 on Reader Service Card

Maritime Reporter/Engineering News



## MEGAYACHTS: A 'MEGA' MARKET FOR U.S. BUILDERS & SUPPLIERS

By James R. McCaul, President  
IMA Associates, Inc.

**A** detailed analysis of the entire U.S. marine industry was recently completed by IMA Associates. The study examines the prospects for vessel construction and major modifications in 24 marine business sectors. Megayacht construction is one of the sectors examined. This article highlights some of the more interesting study findings and conclusions.

Statistics compiled by the Department of Commerce indicate that production and repair of pleasure boats in this country is a \$4.2 billion business. The industry employs 43,000 workers. Details are shown in Exhibit 1.

### Pleasure Boat Exports

The value of U.S. pleasure boat exports was \$816 million in 1991. As shown in Exhibit 2, boat exports have been steadily increasing over the past five years and are expected to continue to grow through 1992. Pleasure boat construction in the U.S. has been one of the few marine activities in which U.S. manufacturers have been actively expanding export sales.

A 120-foot, Detroit Diesel-powered megayacht from Broward Marine.

The major markets for U.S. boat exports are Canada, Japan, and EEC countries. Japan alone accounted for boat export sales totaling \$163 million in 1990 and \$152 million in 1991. In contrast, imports of pleasure boats from Japan were only \$37 million in 1990—producing one of the best export-to-import ratios of any U.S. industry for that year. Details for exports and imports during 1990 are shown in Exhibit 3.

The Department of Commerce reports that "the U.S. pleasure boat industry is one of the few consumer goods industries that has an overall trade surplus." DOC goes on to say that the growth of U.S. pleasure boat exports has been "a bright spot" during the recent recessionary period.

While yachts ranging from 80 to 150 feet in length are only a small portion of the pleasure boat sector,

they represent a very interesting market for builders and equipment suppliers. According to IMA records, U.S. builders during the past three years have delivered more than 80 motor yachts over 80 feet in length. The records indicate that 24 megayachts were delivered in 1989, 34 in 1990 and 26 in 1991.

### Outlook For Megayacht Construction

Like other parts of the economy, U.S. pleasure boat builders have been impacted by the downturn in economic activity over the past year. As indicated by data in Exhibit 1, industry shipments in current dollars declined from \$5.7 billion in 1989—to \$5.2 billion in 1990, \$4.8 billion in 1991. In constant dollars the decline has obviously been more significant.

Contributing to this decline have been changes in the tax law. The recently introduced 10 percent luxury tax on expensive boats has been deadly for pleasure boat manufacturers. However, this luxury tax has had the most impact on yachts in the price range from \$100,000 to \$1 million. Large megayachts costing \$3 million to \$7 million are sold

(continued on page 14)

**Exhibit 1: Trends & Forecasts: Boat Building & Repairing**  
SIC 3732 (In millions of dollars except as noted)

ITEM	1987	1988	1989	1990 <sup>1</sup>	1991 <sup>2</sup>	1992 <sup>3</sup>
<b>INDUSTRY DATA</b>						
Value of Shipments <sup>4</sup>	5353	5935	5739	5240	4810	-
Value of Shipments (1987\$)	5353	5740	5312	4670	4231	4147
Total Employment (000)	57.2	62.8	60.4	51.2	43.0	-
Production Workers (000)	47.1	51.9	49.2	41.3	34.7	-
Average Hourly Earnings (\$)	8.13	8.22	8.44	8.58	8.76	-
Capital Expenditures	134	141	120	-	-	-
<b>PRODUCT DATA</b>						
Value of Shipments <sup>5</sup>	5219	5896	5613	5123	4702	-
Value of Shipments (1987\$)	5219	5693	5180	4566	4072	4054
<b>TRADE DATA</b>						
Value of Imports	-	-	404	279	237	-
Value of Exports	-	-	615	793	816	-

<sup>1</sup>Estimate, except exports and imports. <sup>2</sup>Estimate. <sup>3</sup>Forecast. <sup>4</sup>Value of all products and services sold by establishments in the boat building and repairing industry. <sup>5</sup>Value of products classified in the boat building and repairing industry produced by all industries. Source: U.S. Industrial Outlook 1992.

**MEGAYACHTS**  
(continued from page 13)

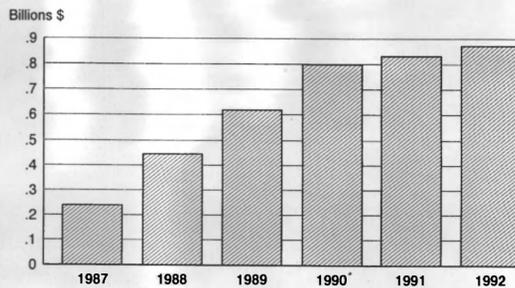
to very wealthy individuals. A luxury tax may only marginally impact the decision of a multimillionaire who wants to purchase a yacht. Further, many U.S.-built megayachts are sold to foreign customers who are not subject to the luxury tax.

**Key Players In This Business Sector**

Among the principal builders of megayachts are Broward Marine, Christiansen Yachts, Burger/Diaship, Denison Marine and Westport. Trinity Industries has developed a presence in this market. Hatteras has also moved into the megayacht sector—though its principal market focus continues to be

on luxury yachts under 77 feet. IMA's report, "Five-Year Outlook for the U.S. Marine Industry," contains additional information on the megayacht and other small vessel construction sectors. It includes a listing of megayachts delivered over the past three years. An assessment of construction and equipment requirements for ferries, passenger vessels, tugboats, inland towboats, barges, patrol boats, fishing boats and other small vessels is provided in the report. The 190-page report is available for \$575. Included as part of the price is a market update to be issued next April. To order contact IMA Associates Inc., 600 New Hampshire Avenue, NW, Suite 140, Washington, DC 20037; telephone: (202) 333-8501; or fax: (202) 333-8504.

**Exhibit 2: Trend in U.S. Pleasure Boat Exports**



Source: U.S. Industrial Outlook 1992

**Exhibit 3: U.S. Trade Patterns – Boat Building & Repairing**  
SIC 3732 (In 1990; in millions of dollars, percent)

EXPORTS			IMPORTS		
	VALUE	SHARE		VALUE	SHARE
Canada & Mexico	134	16.8	Canada & Mexico	94	33.6
European Community	316	39.8	European Community	36	13.0
Japan	163	20.6	Japan	37	13.4
East Asia NICs	22	2.6	East Asia NICs	82	29.3
South America	9	1.1	South America	3	1.2
Other	149	18.8	Other	27	9.5
<b>World Total</b>	<b>793</b>	<b>100.0</b>	<b>World Total</b>	<b>279</b>	<b>100.0</b>

**TOP FIVE COUNTRIES**

	VALUE	SHARE		VALUE	SHARE
Japan	163	20.6	Canada	92	33.2
Canada	126	15.9	Taiwan	56	20.2
Italy	53	6.7	Japan	37	13.4
Spain	48	6.0	Singapore	17	6.0
United Kingdom	47	5.9	France	11	4.1

Source: U.S. Industrial Outlook 1992

**Exhibit 4: 80-Foot+ Motor Yachts Delivered by U.S. Builders**  
(1989-1991)

YARD	NO.	YARD	NO.	YARD	NO.
Admiral Marine	2	Derektor	2	Monterey Marine	1
Angus Yachts	1	Fantare	4	Palmer Johnson	1
Barattucci Yachts	1	Freepport Shipbuilding	1	Swiftships	1
Broward	22	Hatteras	4	Tempest	3
Burger	9	Infinity Yacht	1	Trinity Yachts	1
Christensen	8	Jones Goodell	1	Westport	6
Delta Marine	4	Knight & Carver	1	Workboats Northwest	2
Denison Marine	7	Lydia Yachts	1	<b>Total Delivered</b>	<b>84</b>

**PROPULSION TYPE**

Detroit Diesel/DDDEC	35	GM	10	Deutz MWM	5	Cummins	2
Caterpillar	16	MTU	9	MAN B&W	2	NA	5

**HULL MATERIAL**

Aluminum	47	FRP/Composite	8	Fiberglass	11	Other	6
Steel/Aluminum	1	FRP	5	Fiberglass/Airex	6		

**Major U.S. Yacht Builders Discuss Future Construction Opportunities**

Maritime Reporter Staff

The yacht and pleasure boat building industry, which showed significant expansion over the last few years, remains one of the brightest sectors of the U.S. marine industry; one in which the U.S. actually enjoys a favorable trade balance with Japan and an export market.

Interviews conducted by MARITIME REPORTER with the leaders in the yacht-building industry revealed that, despite the enactment of the 10 percent luxury tax, which severely hurt some U.S. builders, the yacht construction sector should remain a significant growth market in the U.S. over the next several years. In particular, the megayacht market should prove to be lucrative for many U.S. builders who have the facilities and craftsmen to construct these detailed-intensive vessels. Already about 40 megayachts are under construction or on order in the U.S.

As of press time, an amendment repealing the boat luxury tax was expected to be attached to the first



The 97-foot, Gilgenast-design Leda was the first megayacht built by Trinity Yachts, a Gulfport, Miss., yacht builder.

appropriate tax vehicle when Congress reconvenes. Elimination of the luxury tax and predicted economic upturn in the spring could well cause yacht sales to rebound to late 1980 levels or higher.

Leslie Lallande, project manager for Swiftships, Inc., at its Site 1 location, said his company, like other

U.S. builders, has been hurt by the boat luxury tax.

"We haven't signed a contract since the tax," said Mr. Lallande. "It's had a dramatic impact on the industry," he stated. Mr. Lallande said that the boat luxury tax in combination with the economic recession makes people more conservative,

either looking more to the second-hand market or to a builder that is well-established in the megayacht sector. "We are at the entry level stage," he said, "and its been [the tax] a definite roadblock."

Randy Rust of Westport Shipyard, Inc., which has been active in building both commercial and pleasure boats for the past 15 years, also agreed that the tax hurt yacht sales. "Since the luxury tax has taken effect, we have made no direct retail sales and our East Coast representative has made only one sale which is subject to the luxury tax," stated Mr. Rust. "While the economy in general has had some effect, with repeal of the luxury tax, I expect we'll see an increase in yacht sales." According to Bill Shakespeare, director of marketing for Knight & Carver Custom Yachts, Inc., of San Diego, his company's gross sales have plummeted since the excise tax on vessels costing over \$100,000 was announced.

"At that time," said Mr. Shakes-



Westport-built yacht Lestralaw.

peare, "we had about \$12 million backlog in-house and haven't closed a domestic customer since. We have several smaller projects for export to the Japanese market and are working on other business potentials."

Mr. Shakespeare pointed out that as many as 25,000 direct industry jobs may have been lost as a result of the excise tax.

#### U.S. Megayacht Builders

Trinity Yachts, Inc., one of the newer companies in the megayacht market, completed the 97-foot Leda, last year. This year, according to William S. Smith III of Trinity Yachts, the firm is building a 72-foot twin-diesel sportfishing yacht for foreign owners and a 30-foot aluminum tender/landing craft for use on a 250-foot superyacht.

Major multimillion-dollar reconstruction projects at the yard include extensive modification work on the 250-foot superyacht Golden Odyssey and the 192-foot October Rose, both foreign-flag vessels. The Golden Odyssey is the first superyacht drydocked at Trinity's 240- by 120-foot drydock.

"The luxury sales tax has adversely affected the sale of yachts that were U.S. flagged," said Mr. Smith. "The repeal of the luxury sales tax will help our sales of new construction, but it will take some time to get the word out to the public after the tax has been removed."

Another new entrant to the megayacht market is Swiftships of Morgan City, La. The Louisiana builder is nearing the completion of the 155-foot Intrepid, one of the largest megayachts ever built in the U.S., and first in a series of orders placed by an offshore corporation to G.I. Robinson Yacht Designs, Inc. of St. Augustine, Fla.

The Caterpillar 3516TA-powered all-aluminum, four-deck Intrepid has a range of about 4,700 nautical miles and a cruising speed of 18 knots. Auxiliary power is also provided by two 165-kw Caterpillar



The 87-foot yacht Notre Dame from Knight & Carver.

3306 diesel generators.

In December 1990, Swiftships delivered a 117-foot megayacht Safe Conduct II for the U.S. market, and will deliver an 86-footer for a domestic owner shortly.

Bollinger Machine Shop & Shipyard, Lockport, La., is expected to secure a contract to build a 182-foot megayacht, the largest of her type to be built in the U.S.

The luxury megayacht Miss Pauline, built by Broward Marine in

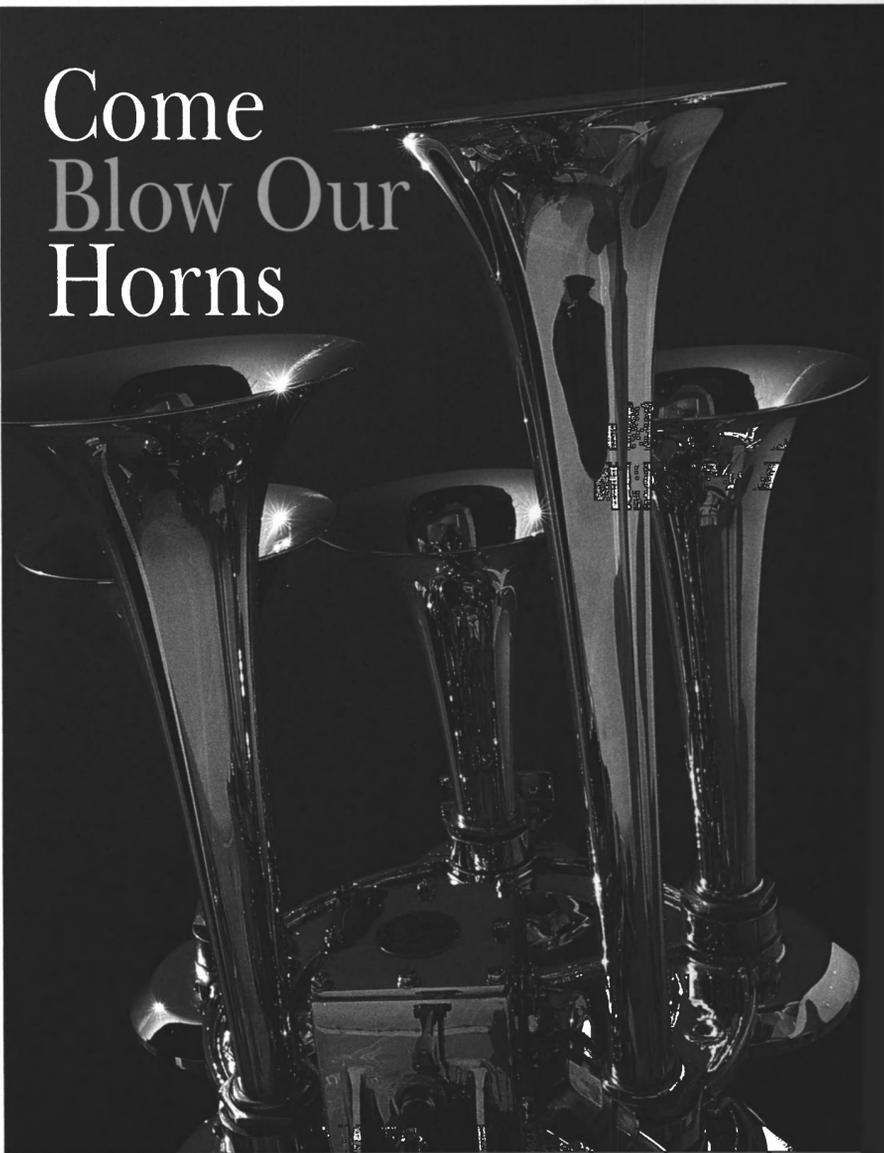
Fort Lauderdale, Fla., features Ulstein-Liaaen lightweight fixed-pitch Speed-Z type FPZ-47 propellers. The units are powered by 1,500-hp diesels which give the vessel a cruising speed of 24 knots.

Phillip Chrysler of Infinity Yachts, Inc., Ft. Lauderdale, Fla., said the luxury tax is the "single biggest reason" why his company's sales are off. Infinity Yachts' latest delivery was the 1991-built 56-foot Infinity D/DC (Duo-Delta Conic

Hull) sport yacht, powered by an 8V92 DDEC Detroit Diesel with surface drives.

The last three boats sold by Infinity, according to Mr. Chrysler, were for export, but, he said he is "guardedly optimistic that the domestic market will rise" in the coming years. Freeport, Fla., builder Freeport Shipbuilding delivered one megayacht last year and is constructing a second this year. The 127-foot by 24-

(continued on page 16)



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February, 1992

**Major Yacht Builders**  
(continued from page 15)

foot all-aluminum, three-deck megayacht is powered by three Caterpillars and Nomera waterjets for a domestic owner.

On the East Coast, construction of a 114-foot luxury motoryacht "MIT sea AH" is well underway at Derecktor's Mamaroneck, N.Y., yard. She will be powered by twin MTU 12V396RE94s, and is scheduled to

be delivered in the spring of 1993.

In the Midwest, Palmer Johnson, the established Sturgeon Bay, Wis., yacht builder, was recently contracted to build a 131-footer by a European client for delivery in 1993. The new yacht, designed by Tom Fexas of Florida, joins four other projects underway at "PJ"—two sailboats of 107 and 116 feet, as well as motor yachts of 80 and 90 feet.

Said Mike Kelsey, chairman of Palmer Johnson, Inc., "Prospective

buyers are waiting to see if the tax will be repealed; we believe our sales will increase with its repeal."

Producing diner and excursion vessels with passenger capacities as large as 225, Skipperliner Shipyards in LaCrosse, Wis., is also well-known in the custom-designed luxury motoryacht market. Skipperliner's 600 Coastal Motor Yacht, designed in-house, has an overall length of 60 feet with standard twin Caterpillar 3208TAs. Other aluminum-hulled



Artist's conception of the 114-foot Derecktor-built MIT sea AH.

models include the 620, with a 62-foot length, and the 700, with a 66-foot length.

Well-established in the megayacht business on the West Coast is Christensen Motor Yachts. According to Dave Christensen, during 1990, the Vancouver, Wash., firm delivered five megayachts in the range of 110-150 feet. Since the luxury tax, however, Mr. Christensen said that his firm hasn't delivered one megayacht to a domestic owner. Christensen exported one megayacht to Italy last year, and is constructing two others for owners in England and Belgium.

Also out on the West Coast is Puglia Shipbuilding, Inc. The Tacoma builder took over the construction of a 150-foot, Caterpillar-powered megayacht following the demise of Tacoma Boatbuilding.

In Westport, Wash., Westport Shipyard's latest delivery is a 96-foot, Caterpillar 3412TA-powered Westship called Tahiti. Westport also has on order a 98-foot Westship, powered by 16V92TA DDEC Detroit Diesels, and two 106-foot Westships, which are both powered by MTU 8V 396TE94s.

Seattle-based Workboats Northwest delivered the 103-foot aluminum Shana in 1989 and was scheduled to deliver a Detroit Diesel-powered 90-footer in 1991.

**For Further Information**

For free literature detailing the yacht construction or repair services of any of the builders reviewed in this article, circle the appropriate number on the Reader Service card bound into the back of this issue. The table below contains the proper Reader Service number for each shipyard.

Reader Service Number Table	
Shipyard	Reader Service #
Bollinger Machine	118
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Freeport Shipbuilding	122
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Palmer Johnson	125
Puglia Shipbuilding	126
Skipperliner	133
Swiftships	127
Trinity Yachts	128
Westport Shipyard	129
Workboats Northwest	130

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Nuclear submarine equipped with Maxim desalinator. General Dynamics Photo



Circle 235 on Reader Service Card

### Lykes Bros. Request To Act As General Agent For Foreign Company Denied

The Maritime Administration has denied Lykes Bros. Steamship Co. permission to act as general agent for Di Gregorio Navegacao Ltda (Di Gregorio), a Brazilian company, in trade between the east coast of South

America and the United States.

In denying Lykes' request, the agency said that Lykes had failed to demonstrate the required special circumstances and good cause required by section 804(a) of the Merchant Marine Act, 1936, as amended.

A notice of the application, assigned Docket S-882, appeared in the **Federal Register** on August 3. The closing date for comments sub-

sequently was extended to September 10 and October 8, 1991.

Crowley Maritime Corp., together with its subsidiaries responded to the notice. Crowley noted that it operates non-subsidized U.S.-flag liner services on essential Trade Route 2 and, said that under the agency arrangement described in Lykes' application, Lykes would provide cargo solicitation and other

marketing service for foreign-flag liner vessels competing directly with Crowley's U.S.-flag service.

Section 804 precludes subsidized U.S.-flag operators or their affiliates from operating foreign-flag vessels which compete with essential U.S.-flag shipping services unless the Secretary of Transportation waives the provision of this section for a specific period of time.



## The world's top shipbuilders turn to New Zealand for waterjets

With waterjets the preferred propulsion system for new age fast ferries, work and patrol boats, commercial influences demand reliability and engineering excellence. That's why more and more shipbuilders are turning to New Zealand, the home of Hamilton Jet.

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techniques, the only choice when it came to selecting the propulsion system for a new ferry was Hamilton Jet. A 33 metre, 35 knot passenger ferry built by Goriki Shipyard, "Nyenufabushi" was commissioned to carry passengers quickly between offshore islands. Crucial design factors were high speed, reliability, passenger comfort and outstanding manoeuvrability. Construction had to be certified to NKK standards. All these were met using the advanced technology and innovative features found only in Hamilton waterjets, adding "Goriki Shipyard" to an impressive and ever growing reference list of satisfied customers worldwide.

Hamilton Jet has built its reputation on providing the best marine jet propulsion systems anywhere in the world. That's why designers from the most technically advanced nations recognise New Zealand quality and expertise and have confidence in specifying Hamilton Jet.



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Circle 344 on Reader Service Card

### Zidell Marine Launches 270-Foot Chip Barge

Zidell Marine Corporation recently launched Barge 26, the first of two chip barges chartered by Tidewater Barge Lines. Each barge is 270 feet x 42 feet x 16.5 feet. Expected completion date for the second chip barge is March, 1992.

For more information about the services of Zidell Marine Corporation,

Circle 7 on Reader Service Card

### ACS Industries Awarded Contracts To Equip Sixteen Vessels

ACS Industries, Inc. has been awarded contracts for the supply of oil/water separator systems for the Trinity Marine Group and Bender Shipbuilding and Repair Company. Two of ACS's oil/water separator systems will be used on each of the sixteen boats that Trinity and Bender are constructing for the Marine Spill Response Corporation (MSRC). MSRC is an independent, nonprofit organization created by the oil industry in response to many of the requirements of the Pollution Act of 1990, as passed by the U.S. Congress.

The MSRC is setting up a network of response centers around the country with a mission of providing the best effort response to oil spills. The oil recovery vessels ACS oil/water separator systems are deployed at various ports around the United States to assist in clean-up operations.

The ACS units were tested at its Houston facility and tested at sea. The ACS units met the required performance for the oil/water separator units.

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**Marine Equipment  
Offered By Kohlenberg  
—Literature Available**

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for Safety of Life At Sea (SOLAS), adopted by the International Maritime Organization (IMO).

For free literature detailing the marine product line of Kahlenberg Brothers,

Circle 111 on Reader Service Card

**Drew Launches Treatments  
To Prevent Problems  
In Marine Sanitary Systems**

Drew's new biologically active treatments, "Ameroid Draingard" cleaner and drain treatment and Ameroid "MSD-PAK" organic waste treatment, contain specially formulated strains of bacteria. These bacteria not only digest organic waste to clear piping, but also help to maintain the natural biological activity within marine sanitation devices (MSD), contaminated holding tanks (CHT), or other sanitary system fixtures.

The bacteria in Draingard cleaner have the ability to digest the organic waste typically found in marine sanitary systems and prevent the formation of new organic deposits.

Draingard treatment's neutral pH ensures that there will be no difficult handling requirements. With regular use, time spent manually cleaning and replacing sanitary system piping is minimized.

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**McNab Linear Fluid  
Resistivity Monitor  
Available In Three Ranges**

McNab, Incorporated recently announced that a new fluid resistivity monitor, available in a choice of three linear, automatically temperature compensated, specific resistance ranges, has been added to the Aqua-Purometer family of fluid quality monitoring systems.

Dubbed the Aqua-Purometer I-D, this new specific resistance monitor has been designed and manufactured along the same rigid standards of quality and dependability as other Aqua-Purometers that have been performing admirably in the field year after year. The choice of one of three, factory set, linear ranges makes the API-D suitable for all types of fluid quality monitoring, including R/O applications, industrial process streams and effluent analysis. Hard to read, compressed hemilog meter scales of other designs have been replaced by the API-D's linear circuitry and linear meter scale with equal specific resistance graduations across the scale.

A special advantage of the Aqua-

Purometer I-D, says McNab, is the unit's automatic zero circuitry, which forever eliminates the need for zero calibration: the API-D automatically zero calibrates itself continuously. Another feature is the hefty 5 amp control outputs, which may be accessed as both normally open and normally closed, powered or isolated, allowing connection to practically any common control or alarm indication devices. This alarm setpoint may be established anywhere within the range of the instrument, via an internal setpoint control the setpoint is meter displayed for absolute accuracy and periodic verifying.

The Aqua-Purometer I-D is housed in a rugged NEMA 4X enclosure, while a see-through NEMA 4 front cover is available as an option. The front panel contains a power switch, a large easy to read analog meter, and alarm and power indicators that can be viewed over a full 180 degrees F. The API-D has been designed for use with McNab's 3/4" NPT specific resistance sensing cells, which feature built-in, high precision, automatic temperature compensation and excellent sampling with reduced air entrapment.

For more information on the API-D Specific Resistance Monitor or other McNab products,

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Platform In North Sea  
Successfully Installed**

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The ACS units were developed and tested at its Houston facility along with testing at sea. The specified requirement for the MSRC oil/water separator units is a discharge no greater than 100 ppm oil in water. The ACS units meet or exceed this requirement with discharge as low as 15 ppm under ideal conditions.

ACS Industries, Inc., headquartered in Rhode Island, with manufacturing facilities in Woonsocket, Rhode Island, Houston, Texas, and Monterrey, Mexico, has been in business for over 50 years with more than 30 years' experience.

For additional information about the ACS oily water separation system or any of the products manufactured by ACS Industries,

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17

**Megayacht Equipment Offered By Kohlenberg —Literature Available**

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Circle 216 on Reader Service Card

## ' We Need America First In U.S. Waters '

James Bovard's call for an end to the Jones Act of 1920, which requires all shipping between U.S. ports to be carried on American-built, -owned and -crewed ships (cabotage laws), ignores critical evidence that would alter the conclusion he has reached ("Torpedo Shipping Protectionism," Editorial Page, Wall Street Journal).

For example, Mr. Bovard would have us believe that the build-American provisions of cabotage laws are singularly responsible for such disparate circumstances as the criminal sales of maritime jobs, underutilization of the Panama Canal, exorbitant union salaries, shortages of home heating oil, and the corrupt Congress, which he alleges. Fortunately, the Jones Act is spared the blame for world hunger and the drug epidemic.

If Mr. Bovard dismisses the cabotage laws' role in national defense—the main purpose for which it was enacted. All maritime nations have such laws. In the Persian Gulf War, we saw a compelling example of cabotage laws' value. In a more protracted fight, putting trained people on merchant vessels will always be a major hurdle; the barge and towing industry can provide this rich reserve of trained seamen. There are more onboard jobs in our industry than in any other maritime sector. Without cabotage, there would be little or no ready reserve.

Mr. Bovard ignores the fact that the Jones Act encourages fierce competition on the U.S.'s waterways. In the tug and barge industry, scores of towing companies operating on the inland rivers and along the coasts of the U.S. vie with one another for cargoes. Without the Jones Act, that competition would disappear.

And there is a new and powerful argument for cabotage that Mr. Bovard overlooks: preserving and protecting the environment. Foreign crews, manning vessels built below U.S. standards, would have only scant knowledge, if any, of complex U.S. and state environmental laws and regulations. The risk of foreign-owned, foreign-crewed vessels operating in U.S. waters beyond the reach of U.S. laws is a chance Americans are unwilling to take.

Joseph A. Farrell,  
President,  
American Waterways Operators,  
Arlington, Va.

## Kvaerner Govan Wins \$360 Million Order For 4 Chemical Carriers

An order worth more than \$360 million for four chemical carriers has been won by Kvaerner Govan Ltd., the Norwegian-owned shipyard in Scotland.

According to the company, the order from Saudi Arabian and Norwegian buyers is the largest single merchant shipping contract ever placed in Britain.

The contract is dependent on the U.K. Government agreeing to pay a subsidy equal to 13 percent of the cost of building the ships, the maximum currently allowed under European Community rules.

Two more similar vessels of 37,500 dwt will be built at Kvaerner's Kleven yard in Norway, in addition to the four ships to be built in Scotland, bringing the total value of the contract to \$540 million.

Three of the ships are being built for the Saudi Arabian company National Chemical Carriers, while the remaining three have been ordered by the Norwegian-owned Storli Group.

The shipping and shipbuilding group Kvaerner AS bought the Govan yard on the River Clyde in 1988.

The Govan yard's total order book is now worth approximately \$2.3 billion.

## Shell To Charter 4 New Product Tankers

Shell International Marine will reportedly bareboat charter four new 40,000-dwt double-hull product tankers under construction at Halla Engineering & Heavy Industries in South Korea.

The contract calls for a 14-year lease, with an option to cancel after the first seven years. The charter rate was not disclosed.

Built to Det norske Veritas class, the tankers, which will be delivered between July 1993 and March 1994, will have a design draft of about 36 feet and will conform with the requirements of the Oil Pollution Act of 1990. Their construction will be supervised by Shell Seatex, a division of Shell International Marine.

The tankers are expected to be the base of a phased replacement program of the Shell Group's small product tanker fleet. Shell International operates a current fleet of 10 tankers of this size built between 1978 and 1980.

## First Thermal Offers New 'Villam' Series Thermal Fluid Heaters

After an extensive four-year study of high-efficiency performance in the field, First Thermal Systems, Inc., Chattanooga, Tenn., announced the release of the Villam Series of high-efficiency thermal fluid heaters for marine applications.

The Villam Series performance range is 2.5 MM BTU/Hr to 24 MM BTU/Hr operating at an average of 89 percent efficiency. Villam uses no refractory and is compact in size. The company reports that fuel savings alone can pay for the Villam MHEHC in a few months. Flexibility in design is also important to allow user friendly exhaust stack locations and inlet and outlet locations. ASME, ABS and USCG certified.

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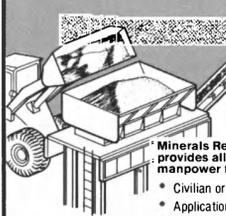
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**Ultra Fend Sheets  
Protect Terminal Piles  
From Costly Wear**

To protect its wood pilings from costly wear and abrasion, the Fisher Island ferry terminal recently installed "Ultra Fend" fendering material from Ultra Poly, Inc., Tacoma, Wash.

According to **Paul Mazzacane**,

director of marine operations for Fisher Island, which is located on the Intracoastal Waterway near downtown Miami, the constant wave action from passing vessels exacerbated by wind conditions planed 5-foot-long, 3-inch-wide sections on the ferry terminal timbers. After machining away the worn sections of the pilings, "Ultra Fend" sheets were lag bolted onto new wood face. The material resists the constant chafing and abrasion of the 12-inch-wide

rub rails on the ferries.

**Mr. Mazzacane** plans to extend the Ultra Poly fenders to his barge loading docks.

In addition to the use of large sheets of Ultra Poly on the terminal, Fisher Island also bought and installed half rounds of "Ultra Fend" for installation on the dolphins seaward of the terminal docks. Piles also are subject to the impact and abrasion of rocking and impacting hulls. "Ultra Fend" is manufactured

up to 40 feet long for gap-free facing. The half-round sections stopped planing of the piles and extend their service life.

For further information on "Ultra Fend" fendering material from Ultra Poly,

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**L.C. Doane Nominated  
For Small Business Award**

The L.C. Doane Company, a Connecticut lighting manufacturer, has been nominated for the U.S. Small Business Administration's Small Business Subcontractor for 1991. The nomination was made by Bath Iron Works (BIW) of Bath, Maine, a prime U.S. Government contractor.

L.C. Doane designs and manufactures low voltage AC/DC fluorescent lighting, 220 volt 50 Hz fluorescent lighting and emergency fluorescent lighting for installation on guided missile destroyers as part of BIW's DDG construction program. Nomination for the award is based on a demonstrated excellence in subcontract work performance by companies having fewer than 500 employees.

The company was recognized in 1989 and 1991 as a Top 10 Supplier to Newport News Shipyard for its commitment to quality production, meeting contractor delivery schedules and reducing costs.

L.C. Doane produces incandescent and fluorescent lighting for the U.S. Navy and the commercial marine industry, with particular emphasis on solving specialized lighting requirements and rigorous testing to ensure fixture durability against vibration and shock.

For free literature detailing the marine lighting products of L.C. Doane,

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**Diversified Technologies  
Awarded Support Contract  
By Korean Company**

Diversified Technologies of Chesapeake and Alexandria, Va., has been awarded a contract by Joo Chang Industrial Co., Ltd., Seoul, Korea, in support of the Korean National Maritime Police 3,000-ton salvage ship currently under construction.

Diversified Technologies will provide a complete Debeaching and Heavy Lift System along with its Model 69 Tow Pin Assembly. Delivery of both systems will be made this month and next month.

Diversified Technologies is a full service naval architecture and marine engineering firm experienced in specialty design, as well as repair, modification, and conversion of tugs, ferries, barges, tankships, and cargo vessels of all sizes.

For free literature detailing the services of Diversified Technologies,

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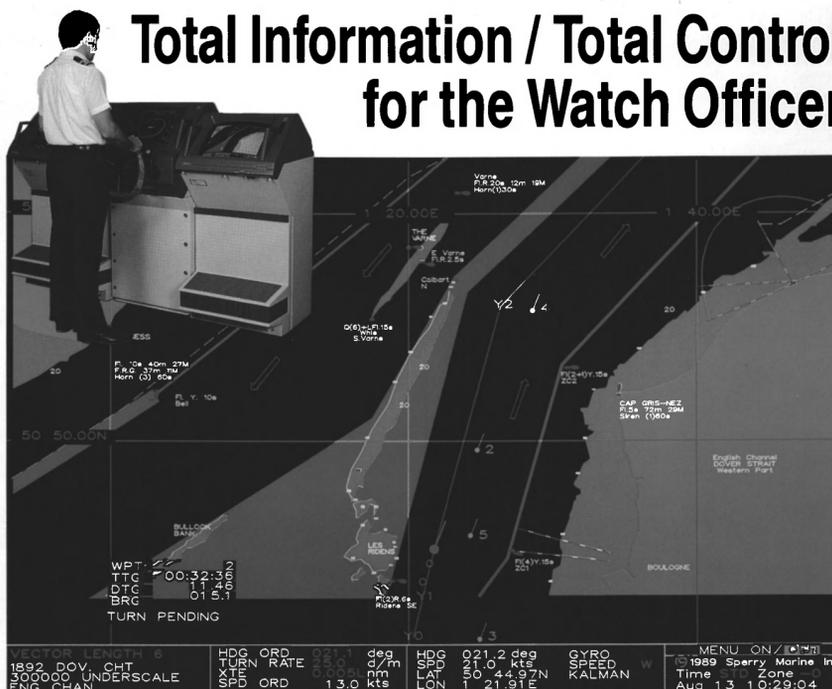
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## SOUTHERN MARINE INDUSTRIES

Maritime Reporter Staff

**S**outhern shipyards, for years the traditional suppliers of equipment for the Gulf of Mexico offshore sector, now build, repair and convert boats, ships and other vessels for the entire cross-section of marine sectors—passenger boats, casino riverboats, Navy oilers, dredges, offshore supply boats, Navy combatants, oil spill response vessels, barges, etc. This review examines some of the latest deliveries and current activity at Southern shipyards.

### Oil Pollution Act Spurs New Orders For OSRVs

The Marine Spill Response Corporation (MSRC) awarded a \$40 million-plus contract to Bender Shipbuilding & Repair Co., Inc., Mobile, Ala., in 1991 for four 210-foot oil spill response vessels, currently under construction at the yard. Other work includes drydocking, repair and sponson modification on the 470-foot cable repair ship USNS Meyer, operated by the MSC, overhaul of the Corps of Engineers' dredge Wheeler, and overhaul work on the NOAA vessel Mt. Mitchell

and the USNS Redstone (T-AGM-20). Last year, the Alabama firm completed over 190 projects in repair and new construction for foreign, domestic and government owners.

The Pascagoula, Mississippi, shipyard of Sea-Fab, Inc., repaired 45 vessels, built one work barge and converted three other boats during 1991. Most notable of the company's projects during the year was the conversion of an oil spill recovery vessel for the Delriver Bay Corp., Lewes, Del. Sea-Fab also built a work barge for Chevron Pipeline Company, New Orleans, La.

Among the work underway at the Mississippi yard's facility this year is the construction of two oil spill recovery vessels for Clean Coastal Waters, Inc., Long Beach, Calif., as well as repair work on a cargo/supply vessel for Tidewater Marine Services, New Orleans, La.

Six smaller all-welded aluminum boom boats were built by SeaArk Marine, Inc., Monticello, Ark., for Sun Refining & Marketing Company, Philadelphia, Pa. One 24-foot "Transporter" boat is located at six different terminal sites.

### Offshore Supply Boat Construction, Conversion

Gulf Coast shipyards, which traditionally served the needs of the Gulf of Mexico offshore sector, are finding new opportunities in foreign markets. For example, Steiner Shipyard, a Bayou La Batre, Ala., builder, has recently completed two contracts for four offshore vessels for Seacor Offshore, Inc., Morgan City, La., owner and operator of a fleet of 51 offshore vessels.

One of the vessels Steiner completed for Seacor was the Veesea Typhoon, a 180-foot by 40-foot vessel used for standby rescue work in the North Sea. The 1976 vintage supply boat was completely updated by Steiner and is operated by Seacor and a joint venture partner, Vector Offshore.

The other contract was for three 220-foot vessels that have been delivered to Seacor over the past two years. The Sun Island, Discovery Island and most recently the Avery Island were built from modules of three 180-foot supply boats that had been abandoned by a now-defunct Gulf Coast shipyard.

"The existing modules were for

180-foot vessels," said **Russell Steiner**, president of Steiner Shipyard. "We had to add 40 feet of hull length to the boats to give Seacor the 220-foot boats they required."

The first two vessels delivered, the Sun Island and the Discovery Island, are working in the Gulf of Mexico for Seacor. Seacor also contracted for a third vessel to work off the West Coast of Africa.

The first two vessels were set up with a pair of rebuilt EMD 12V645-CE2 diesels, each rated at 1,500 hp at 900 rpm and coupled to Marine Gears, Inc., reduction gears at 2.97 to 1 ratio. The Avery Island uses 16V645-CE2 diesels rated at 1,950 hp working with the same gears.

All three vessels are equipped with Cummins-powered bow thrusters. The Avery Island uses a larger thruster than the other vessels, a 500-hp Harbormaster unit.

Located on the Escatawpa River, Homeport Marine Services Inc., Moss Point, Miss., recently completed the conversion of the 187-foot supply vessel Veesea Tempest to a standby/rescue boat with supply capabilities for Seacor Marine, Inc.

(continued on page 24)

**Passenger vessel operators ...**



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**Southern Industries**  
(continued from page 22)

Morgan City, La.

The conversion work represents Seacor's intention to mobilize 10 of its vessels operating in the U.S. Gulf of Mexico and coastwide trade to the North Sea. The boats will serve under contract with Conoco UK.

Seacor president **Glen Fornell**, characterized the conversion work as "extensive." The vessel will com-

ply with the latest rules applying to boats engaged in North Sea safety service and will be capable of meeting the regulations for 250 survivor class boats. The two-tiered extension was fitted to the deck aft of the pilothouse to accommodate survivors in bunks, treatment facilities and seating.

Prior to its delivery of the Veesea Tempest, Homeport Marine Services carried out similar conversion work on the M/V Veesea Topaz and M/V

Veesea Sapphire for Seacor.

The yard also recently delivered a 160-foot all-steel Caterpillar-powered king crab vessel, the Pinnacle, for **Walter L. Casto**, of Mukilteo, Wash. She will be used in the North Pacific and Alaska crab fisheries.

Patterson, La., boatbuilder Gulf Craft was also active in the Gulf of Mexico offshore sector, delivering the 160-foot aluminum crewboats Deanne McCall and Sam McCall, each powered by six Cummins die-



Bender-converted Alton Belle Casino.

sels, and the 130-foot, Caterpillar-powered all-aluminum crewboat Evelyn M. for Offshore Oil Services. Gulf Craft also delivered the 95-foot whale watch boat Voyager II for the New England Aquarium.

**Tremendous Growth For Trinity**

Nineteen-ninety-one was another record year of growth for the Trinity Marine Group.

The range of Trinity's capabilities is reflected in its delivery of a 50-foot mooring boat, beginning of construction of two 328-foot oceanographic survey ships for the U.S. Navy, overhaul of over 250 LASH barges, and major repair and conversion on two megayachts.

In between, some representative deliveries were: over 150 hopper and other barges; an 87-foot aluminum houseboat; two 208-foot hydrographic survey ships, T-AGS-51 and -52, to the U.S. Navy; a 345-foot vehicle barge to Matson Navigation Co.; an 85-foot dinner cruise/excursion boat; eight 85-foot crewboats; twelve 78-foot patrol craft, fast (PCF) to the U.S. Navy (eight for the Philippines and four for a Middle East country); two 260-foot LFG barges; AGOR-23, a 274-foot oceanographic research ship; the 127-foot tug Barbara E. Bouchard; thirteen 174-foot landing craft; two 112-foot steel/aluminum fast patrol boats to Ecuador; and a number of other barges, passenger vessels, and workboats.

Of particular note, are the start of construction on the Hurley, a huge 300-foot dustpan dredge for the Corps of Engineers, two 328-foot oceanographic survey ships for the Navy, a 241-foot towboat, and twelve 208-foot oil spill response boats for the MSRC.

The company, which seems to be growing in leaps and bounds, also acquired certain assets of CE&MCO, a crane and metal components manufacturer in Gulfport, Miss., and added a 15,000-ton drydock at its Beaumont, Texas, yard.

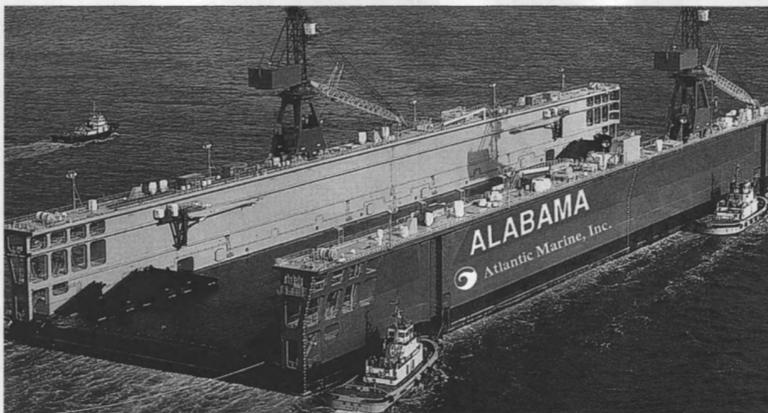
**John Dane III**, president of the Trinity Marine Group, attributed his company's success to its decentralized production and management and operations philosophy.

"It permits our shipyards to operate as individual profit centers," said Mr. Dane.

He added, "While we are indeed very busy, with 11 shipyards, we still have capacity for much more production."

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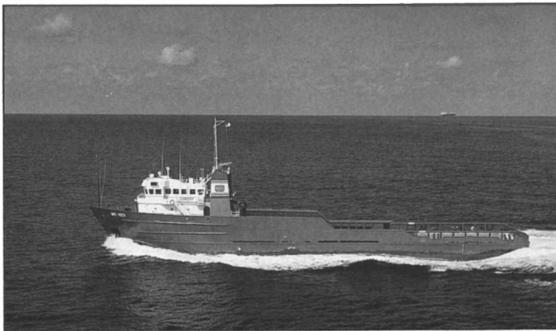
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dale Boat Division, which delivered two 168-foot Viking 2000 Class river towboats in 1991, one for Stokes Towing and one for B&H Towing, expects to receive an order for three tugboats and two river towboats during the first quarter of this year. The firm is currently constructing a 168-foot Viking 2000 Class river towboat and a 110-foot ocean tugboat for E.N. Bisso.

Lacombe, La., builder Balehi Marine delivered three towboats during 1991, the 1,800-hp Choctaw, the 700-hp Jeanne James, and the 700-hp Sally James. The firm also performed two towboat restorations and a number of various repair projects. On order at the yard are two 42-foot by 15-foot by 7-foot 6-inch dredge tender tugs, the C.F. Bean and Jennifer Bean, and a restoration of the towboat John-Tee.

SeaArk Marine, Inc., delivered more than 80 workboats to various commercial and government customers during 1991. The Monticello boatbuilder, which constructs aluminum workboats ranging in size from 17 to 50 feet, has several projects underway for 1992. Cautiously optimistic for their prospects for the new year, SeaArk Marine is already building a 30-foot fireboat for Tampa, Fla., several boats for the Army Corps of Engineers including a 36-foot survey boat, two 30-footers for oil spill response for Mobil Oil Corp., two boats for the U.S. Fish & Wildlife Agency and several boats for the



The new class supply vessel Mr. Vick, from Trinity Marine.

Panama Canal Commission.

#### Multimillion Dollar Market For Casino Boats

Legalized riverboat gaming in parts of Iowa, Illinois, Louisiana and Mississippi has created an annual multimillion-dollar market for many Gulf Coast builders and suppliers.

Service Marine Industries, Inc., (SMI) of Morgan City, La., expects a number of dinner and casino boat construction opportunities in the coming year, and is anticipating landing a number of new orders.

The yard is currently building a new Spirit of Norfolk, a 187- by 40-foot dinner boat for Spirit Cruises.

During 1991, the yard completed the 800-passenger, 175-foot dinner boat Odyssey for Premier Yachts of Chicago, Ill.

Conversion of a 176-foot oilfield supply vessel to a North Pacific crab catcher vessel was also completed, which included the repowering of the vessel with a new Caterpillar 3508 main engine, as well as a new 150-kw Caterpillar generator unit.

Additionally, the ex-M/V Hawaiian Command and M/V Polynesian Command have recently been out-fitted and delivered to Sociedad Pesquera Coloso S.A. of Santiago, Chile, for service in the South American Pacific fishing industry.

During the year, Service Marine was active in USCG and ABS drydock inspections/repairs of oilfield-based supply vessels and tugs, including the reconstruction of a 75-foot, 1,200-hp tug owned by Basin Marine of Morgan City.

Patti Shipyards, Pensacola, Fla., which last year delivered the 2,000-passenger gaming vessel Dubuque Casino Belle and converted the Mississippi Belle II to a gambling boat, is building a 450-foot, 3,000-passenger gambling excursion vessel for the same owners, Bob and Ruth Kehl of Dubuque, Iowa.

During 1991, Patti also built two 65-foot dredge attendant vessels, the anchor tenders Ward and Lusk, for the U.S. Army Corps of Engineers.

The drift collector Reynolds, a 60-by 22-foot harbor maintenance vessel, is presently under construction at the yard for the CoE.

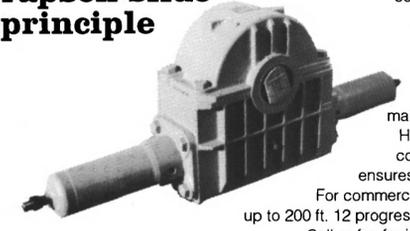
Frank Patti, the owner of Patti Shipyards, Inc., said that the large excursion market and Government contracts were the most profitable for his yard in 1991, both of which have been a mainstay for the Florida builder for the last five years. Mr. Patti expects the company's current contracts to sustain production into early 1993.

The Jacksonville, Fla., yard of Atlantic Marine, Inc. which delivered three paddlewheel casino/dinner vessels during 1991, was awarded yet another gambling boat contract. (continued on page 26)



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**Southern Industries**  
(continued from page 25)

The 222-foot by 66-foot twin-deck casino boat Empress, being constructed for the Des Plaines River Entertainment Corporation, Joliet, Ill., is scheduled for a May 1992 delivery. Two of the Atlantic-built boats, the 201-foot sisters Emerald Lady and Diamond Lady, are operating out of Iowa, while the third, the Par-A-Dice, operates out of Illi-

nois. The Alabama yard of Atlantic Marine, well-situated in the repair market, added a huge 40,000-ton drydock, formerly owned by Todd, which greatly enhanced its repair capacity and almost positioned the firm for potential tanker construction contracts.

Jennings, La., builder Leevac Shipyards, Inc., has been extremely active in the passenger and casino boat market. During 1991, Leevac

delivered the 280-foot excursion boat Belle of St. Louis for Gateway Riverboat Cruises and the 200-foot gaming vessel Casino Rock Island for D.J. Juner.

The firm's prospects for 1992 look good, according to Charles E. Burrell of Leevac. Leevac already has an order for a 288-foot excursion/gaming vessel for Gateway Clipper Fleet, as well as a 60-foot shooting seismic barge for HGS and an after deck conversion project of



The Steiner-built Discover Island.

the Big Orange 23 for Dowell Schlumberger.

Freeport Shipbuilding delivered three boats during 1991, one megayacht and two passenger vessels, as well as performed work under several government repair contracts. The Freeport, Fla., yard is currently building a 127-foot megayacht and converting an excursion boat to a glass-bottom boat for a Panama City, Fla., operator.

**Yards Benefit From Navy Construction, Repair Contracts**

Southern shipbuilders, like many yards around the U.S., are the beneficiaries of Navy, MarAd and U.S. Government vessel construction and repair contracts.

Pascagoula, Mississippi-based Ingalls Shipbuilding, a division of Litton Industries, currently has contracts to build 17 U.S. Navy vessels and three Israeli Navy corvettes. Ingalls workload includes five U.S. Navy Ticonderoga Class (CG-47) cruisers, eight Arleigh Burke Class (DDG-51) destroyers, four Wasp Class (LHD-1) amphibious assault ships, and three SA'AR-5 Class Israeli Navy corvettes, as well as a DD-963 overhaul.

The naval sector has been Ingalls' most active sector and, despite potential reductions in future U.S. defense budgets, Ingalls Shipbuilding believes it "is building the right types of ships in the right markets."

Avondale Industries' Shipyards Division, located in Avondale, La., has been extremely busy with Navy T-AO Class oiler, LSD Class landing ship dock, and T-AGS ocean surveillance ship construction programs. Additionally, the Louisiana builder is finishing the jumboizing of the AO-177 and AO-186 oilers.

Other work at the yard includes repair projects on the Genevieve Lykes and the floating college SS Universe.

During 1991, Avondale delivered the LSD-47, two T-AO-187 Class oilers and three jumboized oilers to the Navy, as well as performing repairs on the USS Stump (DD-978) and several commercial vessels.

New Orleans-based Textron Marine Systems was awarded multi-million-dollar Navy contracts during 1991 for their ongoing LCAC construction program. One contract was worth \$69.1 million for LCAC production work, while a second contract initially worth \$138.9 million could grow to as much as \$300 million if the Navy exercises all options.

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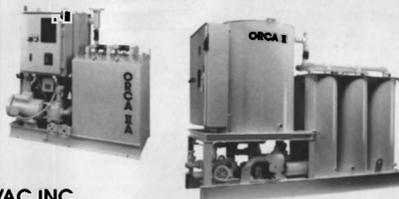
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**sta • bil • i • ty** / n 1 : the quality, state, or degree of being stable; as a 2 : the strength to stand or endure : FIRMNESS b : the property of a body that causes it, when disturbed from a condition of equilibrium or steady motion, to develop forces or movements that restore the original condition 2 : the dramatic effect of NAIAD roll stabilizers on a vessel at sea.

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Whale watch boat Voyager II, from Gulf Craft.

McDermott Shipyard in Amelia, La., which delivered the first of a new class of SWATH (Small Waterplane Area Twin Hull) ocean surveillance ships, the USNS Victorious (T-AGOS-19), is constructing the second, third and fourth of the class, with the first two already christened.

#### Suppliers' Fortunes Linked Closely To Yards

Following the fortunes of regional shipyards, many Southern marine suppliers were able to win or fill significant orders during the year. For example, the two remanufactured GM EMD 16-645CE6 diesel engines for the highly advanced sup-

ply vessel Mr. Vick, built by Trinity Marine, were supplied by Stewart & Stevenson, Harvey, La. Supplying a total of 4,000 hp, the EMDs propel the 220-foot vessel to a speed of 14 knots.

The first of four boats for Oil & Gas Rental Services, Inc., Morgan City, La., the Mr. Vick also features Robertson autopilot, joystick controls, and dynamic positioning system from Robertson Marine Systems, Inc., Metairie, La. The Robertson DP system controls the bow thruster, main engines, and two articulated Willi Becker high lift rudders which can be operated independently or in unison.

Southern Mississippi Caterpillar dealer Puckett Machinery Company, Gulfport, Miss., has been awarded a \$7.7 million order to furnish engines and generators for 12 oil spill recovery vessels. The vessels are to be built by the Trinity Marine Group of Gulfport for the Marine Spill Response Corporation (MSRC), Nashville, Tenn.

The ships will operate in harbors, coastal areas and open oceans to

recover up to 1,900 barrels or 79,000 gallons of oil per hour. They will be homeported in Seattle, Washington, Long Beach, California, Lake Charles, Louisiana, Port Everglades, Fla., and the New York City metropolitan area for quick deployment to spill areas.

**Ben Puckett Jr.**, engine division manager of Puckett Machinery, said, the award was the largest single order in the history of the company. Seventy-two Caterpillar engines will be provided for main propulsion, bowthruster and generator set service aboard the 208-foot vessels.

Bisso Marine Company, Inc., New Orleans, La., has just completed a four-year contract with Bollinger Machine Shop and Shipyard, Lockport, La., by successfully launching forty-nine 110-foot Island USCG patrol boats using the Derrick Barge Ajax. The vessels are being used by the Coast Guard for search and rescue and drug interdiction operations.

Bisso also received another two-year contract from Bollinger to launch thirteen 170-foot U.S. Navy

patrol boats now under construction. The launches will be done by Bisso's 700-ton Derrick Barge Cappy Bisso at the Lockport facility.

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February, 1992

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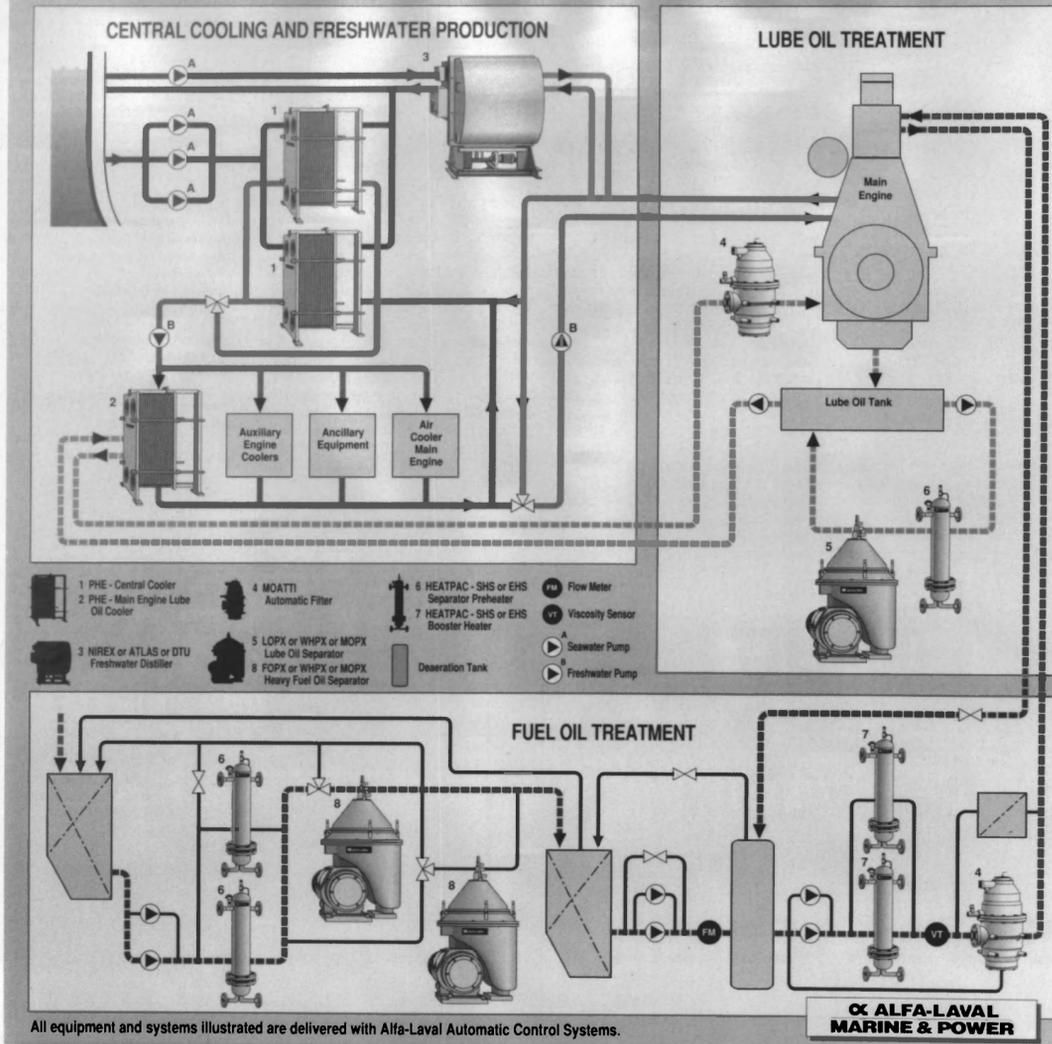
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27



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The megayacht Magnifico, built by Christensen Yachts, Features Lo-Rez Soft Mount systems

## Lo-Rez "Soft-Mount" Systems Are A Sound Choice For Wide Range of Vessels

Beginning with its patented steel-spring vibration isolators in 1956, Vancouver, Canada-based Lo-Rez Vibration Control Ltd. has since developed and marketed widely its lines of flexible couplings, shock mounts, torque limiters, crankshaft dampers and "Soft Mount" systems to the marine industry.

Steel-spring torsionally soft flexible couplings have been extensively used between diesel engines and gear boxes for the effective and predictable control of torsional vibration since 1960.

Lo-Rez steel-spring vibration isolators, long a "must" in shipboard auxiliary generating plants, are coming into wide usage in propulsion engine systems, including direct drive engines of 2,000 hp/600 rpm. When these isolators are used in conjunction with the torsionally soft spring couplings and HLF (High Lateral Flexibility) couplings, a very high isolation efficiency treatment of noise and vibration is available. This combination, as used in the M/V R.B. Young, is particularly useful in hard-mounted gear applications.

The more common Lo-Rez "Soft Mount" system, utilizing the elastomer RT type sound-attenuating flexible couplings is now in use in over 160 propulsion applications,

ranging from stealthy research ships, survey vessels, Coast Guard cutters, U.S. Navy patrol craft and mine countermeasure ships to tugs, dinner/excursion boats and luxury yachts.

Lo-Rez, for example, has supplied systems for six of the eight megayachts delivered by Christensen Yachts over the last three years. When engines and gear boxes are integral, the two units are supported on BR4-TLS thrust-absorbing isolators and the noise-attenuating RT couplings are positioned aft of the gear boxes.

With steadily growing emphasis on the requirement for environmental noise and vibration control, Lo-Rez—now marketing some 75 percent of its product lines in exports—is looking forward to very strong growth, according to **Ted Spaetgens**, the company founder and president. Mr. Spaetgens believes that although Lo-Rez is heavily committed to its industrial business which includes the growing seismic market, he feels that the marine industry will continue to hold the largest potential and challenge. For free literature detailing Lo-Rez "Soft Mount" systems and other noise and vibration control products.

Circle 157 on Reader Service Card

### Goltens Offers New Color Brochure On Diesel Parts, Service

Celebrating 50 years as a major diesel engine repair service and spare parts supplier, Goltens is offering a new full-color brochure.

Re-engining, engine overhaul, main journal and crankpin reconditioning, centrifugal re-babbiting of bearings, line boring, reconditioning fuel injection equipment, in-place machining and spare parts supply are some of the topics covered in detail.

For a free copy of the new Goltens brochure,

Circle 66 on Reader Service Card

February, 1992



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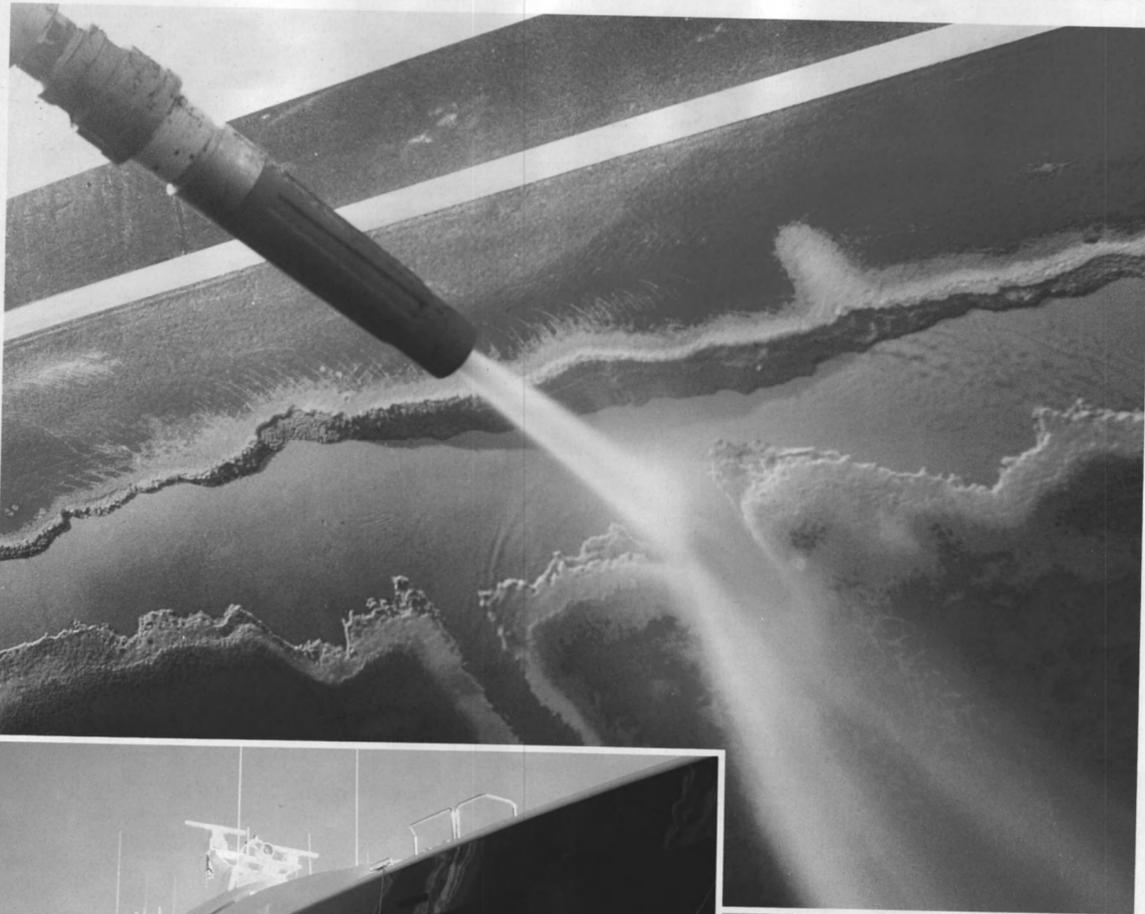
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29

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**Keppel Shipyard Gives World's Largest Tanker New Lease On Life**

Singapore-based Keppel Shipyard, a major operating division of Keppel Corporation Limited, has successfully repaired and refurbished the ultra large crude carrier Jahre Viking (formerly Giant).

The extensive reconstruction job,

worth about \$63 million, was awarded to Keppel Shipyard by K/S Jahre Viking of Norway amid stiff competition, on the strength of the yard's worldwide reputation for quality service and work.

Measuring a massive 1,505 feet long by 226 feet beam, the 564,739-dwt vessel is the largest tanker in the world.

For free literature detailing the facilities and capabilities of Keppel Shipyard,

Circle 71 on Reader Service Card

**New XMT Portable Welder From Miller Electric Has Unique 'Auto-Link'**

Miller Electric's XMT Series state-of-the-art inverter welding power sources now have 'Auto-Link,' a unique Miller feature making the unit easy to install and use. No manual primary voltage relinking is required. Operators can power up

and weld using any of three primary voltages: 208v single-phase, and 230v or 460v single or three-phase. Voltage adjusts automatically on three models: XMT-300 CC/CV, CC/TIG and 300 CC.

Versatile, multiprocess welding is offered: MIG (GMAW), stick (SMAW), scratch start ore high-frequency start TIG (GTAW) and air carbon arc cutting/gouging (ACA), varies with model. Units provide up to 200 or 300 amperes of constant current or constant current/constant voltage DC output, depending on model. Smooth, stable arc is consistent through the entire amperage range, including low amperage TIG welding jobs.

For free literature from Miller Electric,

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**Thrust Is Forwards And Sideways And Backwards**

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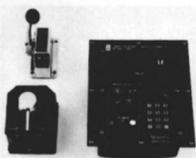


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Circle 292 on Reader Service Card

**MarAd Approves Lykes Request To Operate Four Vessels In Foreign-Flag Service**

The Maritime Administration has approved an application by Lykes Bros. Steamship Co., Inc. for permission to charter or own and operate four vessels in a foreign-flag service between the Middle East and the U.S. Gulf and Atlantic Coasts on Trade Route (TR) 18. In its decision, MarAd noted that Lykes's U.S.-flag fleet is aging and has no prospect of replacement with U.S.-built ships.

Section 804 of the Merchant Marine Act of 1936, as amended, precludes subsidized U.S.-flag operators or their affiliates from operating foreign-flag vessels which compete with essential U.S.-flag shipping services unless the Secretary of Transportation waives the provision of this section for a specific period of time.

In its decision, MarAd stipulated that no operating differential subsidy (ODS) be paid or used to benefit any foreign interest whose relationship is approved by this waiver and that no changes in geographic scope of the service in a Lykes/Waterman Sailing Agreement beyond ports on TR 18 and TR 17 shall be made without the agency's prior approval.

**Tenneco Names Campbell President Of J I Case**

Tenneco Inc. recently announced that **Edward J. Campbell** has been named president of its J I Case farm and construction equipment unit in Racine, Wis.

Mr. Campbell will be responsible for worldwide operations at Case. He previously worked at Case from 1968 to 1978, last as an executive vice president, before moving to Newport News Shipbuilding.

While Mr. Campbell was president of Newport News Shipbuilding, sales rose from \$700 million to more than \$2 billion a year, and operating income improved from \$13 million to more than \$200 million.

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8"	120	81,000	115	105,000
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**Unique Bardex System Will Install, Maintain Riser On Shell Auger TLP**

Shell Pipe Line Corporation has contracted with Bardex Corporation, through the latter's Houston office, for a unique installation and maintenance system (IMS) module assembly for use on Shell's laterally moored Auger TLP slated for operation in Garden Banks Block 426 in the Gulf of Mexico.

The 12-inch nominal diameter steel catenary riser will be handed off from the lay vessel to a chain pull-in line attached to the primary lifting device—a Bardex hydraulic chain jack—mounted in the IMS near the top deck of the TLP. The chain jack, which has a rated pull capacity of 400 kips, will then pull the riser into a receptacle on the rectangular hull pontoon. A control line from the lateral control winch(s) located on the IMS will be used to guide the riser into the receptacle.

**Robertson-Shipmate Judged 'Best' In Autopilots And Gyrocompasses**

Three separate products from Robertson-Shipmate Inc. were chosen as "best" at this year's National Marine Electronic Association annual conference held in St. Petersburg, Fla.

Larry Anderson, president of Robertson-Shipmate, made the announcement. This is the seventh consecutive year in which the company has been awarded a top prize by this prestigious organization.

This year's contest marked the first time that judges awarded separate honors to autopilots for both small boats and larger craft. The Robertson AP 2500 received the highest award in the small craft category, while the Robertson AP 2000DL was selected as the best autopilot in the large boat division.

The Robertson RGC 50, introduced last year, was the company's other winner, collecting honors as the best gyrocompass.

For free literature on products from Robertson-Shipmate,

Circle 117 on Reader Service Card

**Coast Guard Solicits Bids For Cutter Repairs**

The Commander, U.S. Coast Guard Maintenance & Logistics Command Atlantic, Governors Island, N.Y., is soliciting bids for dockside repairs of the U.S. Coast Guard cutter Mackinaw (WAGB-83). The 290-foot cutter is homeported in Cheboygan, Mich. Bids are due March 4, 1992.

Qualified sources interested should contact Debi Kearns, contract specialist, at (212) 668-6253, or Ms. V.A. Nemara, contracting officer, at (212) 668-3455 for further information. The solicitation num-

ber is DTCG80-82-B-3FA781.

**\$287,495 Contract For Patrol Boat Work**

Assured Corporation, El Cajon, Calif., was recently awarded a \$287,495 contract for the drydocking repairs and re-engining of two 82-foot patrol boats for the U.S. Coast Guard.

**Bollinger Awarded \$212,721 Contract For Cutter Repairs**

Bollinger Machine Shop and Shipyard, Inc., Lockport, La., has been awarded a \$212,721 contract for the drydocking and repair of the USCG cutter Kickapoo (WLR-75406).

**\$4.3 Million Contract Awarded By U.S. Navy To Continental Maritime**

The frigate USS Mahlon S. Tisdale (FFG-27) will undergo a drydocking restricted selected availability at Continental Maritime of San Diego, Inc., San Diego, Calif. The contract is worth \$4,339,476.

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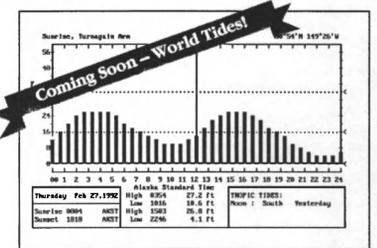
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Circle 267 on Reader Service Card

### STAL Refrigeration Installation On 'Monarch' Largest Ever On A Ship

The refrigeration installation on board the M/S Monarch of the Seas is said to be one of the largest ever installed on a ship. With a crew of 830, this new liner will cruise in the Caribbean, accommodating about 2,770 passengers.

Built by the shipyard Chantiers de l'Atlantique of France, for Royal Caribbean Cruise Line in Miami, the vessel is equipped with refrigeration systems from STAL Refrigeration for air conditioning of accommodation, control room, workshops, as well as for provision rooms. The refrigeration systems consist of five large water chillers with Stal-Maxi screw compressors and eight condensing units with Stal-Mini screw compressors. The refrigeration installations will produce a thermal capacity of about 18,000 kw.

For more information and free literature from STAL Refrigeration, **Circle 74 on Reader Service Card**

### New Anchor Developed By Creative Marine

Creative Marine of Natchez, Miss., has introduced what it calls the ultimate storm anchor—the MAX—which it describes as one of the best holding and best tracking anchors made.

An underwater video is available from Creative Marine which it says shows the MAX to be the only anchor to properly reset after breakout. The company states that the MAX holds better and tracks better in all bottoms than any of the others because its adjustable shank can be set for each bottom condition. Also, because its outer arm can be separated, the smaller anchors can be carried with ease and be stowed in small spaces. It fits any open-jawed bow roller.

The MAX is made of high-tensile steel and is galvanized. It is also very easy to retrieve.

Large sizes are available for ships and oil platforms. These can be made to suit your specific needs. For free literature giving more

information on the MAX from Creative Marine, **Circle 75 on Reader Service Card**

### McNab Offers Dip Cell Mount Fixture

McNab, Inc. of Mount Vernon, N.Y., offers Model #2666-Tank dip cell mount fixture which allows a pH probe or conductivity sensor to be suspended by the use of standard 1-1/2-inch U-clamps in a tank or weir or lagoon. Installation is by lowering and fixing a PVC pipe. The fixture is supplied in various lengths in multiples of 6 feet.

It is available in sturdy corrosion-resistant PVC, which also provides a protective shield for the sensor. A removable cap at the top end keeps out weather and moisture.

The dip cell mount fixture can be used with the Aqua Purometer II to meet various range requirements. Use of 100-foot extender cables permits separation of the monitor from the actual probe. The cable is run inside the PVC casing. Temperature range is up to 150 degrees F.

It is suitable for sewage, water treatment, public utilities, pulp and paper, textiles, chemicals, electroplating, pigments and environmental monitoring.

McNab, Inc. has been providing the best in fluid monitoring equipment for over 50 years as evidenced by their 2.6 billion hours on in-line fluid quality instrumentation experience.

For more information on McNab products, **Circle 76 on Reader Service Card**

### W.R. Phillips Named Newport News Shipbuilding President By Tenneco

Tenneco Inc. recently announced that **W.R. (Pat) Phillips** has been named president of Newport News Shipbuilding in Newport News, Va.

Mr. Phillips replaces **Edward J. Campbell**, who was named to become president of J.I. Case, Tenneco's farm and construction equipment unit in Racine, Wis.

Mr. Phillips was previously executive vice president of the shipyard, responsible for construction and repair operations, construction engineering and testing, and the overhaul and refueling of the aircraft carrier USS Enterprise.

### New Throw-Overboard Life-raft From Viking Accommodates 50 People

A new 50-person throw-overboard life-raft is available for use whenever emergency evacuation from large ships or platforms becomes necessary. Because it is ruggedly constructed to withstand extensive abuse, the liferaft helps promote passenger and crew safety from unforeseen problems.

The 50-person throw-overboard life-raft is distributed by Viking Life Saving Equipment of Miami, Fla., An emergency pack and all life-raft safety equipment as required by the 1983 SOLAS Amendment is included.

For further information and free literature from Viking Life Saving Equipment, **Circle 72 on Reader Service Card**

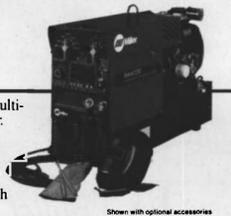
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**Alexander Industries  
Announces Affiliation  
With Mar-Quipt, Inc.**

Calvin M. Bohnet, vice president equipment sales for Alexander Industries Inc., New Orleans, La., recently announced an affiliation between his firm and Mar-Quipt, Inc., Pompano Beach, Fla.

Mr. Bohnet indicated that Mar-Quipt is already well-known in the yachting industry as a major manufacturer of gangways, sea ladders and cranes for the domestic and international markets. According to Alexander Industries, Mar-Quipt has an internationally recognized reputation for ease of operation, reliability, maintainability and functional beauty.

Mar-Quipt plans to provide a full line of standard design cranes along with the willingness and capability to provide custom designs to suit specific needs. Also envisioned is a full line of state-of-the-art boat-handling davits to supplement Alexander Manufacturing & Service Companies existing proprietary davit launched life raft system.

Coordination of all custom-designed Mar-Quipt systems will be handled by Charles L. Morris, vice president engineering, Alexander Manufacturing & Service Company, Inc.

For free literature detailing the marine products offered by Alexander Industries,

Circle 156 on Reader Service Card

**Guill Tool Offers  
Free Literature On  
Fittings And Valves**

Guill Tool & Engineering Co., Inc., West Warwick, R.I., which has been a MIL-I-45208A qualified supplier to the U.S. Navy for 30 years, is offering free literature detailing its marine pipe fittings, valves and assemblies.

Among the components and assemblies manufactured to print by the Rhode Island company are Level 1/Subsafe pipe fittings and check valves, grease valves, lighting brackets, vents and drains, strainers, indicator assemblies, and defuser assemblies.

For free literature detailing Guill Tool & Engineering products,

Circle 10 on Reader Service Card

**New 'Sea Bumpers'  
Available From Seaward**

To complement their growing line of foam-filled marine buoys and fenders, Seaward International, Inc., Clearbrook, Va., now offers a more compact yet very rugged style of fender known as the Sea Bumper. As with other fender designs Seaward is well known for, the Sea Bumper has an

February, 1992

inner core composed of a closed-cell polyethylene foam surrounded by a thick polymer skin of rugged polyurethane elastomer. This skin is formulated and manufactured by Seaward specifically for this fender style and application. The Sea Bumper is available in various cross sections and individual unit lengths from 4 to 16 feet for custom selection. Multiple units can be installed end-to-end to provide a continuous fender system.

Ideally suited for applications

where a pier or wharf needs fendering configured to its long, narrow style, the Sea Bumper provides high capacity, flexibility and durability to meet a variety of installation requirements including small standoff and limited space. It is rugged enough to be placed between larger fenders at major port facilities yet practical enough to be the primary fendering system at smaller ports and marinas.

One specific requirement these fenders have filled recently is pro-

viding protection for the stern accommodation platforms of CVN class aircraft carriers. Present installations include Sea Bumpers in sets of nine, each having a 6- by 8-inch cross section and 16-foot length, installed on the USS Abraham Lincoln (CVN 72) and the USS Theodore Roosevelt (CVN 71).

For more information on Seaward products,

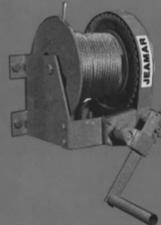
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**Compact Lightweight**

- Light but tough for heavy duty applications
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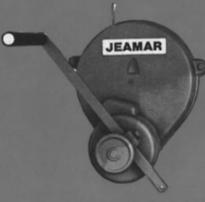
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- Three models: 550 to 1650 lbs



**Controlled Free Fall**

- Load can be lowered by controlled free fall
- Automatic brake governs pay out speed to predetermined maximum
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- Four models 660 lbs to 3300 lbs line pull

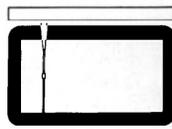


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### New England Trawler Adds West Coast Affiliation

New England Trawler Equipment Company, Chelsea, Mass., manufacturers of marine deck machinery for over 65 years, recently announced the formation of a new West Coast sales affiliation, **William C. Hoyt**, president of New England Trawler,

announced the addition of **Robert J. Buza** of Cardiff by the Sea, Calif., and WestPac Industries to its force of independent sales representatives. WestPac Industries, which covers the Pacific Coast states, represents a variety of marine oil field and industrial suppliers.

**Bob Buza**, who is the owner of WestPac, joins New England Trawler's growing force of independent sales representatives. **Vern Olson**, Glenside, Pa., has been very active as

both a sales representative and marine consultant for over 40 years. In August 1991, **John McDonald**, also from the Philadelphia area, joined the sales force, lending his 26 years' experience with the marine transport industry to New England Trawler's capabilities.

In the busy Gulf Coast area, **Alexander Industries**, New Orleans, La., represents NETEC to the shipbuilding industry. **Mr. Buza**, who started WestPac

Industries and is the principal owner, has been active in associated marine marketing since 1970. He said he feels the New England Trawler Equipment line of custom designed and manufactured windlasses, capstans, winches, cranes and hydraulic power units is a fine complement to WestPac's other product lines.

For free literature detailing New England Trawler Equipment products,

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### Coast Guard Proposes New Auto Pilot, Crew Rules To Help Stop Oil Spills

To reduce marine accidents and subsequent oil pollution, the Coast Guard proposes to prohibit tank vessels from using automatic pilots in some U.S. waters.

The Coast Guard's proposal would also require that a qualified crew member be at the helm of a tank vessel and be prepared to assume manual control whenever the vessel is operating in U.S. waters. These requirements are mandated by the Oil Pollution Act of 1990.

Comments on the proposal should be mailed before March 5 to the Executive Secretary, Marine Safety Council (G-LRA-2), U.S. Coast Guard Headquarters, 2100 Second Street, S.W., Washington D.C. 20593-0001.

For additional information, call Lt. Comdr. **Paul Jewell**, Oil Pollution Act Staff, at (202) 267-6746 or write Commandant (G-MS-1), U.S. Coast Guard, 2100 Second Street,

### North American Activities Of ZF Combined To Form Regional Division

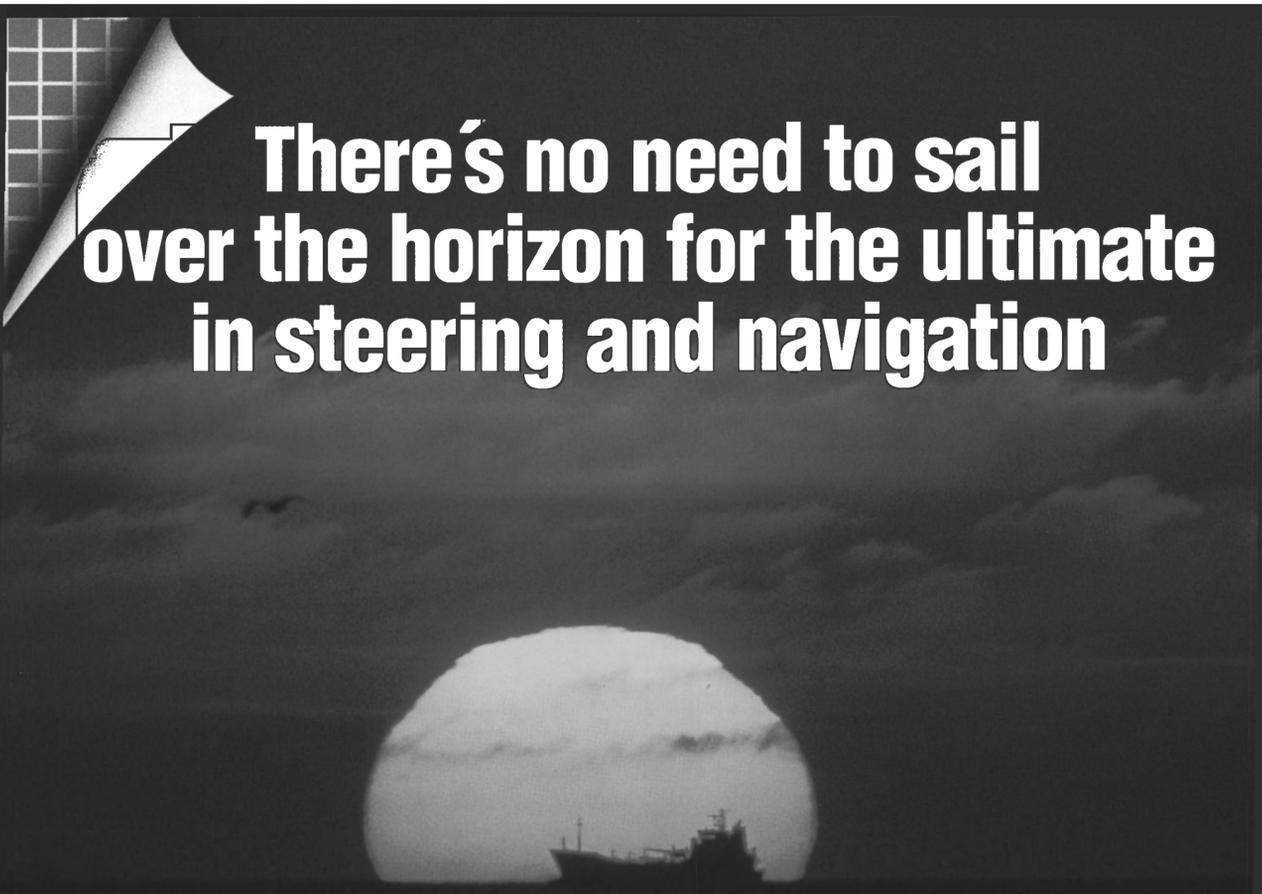
The ZF activities in North America (excluding the activities of Lemforder Metallwaren) have been combined to form a regional division-North America which includes ZF Transmissions Inc., Gainesville, Ga., ZF of North America Inc., Lincolnshire, Ill., as well as the operating business of ZF Industries Inc., McLean, Va.

Management of the regional division will be assigned to **Werner Arnold**, who now heads the regional division-South America.

The regional division will assume full market responsibility for the North American territory (new equipment and after-sales business/service) as well as full product responsibility for the products concerned. The regional division will also be responsible for product adaptation. Responsibility for new product developments will be in the hands of the relevant company divisions.

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# NAVAL TECHNOLOGY

**& SHIPBUILDING**



*a special supplement to*

**MARITIME  
REPORTER**  
AND  
ENGINEERING NEWS

FEBRUARY 1992



## STATUS OF U.S. NAVY SEALIFT SHIP PROGRAM

*Congress Provides \$1.875 Billion In Funding  
Of Planned \$11 Billion Sealift Program*

By James R. McCaul, President  
IMA Associates, Inc.

Construction of additional sealift ships continues to be a major priority to U.S. defense planners. Congress has already provided \$1.875 billion in funding for expanding U.S. sealift capability. Sealift funding continues to remain intact—despite funding cutbacks in other programs. A long-term plan developed by DOD for sealift development calls for ultimate expenditures of as much as \$11 billion.

### NAVSEA Design Competition

The Naval Sea Systems Command contracted with nine shipyards last September to prepare competing sealift ship designs. In a circular of requirements, NAVSEA spelled out two concepts for which the shipyards were to develop designs. One concept called for a 950-foot RO/RO ship capable of being used for

prepositioning military equipment in forward locations. The second concept called for a 700-foot RO/RO which could be used for either prepositioning or be available for quick breakout and use. The shipyards were to evaluate various design options which would meet the Navy requirements.

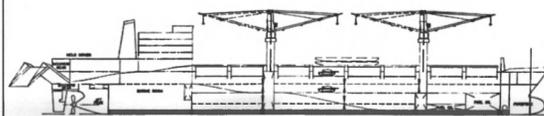
Reports from nine shipyards were submitted to NAVSEA in mid-December. Plans call for a 90-day review period—followed by NAVSEA issuing a revised circular of requirements which incorporates results of the initial design review. Each of the nine shipyards will then be invited to bid on the revised COR.

### MarAd Midterm Sealift Ship Design

The Maritime Administration has developed a conceptual design for an "enhanced" midterm sealift ship. The design incorporates features enabling the vessel to be used in commercial container service—but be convertible to a militarily useful RO/RO vessel in an emergency. Basic characteristics are: a length of 199.8 meters (655 feet); beam of 32.2 meters (105 feet); container capacity of 1,900 TEU; RO/RO capacity of 18,990 square meters; slow-speed diesel propulsion of 29,350 bhp at 94 rpm; and sustained speed of 20.9 knots.

The design concept calls for the vessel to be used as a commercial containership under normal circumstances. A stern quarter ramp, hoistable car decks, transverse sliding decks and liftable decks are fitted for use in RO/RO service. The stowable decks would be kept aboard the ship behind portable cell guides

PD-337 ENHANCED CARGO SHIP  
GENERAL ARRANGEMENTS



The Maritime Prepositioning Ship Pvt. Harry Fisher, operated by Maersk Line.

or stowed in container slots—displacing about 120 TEUs. General arrangements of the ship are shown in Exhibit 1.

#### Congressional Directives On Use Of Sealift Funds

Congress included language in the FY 1992 defense appropriations bill which specifies limits on use of funds for purchase or charter of foreign-built ships.

According to Sec. 8117, "Notwithstanding any other provision of law, no more than 15 percent of the funds available to the Department of Defense for sealift may be used to acquire through charter of purchase, ships constructed in foreign shipyards: Provided, that ships acquired as provided above shall be necessary to satisfy the shortfalls identified in the Mobility Requirements Study: Provided further, that any

work required to convert foreign-built ships acquired as provided above to the United States Coast Guard and American Bureau of Shipping standards, or conversion to a more useful military configuration, must be accomplished in United States domestic shipyards: Provided further, that no foreign-built ships may be acquired, through charter or purchase, until submission of the Mobility Requirements Study to the congressional defense subcommittees."

Congress also included language in the FY 1992 Defense Authorization Bill which directs the Navy to purchase U.S.-manufactured propulsion machinery, control systems and interior communications equipment.

#### Ready Reserve Fleet

Contrary to initial reports, respon-

sibility for custody and maintenance of RRF ships is to remain in the Maritime Administration. OMB had proposed to shift responsibility for the RRF to DOD—and transfer about half of the MarAd employees to the Defense Department. This transfer was to be proposed in the FY 1993 budget submission. Aggressive efforts by industry and congressional supporters caused OMB to shelve the proposal. This reversal was essential to MarAd—as loss of RRF ship custody would have stripped the agency of any material functions.

#### Mobilization Study

The congressionally mandated mobility study is expected to be submitted to Congress within the next several weeks. Planned delivery is timed to coincide with the FY 1993 budget submission. The upcoming

report is supposed to be finalized assessment of mobility requirements—and is to set the overall framework for the future sealift ship program.

#### Next Steps In Sealift Program

It should be noted that the Navy has not yet received the \$1.875 billion earmarked for sealift ship construction. These funds have been appropriated—but will not be released by DOD to the Navy until Milestone I is reached. Before Milestone I, DOD must (1) complete the mobility study; (2) incorporate the results into a revised sealift implementation plan; (3) update the mission elements needs statement; (4) complete a study of survivability trade-offs; and (5) complete the concept expiration studies of sealift ship alternatives. Milestone I is scheduled for next spring.

**Exhibit 2: U.S. Navy Shipbuilding Program**  
FY 1992-1997

SHIP TYPE	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97
CVN	-	-	-	1	-	-
SSN-21	1	1	1	1	2	1
DDG-51	5	4	3	3	4	3
LSD-41 (CV)	-	1	-	-	-	-
LX	-	-	-	1	-	1
MHC	3	2	1	-	-	-
MHC(V)	-	-	-	1	-	2
AR	-	-	-	-	1	-
ARS	-	-	1	-	2	-
TAGOS	1	1	1	2	-	-
AOE-6	1	-	-	-	-	-
Ocean. Ships	2	2	2	1	-	-
LCAC	24	-	-	-	-	-
<b>Total Ships</b>	<b>13*</b>	<b>11</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>7</b>

\*FY 92 ships are funded, FY 93-97 ships are planned, excluding LCACs.  
Source: IMA records

**Exhibit 3: Long Term Navy Shipbuilding Requirements**  
(1998-2010)

TYPE SHIP	NO. OF NEW SHIPS REQUIRED	
	1998-2004	2005-2010
AGF Command Ship	1	1
AOE Logistics Station Ship	2	5
AOEV Logistics Shuttle Ship	3	7
AR Repair Ship	0	2
AS Submarine Tender	1	2
ATR Rescue and Salvage Ship	0	3
CVN Aircraft Carrier	3	0
DDG Guided Missile Destroyer	14	24
LHD Amphibious Assault Ship	0	3
LX New Amphibious Ship	13	0
MHC Coastal Mine Hunter	2	0
PHM Small Combatant	1	5
SSBN Ballistic Missile Submarine	0	6
SSN Attack Submarine	17	22
<b>Total</b>	<b>57</b>	<b>80</b>

Source: Congressional Budget Office

### Other Navy Ship Construction

**Navy Plans, Requires 196 New Ships—\$175-\$190 Billion Over Next 19 Years**

As of press time, Exhibits 2 and 3 show—the actual appropriations for FY 92—planned shipbuilding for FY 93 through FY 97 and Navy shipbuilding requirements for FY 98 through FY 2010. Not including sealift, Congress has appropriated \$9.2 billion for shipbuilding and conversion in FY 1992. These funds will be used to build 13 ships and 24 air cushion landing craft. Details are shown in Exhibit 2—along with the building plan for the next five years. As shown, the Navy plans to build 46 ships in the five-year period of FY 93 to FY 97.

Exhibit 3 shows long range shipbuilding requirements beyond 1997. As indicated, the Navy will require an additional 137 ships between 1998 and 2010 in order to maintain planned fleet levels. This represents an average expenditure of \$9 billion to \$10 billion per year in 1992 dollars. All inclusive, FY 92 through FY 2010, total long-term requirements call for 196 new ships, with projected expenditures estimated between \$175 billion and \$190 billion.

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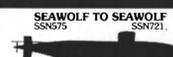
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Circle 247 on Reader Service Card

### Metal Trades Receives \$1.4 Million Contract

Metal Trades, Inc., Hollywood, S.C., was recently awarded a \$1,381,628 contract by the Supervisor of Shipbuilding, Conversion and Repair, Charleston, S.C., for technical availability work on the larger covered lighter YFNB-42, the floating cranes YD-245 and YD-234 and the covered lighter YFN-1252.

### Navy Contract Worth \$115,704 Awarded To Braswell

Braswell Services Group, Inc., Charleston, S.C., was recently awarded a \$115,704 contract by the Supervisor of Shipbuilding, Conversion and Repair, Charleston, S.C., for the technical availability work on the ammunition ship AE-34.

### West State Awarded \$1.7 Million Pact For Drydock Work

West State, Inc., Portland, Ore., one of the contractors at the Portland Ship Repair Yard (PSRY), was recently awarded a \$1,728,348 contract by American Foreign, General Agent for the Department of Transportation, Maritime Administration, for the drydocking and topside repair work on the SS Chesapeake.

### \$2.7 Million Contract Won By Southwest Marine For Phased Maintenance

A phased maintenance availability contract for general purpose amphibious assault ship USS Mobile (LKA-115) was recently awarded to Southwest Marine, Inc., Terminal Island, Calif. The contract was worth \$2,698,711, and was awarded by the Supervisor of Shipbuilding, Conversion and Repair, Long Beach, Calif.

### \$429,665 Pact Won By San Pedro Boat Works

San Pedro Boat Works, San Pedro, Calif., was recently awarded a \$429,665 contract for the small boat's phased maintenance availability of the USS Mobile (LKA-115). The contract was awarded by the Supervisor of Shipbuilding, Conversion and Repair, Long Beach, Calif.

### \$509,899 Drydocking Of 'Texas Clipper' Awarded To BethShip Yard

BethShip Sabine Yard, Port Arthur, Texas, was recently awarded a \$509,899 contract to drydock the T/S Texas Clipper by the Department of Transportation, Maritime Administration.

### MSC Awards \$123,500 Contract To Crowley Towing

Military Sealift Command (MSC), Pacific, Oakland, Calif., recently awarded a \$123,500 contract to Crowley Towing and Transportation, Long Beach, Calif., for towing services.

### Quality Boats To Perform Regular Overhaul On Landing Craft

Quality Boats Co., Inc., Portsmouth, Va., was recently awarded a \$107,875 contract for the ship repair and regular overhaul of landing craft, mechanical (LCM) by the Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Va.

### \$3.6 Million Contract Awarded To BethShip

The medium auxiliary floating drydock USS Sustain (AFDM-7) will

undergo a \$3,620,000 ship repair at BethShip Sparrows Point Yard, Sparrows Point, Md.

### Marine Hydraulics To Perform \$381,358 Deactivation Of 'Pride'

Marine Hydraulics International, Inc., Norfolk, Va., was recently awarded a \$381,358 contract for the deactivation of the SS Pride by the American Overseas Marine Corp., Quincy, Mass.

### BethShip Sparrows Point Wins \$3.1 Million Pact

BethShip Sparrows Point Yard, Sparrows Point, Md., was recently awarded a \$3.1 million contract for the regular overhaul of the USNS Sirius (T-AFS-8). The contract was awarded by the Military Sealift Command.

### 'Nimitz' To Undergo \$2.9 Million Repair At Todd Pacific

The aircraft carrier USS Nimitz (CVN-68) will undergo a \$2,946,892 selected restricted availability (SRA) repair at Todd Pacific Shipyards Corp., Seattle, Wash. The contract was awarded by the Supervisor of Shipbuilding, Conversion and Repair, Seattle, Wash.

### \$1.1 Million Contract To Cascade General For COE Dredge Overhaul

The U.S. Army Corps of Engineers, Portland, Ore., recently awarded a \$1,133,675 contract to Cascade General, Inc., Portland, Ore., a contractor at the Portland Ship Yard (PSY) for the overhaul of the dredge Essayons.

### \$301,636 Drydocking Of Cutter 'Citrus' At Mid-Coast Marine

Mid-Coast Marine, Coos Bay, Ore., will perform drydocking and repairs on the USCGC Citrus (WMEC-300) under a \$301,636 contract awarded by the U.S. Coast Guard Commander, Maintenance and Logistics Command Pacific.

### MarAd Awards \$2.6 Million Contract To Houston Ship Repair

The Maritime Administration (MarAd) has awarded a \$2,642,630 contract to Houston Ship Repair, Inc., Channelview, Texas, for deactivation of the Ready Reserve Force (RRF) breakbulk carrier SS Courier.

MarAd maintains a select group of cargo ships known as the RRF to meet surge sealift needs in the early stages of military contingency operations. During Operations Desert Shield and Desert Storm, MarAd activated 78 of its RRF vessels.

The deactivation work includes repairs necessary to meet classification specifications and regulations. Necessary maintenance repairs will also be performed to ensure that the vessel may be expeditiously activated in the event of future emergencies.

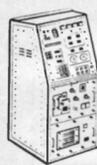
### Litton Awarded Additional \$731.3 Million For LHD Class Ship

Ingalls Shipbuilding division of Litton has been awarded a \$731.3 million contract to build an additional Wasp Class multipurpose amphibious assault ship for the U.S. Navy.

Ingalls has previously been awarded contracts to build the first four ships of the class, called LHDs, the first of which has been delivered

(continued)

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and is now in operation with the U.S. Navy fleet.

The contract for the fifth ship of the class, LHD-5, includes options for two additional ships, LHD-6 and -7, which would be awarded following Congressional funding of future year defense budgets.

The 40,500-ton LHDs are 844 feet long, with a beam of 106 feet. Two steam propulsion plants, developing a combined 70,000 horsepower, drive the ships to speeds above 20 knots.

The Wasp Class ships are the first specifically designed to accommodate the air cushion landing craft (LCAC) and Harrier (AV-8B) STO/VL (Short Take Off/Vertical Landing) jets. The class will also accommodate the full range of Navy and Marine Corps helicopters, conventional landing craft and amphibious vehicles. Outfitted for their primary mission, LHDs carry a mix of assault helicopters, plus six to eight Harriers.

The ships are fully capable of maintaining onboard aircraft and landing craft, as well as supporting the embarked landing force.

LHDs have more than 22,000 square feet of vehicle space, 100,000 cubic feet of cargo space, and accommodations for nearly 3,000 troops and crew members.

For combat casualties, as well as humanitarian missions, LHD-5 will have six fully equipped medical operating rooms, four dental operating rooms and hospital facilities ca-

pable of caring for 600 patients. The lead ship of the LHD program, USS Wasp (LHD-1), was delivered to the Navy by Ingalls in 1989. Ingalls now has in production Essex (LHD-2), Kearsage (LHD-3) and Boxer (LHD-4).

In addition to LHD amphibious ships, Ingalls is building a series of Aegis guided missile cruisers and destroyers for the U.S. Navy and is participating in international shipbuilding programs.

### Jerred Brown Wins U.S. Navy Contract For Elevated Causeway

Marine systems manufacturer Jerred Brown Brothers Inc. has been awarded a \$27 million contract by the U.S. Navy for the design, construction and demonstration of a new elevated causeway (ELCAS) for use in amphibious landings.

The contract—awarded by the Naval Facilities Engineering Command, Port Hueneme, Calif.—includes an additional \$12 million option clause which can be exercised within 15 months.

ELCAS is part of the U.S. Navy's Strategic Sealift Program. It will enable deep-draft supply vessels to unload cargo onto an unimproved beach and is designed to carry loads

up to the weight of a 60-ton main battle tank.

Jerred president Rick Edger says the ELCAS award represents a new challenge and a new direction for Jerred as a prime government contractor on a complex system.

ELCAS rides on piles above the water. As a result, unlike landing craft and pontoon systems, its use is not restricted by rough seas. It is a modular system that can be transported on a single ship and erected within a week.

The basic contract is for the design, construction and demonstration of the majority of the elevated causeway, including 800 feet of a 3,000-foot roadway that will serve as a ramp to the landing beach. If the Navy exercises its option clause, Jerred will build the additional 2,200 feet of causeway.

The causeway will be built at Jerred Brown Brothers recently acquired facility in Brunswick, Ga.

In announcing the award, Mr. Edger praised the efforts of Jerred employees and of its three technical partners—JFH, Inc. of Arlington, Va., a naval architect and marine engineering firm; TRD of Cherry Hill, N.J., which will provide integrated logistic support; and McLean Construction, Glen Bernie, Md., which will build a demonstration section of the causeway.

For free literature detailing Jerred Brown Bros. marine products,

Circle 116 on Reader Service Card

### Bender Awarded Contract On USNS Redstone

Senator Howell Heflin of Alabama recently announced that Bender Shipbuilding & Repair Co., Inc. of Mobile, Ala., was awarded a \$2,933,419 contract for the regular overhaul and drydocking of the USNS Redstone (T-AGM20). The Redstone is a 595-foot-long missile-tracking ship operated by the Military Sealift Command, Bayonne, N.J., for the U.S. Navy.

Bender drydocked the Redstone on the Pete B, its newest and largest drydock. The Pete B has a lifting capacity of 20,000 tons, a length of 545 feet and measures 124 feet between its wingwalls.

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

Circle 97 on Reader Service Card

### MarAd Awards \$2.7 Million Contract To T-ACS Deactivation

The Maritime Administration (MarAd) has awarded a \$2,722,120 contract to Eastern Technical Enterprises, Inc., Norfolk, Va., for deactivation of the auxiliary crane ship Keystone State.



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**Westinghouse To Develop  
Advanced Gas Turbine  
Propulsion Engine For USN**

The Westinghouse Marine Division has been awarded a \$160 million contract from the U.S. Naval Sea Systems Command to design, develop, fabricate and test an intercooled recuperated (ICR) gas turbine engine system in support of the U.S. Navy's advanced surface machinery system program, previously known as integrated electric drive (IED).

Westinghouse, a leading supplier of U.S. Navy advanced propulsion systems, is teamed with Rolls-Royce, a leading supplier of gas turbine engines, to develop the aero-derivative ICR engine for application in future Navy surface ships.

Dr. **Fran Harvey**, Marine Division general manager, said: "We are extremely pleased to have won this key Navy development program. It is an important step in broadening our propulsion product line. We are looking forward to advancing the state-of-the-art in marine gas turbine technology, which will provide the Navy with significant savings in fuel costs.

During this four-year advanced development phase of the initial contract, the Westinghouse team will design, manufacture, and test two ICR gas turbine systems.

The total value of the contract, with all options, is \$356 million. The options include full-scale development and qualification, technical data, training, and engineering services.

The Westinghouse Marine Division, as ICR prime contractor, is responsible for overall engine performance. Rolls-Royce Industrial and Marine Gas Turbines Limited is responsible for gas turbine design, test and performance.

The ICR engine incorporates an intercooler between the low-pressure and high-pressure compressor sections and a recuperator to recover heat energy from the exhaust gases. The result is a modern, 26,400 brake horsepower engine offering a 30 percent fuel savings at Navy operating conditions and a significantly reduced exhaust gas signature.

The new engine offers several other benefits including increased power margin, reduced life-cycle costs, and a lower airborne and structure-borne noise.

The Westinghouse ICR design will have high commonality with commercial engines which have been proven in over 42 million hours of performance on high-endurance aircraft.

For more information and free literature from Westinghouse, Circle 159 on Reader Service Card

**New Coast Guard Rule  
Allows More Efficient  
Approval Of Equipment**

Last year, a new U.S. Coast Guard regulation became effective that

permits the use of consensus industry standards rather than detailed regulations for shipbuilding and repair products. The products governed by this regulation are sliding water-tight doors, nonmetallic flexible hoses, backfire flame control devices, quick disconnect couplings, spill valves, tank vent flame arresters and international shore connections.

The regulations provide a more efficient manner for approving and accepting the defined equipment. The adoption of industry standards results in a savings of time and money for both the shipbuilder and the component manufacturer.

The new regulations no longer require detailed plans for the defined products. This eliminates delays in production that occur while

awaiting component approval. Adopting industry standards is one of the many steps being taken that simplifies regulations, thereby allowing the United States to be more competitive in the world market.

More information may be obtained by contacting: Commandant (G-MTH), U.S. Coast Guard, 2100 Second Street SW, Washington, D.C. 20593-0001.

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View of future HMCS Regina, CPF-05, on the day before christening and launching ceremony.

## MIL Davie Christens, Launches Canadian Patrol Frigate Regina At Shipyard In Quebec, Canada

Mil Davie, Inc. recently launched and christened Her Majesty's Canadian Ship (HMCS) Regina during a ceremony at the shipyard in Quebec, Canada. About 8,000 employ-



Guy C. Veronneau, president and CEO of MIL Davie and The MIL Group, is shown with Minister Pierre Blais before beginning the ceremony on the dais.

ees and family members joined 200 federal and provincial representatives and local guests to celebrate this important phase in the construction of the Canadian Patrol Frigate 05 (CPF-05).

In accordance with tradition, the ship's sponsor, Commodore **Laraine Orthlieb**, Senior Naval Reserve Advisor, cut the ribbon that released the bottle of champagne against the bow. The ship then slid down the launch ways and sailed at high tide into the St. Lawrence River.

The frigate will be drydocked for a few months in order to carry out work below the waterline. Once out of the drydock, all the outfitting work will be done alongside at MIL Davie, then sea trials will begin.

Vice Adm. **John R. Anderson**, Commander of Maritime Command, and the Honorable **Pierre Blais**, Minister of Consumer and Corpo-

rate Affairs, Minister of State for Agriculture and Minister responsible for Quebec region, attended the ceremony presided over by **Guy C. Veronneau**, president and chief executive officer of MIL Davie and the MIL Group.

Within the Canadian Patrol Frigate (CPF) Project, in addition to CPF-05 just launched, MIL Davie has two other frigates under construction, which are CPF-03, and CPF-06. The dimensions of the frigates are 440 feet in length, beam of 53.8 feet and navigational draft of 22.6 feet. The hull and superstructures are divided into 34 modules—their weight varies from 30 to 600 tons—that are erected one after the other on the launching berth. The impor-



The ship's sponsor, Commodore Laraine Orthlieb, receives flowers presented to her at the beginning of the ceremony.

tant construction stages are: keel-laying, launching, tests and trials, delivery and commissioning.

For free literature detailing the facilities and capabilities of MIL Davie,

Circle 88 on Reader Service Card.

## Navy To Build Nuclear Simulator

The Navy will continue with plans to install a nuclear blast simulator on a barge in the Gulf of Mexico, despite the ending of the Cold War.

To be stationed off the coast of Alabama, the simulator will fire electromagnetic pulses at passing Navy warships to determine if the ships' combat systems could survive a nuclear explosion in space.

## Lucas Aerospace Joins Team To Build Navy's AIWS

Texas Instruments (TI) and LTV are being joined by Lucas Aerospace in building the Navy's Advanced Interdiction Weapon System (AIWS).

The boat tail assembly and the control actuation system for the AIWS will be designed and built by Lucas.

The Navy announced earlier that it had selected the TI-led team to build the AIWS, which will replace the Navy's Paveway and Skipper precision guided weapon systems.

## ASW Trainer Bought By Japanese Navy

A \$8.25 million foreign military sales contract has been awarded by the Naval Training Systems Center to CAE-Link Corp. for production of a surface ship antisubmarine warfare (ASW) Training System for the Japanese Navy.

Designated Device 14A12J, this training system will be similar to the ASW team trainers CAE-Link builds for the Navy. It will enable combat information center, bridge, sonar and aircraft operators to learn essential ASW engagement procedures in a simulated multi-threat, multi-platform tactical environment.

Delivery to the Japanese Maritime Self Defense Forces is expected in mid-1994.

## Navy Contract Worth \$15.3 Million Awarded Ingalls Shipbuilding

The U.S. Navy has awarded Litton's Ingalls Shipbuilding division a \$15.3 million contract modification to continue providing engineering and planning support to the Navy's Arleigh Burke (DDG-51) Class Aegis guided missile destroyer program. Ingalls, based in Pascagoula, Miss., currently has construction contracts for eight of the ships.

The support contract is now in the third element of a six-year program, which began in December 1988, with a total projected value of about \$100 million.

For further information, Circle 70 on Reader Service Card

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Circle 28 on Reader Service Card

### DOD Will No Longer Oppose Diesel Sub Exports

U.S. shipbuilders may finally have the opportunity to build diesel-electric submarines for export, now that the Department of Defense has dropped its opposition, according to industry sources.

One apparent beneficiary of the government's new stance might be Ingalls Shipbuilding, which has lobbied to obtain approval to build diesel-electric submarines for export for a number of years. Ingalls officials apparently convinced Secretary of Defense **Dick Cheney** for the need to open this lucrative world market to U.S. yards, according to an industry source.

### Electric Boat Receives \$9.5 Million Contract

The Electric Boat Division of General Dynamics, Groton, Conn., was recently awarded a \$9,495,000 cost-plus-award-fee contract modification by the Naval Sea Systems Command to exercise an option for command and control system engineering and technical services for Ohio Class submarines. The work is expected to be completed by September 30, 1992. The contract number is N00024-90-C-2109.

### Frigate Drydocking Worth \$5.8 Million To Southwest Marine

Southwest Marine, Inc., Terminal Island, Calif., has been awarded a \$5,758,683 firm-fixed-price contract for the drydocking selected restricted availability (DSRA) of the frigate USS Lewis B. Puller (FFG-23). The contract, N00024-85-H-8222, was awarded by the Supervisor of Shipbuilding, Conversion and Repair, Long Beach, Calif.

### Halter Marine To Build Navy Repair Barge Under \$5.8 Million Contract

Halter Marine Inc., Gulfport, Miss., was recently awarded a \$5,793,349 firm-fixed-price contract for the construction of one YR 90 series berthing, messing and repair barge for the U.S. Navy. The contract, N00024-92-C-2306, is expected to be completed by December 1992.

### \$10.6 Million In U.S. Navy Contracts To GD-Electric Boat

General Dynamics Corporation's Electric Boat Division, Groton,

Conn., has been awarded a \$5,460,625 cost-plus-fixed-fee contract modification by the Naval Sea Systems Command for reactor plant planning yard services for nuclear-powered guided missile cruisers. The contract number is N00024-91-C-4030.

In addition, under a separate award, Electric Boat also received a \$10,173,000 for similar work for nuclear-powered submarines. The contract number is N00024-91-C-4029.

### GE To Supply Generators, Turbines For Foreign Frigates

GE Aircraft Engines, Marine & Industrial Division, Cincinnati, Ohio, has been awarded a \$6,832,804 firm-fixed-price contract for two gas generators and associated equipment and two power turbines and associated equipment as spares for the Spanish and Portuguese frigates under the Foreign Military Sales Program. The contract number is N00024-92-C-4070.

### PBI Requests MarAd Approval Of Ferry Sales

Peterson Builders, Inc. (PBI), Sturgeon Bay, Wis., has asked permission to sell two passenger car ferries to Konstantinos Makrydakis of Athens, Greece, for scrapping in Greece. The vessels are the 1917-built, 1,825-dwt Arthur K. Atkinson, and the 1925-built, 1,287-dwt Viking.

### New Budget May Include Additional \$1.2 Billion For Sealift Defense Fund

An additional \$1.2 billion to build up the military cargo fleet might be recommended in President **Bush's** new budget, which could also call for creating a special fund in which to place all sealift-related money.

When added to money appropriated in past years for construction and acquisition of new military supply vessels, the total funneled into the new fund would mount to over \$3 billion.

The fiscal year 1993 budget blueprint may include a legislative proposal for the so-called sealift defense fund, a single, protected source for sealift money, government and industry sources said.

A sealift fund could have some advantages in terms of funding flexibility and revenue potential, especially if it is used as a resting place for outside revenues.

During the Persian Gulf war, for example, there were questions about



The U.S. Navy's newest Aegis guided missile cruiser Cape St. George (CG 71) built by Ingalls Shipbuilding for the U.S. Navy.

## Ingalls Launches Seventeenth Of Nineteen Aegis Cruisers Being Built For U.S. Navy

The U.S. Navy's newest Aegis guided missile cruiser, Cape St. George (CG 71), was recently launched at Ingalls Shipbuilding division of Litton in Pascagoula, Miss. The 567-foot-long ship is the 17th of 19 Aegis cruisers being built for the Navy by Ingalls.

CG 71 is the first ship named to commemorate the World War II naval battle won by the Pacific Fleet's Destroyer Squadron 23, commanded by Captain (now Admiral) **Arleigh Burke**. Captain **Burke's** force of five destroyers sunk three Japanese destroyers and damaged another,

without damage to Capt. **Burke's** squadron. The CG 71 will be christened at Ingalls on Saturday, April 11, 1992, by Mrs. **Doris Hekman**, ship's sponsor and wife of retired Vice Adm. **Peter M. Hekman**, former commander of the Naval Sea Systems Command. After christening, the CG 71 will undergo final outfitting and sea trials before delivery to the Navy in 1993.

For free literature detailing the facilities and capabilities of Ingalls Shipbuilding,

Circle 173 on Reader Service Card

where to put the money contributed by U.S. allies during the conflict. That problem could be solved with a sealift fund.

Revenues generated under sealift vessel-leasing programs, if that activity occurs, could also go directly into the fund.

### USCG Forms Committee To Aid In Developing Spill Response Plans

The U.S. Coast Guard recently announced the formation of a negotiated rulemaking advisory committee. The committee will advise and consult the Coast Guard staff that is preparing the tank vessel regulations mandated by the Oil Pollution Act of 1990. The committee membership includes 24 representatives that reflects federal, state and local governmental agencies, environmental and public interest groups, response contractors, tank vessel owners and operators, tank vessel cargo interest groups, oil handling facilities representatives and shipboard personnel.

The first meeting of the committee was held last month in the Department of Transportation's Headquarters building located in Washington, D.C. For additional information concerning this meeting, contact the Coast Guard at (202) 267-6739.

OPA 90 mandates that regulations be developed addressing tank vessel oil spill response plans, as well as regulations requiring the vessels to carry and maintain oil spill removal equipment. On August 30, 1991 (56 FR 43534) the Coast Guard published an Advanced Notice of Rulemaking (ANPRM) regarding these regulatory requirements and received over 150 comments.

Noting that the comments possessed a strong difference of opinion and numerous issues, the Coast Guard proposed forming a negotiated rulemaking advisory committee as an additional means for obtaining public input. On November 18, 1991, the Coast Guard published its proposal to form the committee (56 FR 58202). Supplemental information was published in the November 29, 1991 Federal Register.

### Cruise Ship Inspection Fees Increased

User-fees that cruise lines must pay for the periodic inspection of their vessels calling at U.S. ports have been increased by an average of 9 percent.

The Centers for Disease Control vessel sanitation program fees valid through 1992 are: \$6,000 for ships of more than 60,000 grt; \$4,500 for those of 30,001-60,000 grt; \$3,000 for ships of \$15,001-\$30,000 grt; \$1,500 for those 3,001-15,000 grt, and \$750 for vessels smaller than 3,000 grt.

The fees will be charged again for reinspections of vessels failing to meet standards. The gross tonnage scale to be used is based on sizes shown in Lloyd's Register of Shipping.

### Port of Portland May Break Tonnage Record

The Port of Portland on the U.S. West Coast is close to achieving its best cargo tonnage year ever, breaking the 1989 record of 5.05 million tons (exclusive of grain).

Marine activities at the port create an estimated \$1.1 billion annually in economic benefits for the region, according to the port.

The movement of refrigerated container barges on the Columbia River between the upriver ports of Pasco, Washington and Umatilla, Oregon and terminal 6 at the Port of Portland has expanded.

The sales for the Portland Ship Yard, reached \$250 million in 1991, making it the busiest and most productive ship repair facility on the West Coast.

The ship yard made 111 repairs, with 82 of these involving the use of the port's dry docks. Tankers accounted for 51 percent of the repair sales, which denoted 77 percent of all West Coast tanker work.

Final regulations must be completed by August 18 1992, and operators must submit response plans for approval by February 18, 1993.

### HDW Delivers Frigate "Corte-Real" To Portugal

Howaldtswerke-Deutsche Werft AG recently delivered the frigate, "Corte-Real", NATO Designation "F332", to NATO partner Portugal. At the same time, the Portuguese Navy officially put the ship into service. HDW previously delivered the sister ship "Alvares Cabral."

The two frigates are part of an order for three vessels the MEKO consortium received from the Portuguese Navy in 1986. The MEKO consortium is comprised of the companies Blohm & Voss, Ferrostaal, Thyssen Rhein Stahl Technik, and Howaldtswerke-Deutsche Werft AG. The Hamburg yard, Blohm & Voss, delivered the first frigate, "Vasco da Gama," in January 1991. For HDW, the order represents about 1.75 million manufacturing and construction hours.

For complete information on the shipbuilding services offered by HDW,

Circle 36 on Reader Service Card

### Agreement Made Between MARAD And Farrell Lines

In a recent agreement, the Maritime Administration forgave about \$20 million in loans that Farrell Lines Inc. owes. In exchange, the company consented to shortening a government subsidy contract by three years. This contract, covering four vessels in the Mediterranean trade will now expire at the end of 1997. Its other government contract expires December 31, 1995.

Farrell received subsidies totaling \$14.6 million in 1990 and \$15.1 million in 1991.

Included in the \$20 million debt is a 1987 default on a \$6 million loan guarantee made under the MARAD's Title XI program for construction of LASH barges and several loans the agency made to Farrell in the early 1980s.

Recently a Lykes' Lines subsidy contract was shortened by one year in exchange for a three-year extension on the subsidizable life of five aging vessels.

### Hermann Amrein Named As Vice President Of MTU

Hermann Amrein was recently named vice president at the meeting of the supervisory board of MTU Friedrichshafen, a subsidiary of Deutsche Aerospace. He will be responsible for the sales division as of January, 1992.

### New Prison Barge For New York City

A \$165 million prison barge was recently completed at Avondale Shipyards for the City of New York.

The barge, which will hold medium and maximum-security prisoners awaiting trial, is scheduled to arrive in New York the last week in January.

This 800-bed barge will be the fourth vessel of this type built for New York's expanding prison population.

### Deutz MWM Announces Marketing Staff Changes

Change in its marketing staff were announced recently by Deutz MWM. Dirk Muller, previously head of marketing services (including PR and advertising) within the Deutz MWM division of the KHD group in Mannheim, recently went to Deutz Service International GmbH in Cologne. His new position includes the responsibility for sales promotion - also including PR and advertising - of the service company for the trademarks Deutz and Deutz MWM.

Carl-Ulrich Huhn, will succeed Dirk Muller in Mannheim. He has worked for the company for six years and has been responsible for information and sales training within the marketing sector.

Dr. Ottar Holm was also recently appointed as head of Deutz MWM marketing; he had previously worked with Suddeutsche Kuhlmaschinenfabrik Julius Fr. Behr GmbH & Co. KG.

### Advisory Panel Starts Work On Rules For Spill Response

An advisory panel, which includes Coast Guard personnel, is helping to write oil spill response rules for tanker operators. The primary issues it will discuss over the next few months will include what the basic definitions of "adverse weather" and "worst case" spills are and to determine the amount and kinds of spill response equipment tankers must carry.

Under the 1990 Oil Pollution Act, tanker operators sailing in U.S. waters must have Coast Guard-approved spill contingency plans in place by August 1993. They also must have personnel and equipment available to handle a "worst case" spill of their vessel's entire cargo in adverse weather conditions.



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Circle 276 on Reader Service Card

### Peterson Builders Launches Ninth Mine Countermeasure Ship In Series Of 11

Peterson Builders, Inc. (PBI) recently christened and launched the 224-foot wooden MCM-12 Mine Countermeasure Ship at its yard in Sturgeon Bay, Wisc.

The sponsor of the ship, **Sue Ann Thompson**, wife of Wisconsin Governor **Tommy Thompson**, christened the ship Ardent.

The Ardent is the ninth MCM launched at PBI in a series of 11 MCM Ships contracted with the U.S. Navy. Peterson Builders is one of the few remaining shipyards with the expertise, facilities and knowledge to construct large wooden ships today. PBI is entering its fifth decade of minecraft ship construction and has built minecraft for 13 different navies around the world.

The Mine Countermeasure Ships accommodate a crew of 81, and are the Navy's largest wooden-hulled ship. A wide variety of special skills, equipment and materials are utilized in laminating the ship's major structure from large timbers of Douglas fir, white oak and Alaskan cedar.

The MCM incorporates modern mine countermeasure technology into a specially designed platform which includes low magnetic signature diesel engines, a precise electronic navigation system, a minehunting and classification sonar, and a mine neutralization system.

The MCM mission is to clear the bottom and water volume of mines in coastal and offshore areas.

Overall length of the MCM ships is 224 feet. Draft is 11 feet 3 inches and beam measures 38 feet 11 inches. Full load displacement of the ships is 1,250 tons. The MCM is powered by four diesel engines rated at 600 hp per unit. They are equipped with a 350-hp bow thruster, and electric power is furnished by three 60-Hz, 375-kw generators.

The MCM-1 Avenger, the lead ship of this new MCM Class built at PBI, is based in Charleston, S.C.

Six ships of the MCM-1 Class remain in various stages of construction at Peterson Builders, with deliveries scheduled through mid-1994.

For free literature on the facilities and capabilities of Peterson Builders,

Circle 80 on Reader Service Card

### \$8.2 Million Contract To Electric Boat For Sub Refit

The Electric Boat Division of General Dynamics, Groton, Conn., recently received an \$8,173,441 firm-fixed-price contract modification from the Naval Sea Systems Command to exercise an option for the extended refit period of the USS Mariano G. Vallejo (SSBN-658).

The contract number is N00024-91-C-2102.

### Scott Named President Of California Steamship Group

Richard Scott was recently elected president for the Steamship Association of Southern California. Scott is currently the vice president of International Business Transporta-

tion Service Inc. in Long Beach, California.

### GE Awarded \$8.1 Million Contract

General Electric Company, Navy & Drive Turbine Systems, Fitchburg, Mass., was recently awarded an

\$8,099,794 firm-fixed-price contract modification for two ship service generator sets for the Seawolf SSN-21 Class submarines. The contract, N00024-90-C-4066, was awarded by the Naval Sea Systems Command.

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General view of the Gdynia Shipyard, one of the most modern shipyards in Europe.

## Restructured Polish Shipyards Offer Modern Facilities, Cost-Effective Services

For the last 40 years, Polish shipyards have been active in the construction and repair of large ocean-going ships. Due to the political climate in Poland during this period, their products have been confined mostly to Europe and what was the Soviet Union.

Now, however, due to the Solidarity movement in the 1980s, and the events in Eastern Europe in the last two years, Polish yards are expanding their marketing efforts outside their normal customer base, according to **Mark Pancer**, a U.S. representative for the yards. Polish shipyards are undergoing restructuring, privatization, and investment programs, as well as expanding their facilities in order to attract new business.

"The political environment is totally different," said **Marian Zakrzewski**, vice president of marketing for Gdansk Shipyard, a leading Polish shipbuilder. "In the past, the yard operation was subjected to a government controlled management system. Today, the yard manages itself, and we have the freedom to make decisions regarding marketing, contract negotiations, money management and investment strategy. The end result is that we have become a more efficient organization, which in turn has made us more competitive," Mr. Zakrzewski stated.

The yard, which specializes in high-tech vessels, recently delivered the third in a series of four 1,500-TEU containerships for Polish Oceans Lines. Current construction includes two multipurpose cargo vessels for delivery in 1993-94. Additionally, French owner Societe Naval et Commerciale Delmas-Vieljeux has ordered two 2,280-TEU container vessels for delivery in 1993-94, as well as an order from Finlines Group Oy AB for four RO/ROs.

At Szczecin Shipyard "Warski," which operates two production centers, the company's main yard has six longitudinal slipways for constructing vessels up to 35,000 dwt. Szczecin will shortly complete the rebuilding of its slipways, which will accommodate ships up to 230 meters

in length or Panamax size ships.

The Gdynia Shipyard, which has constructed over 500 ships since World War II, is currently in a partnership with the Polish Treasury, the first step in the process of privatization. The yard is also undergoing internal restructuring in order to increase efficiency.

A new floating dock with a lifting capacity of 15,000 tons was recently added to the Szczecin Ship Repair Yard "Gryfia." According to **Tomasz Gadowski**, the managing director for the facility, this will enable Gryfia to drydock ships up to 40,000 dwt and 216 meters in length.

GSY, the Gdansk Ship Repair Yard, near the entrance to the Port of Gdansk, has major clients from the U.S., Europe and the Mediterranean area. Employing over 3,000 workers and an additional 1,000 on-site subcontractors, GSY performs the full spectrum of repairs, from routine overhauls to special conversions.

The maximum length GSY can accommodate is 260 meters. Its floating drydocks have lifting capacities from 2,200 to 55,000 tons.

Last year, the shipyard built a new repair shop, a fitting-out berth, and a 33,000-ton lifting capacity floating dock.

GSY is currently converting a refrigerated vessel into a banana carrier, requiring 300 tons of steel replacement and multiple modifications.

On the ship training side, the Polish maritime academies of Szczecin and Gdynia play an important role in preparing future captains and chief officers for Polish and foreign shipping companies.

At the Szczecin academy, which offers courses in navigation, machinery, and sea port administration, there are about 1,100 students. The Gdynia Academy has additional telecommunication and electrical departments.

For free literature fully detailing the ship construction and repair services of Polish Shipyards,

Circle 95 on Reader Service Card

## Garlock V&IP Develops New Material To Prevent Fouling By Zebra Mussel

Garlock Valves and Industrial Plastics (V&IP), a unit of Coltec Industries, has developed Z-GARD, a material that prevents zebra mussels from fouling the intakes of power plants and drinking water facilities.

Zebra mussels (*Dreissena polymorpha*) are tiny mollusks that form huge colonies and clog water intake pipes, valves and trash gates. They have caused extensive damage and have had to be removed mechanically, a costly and time-consuming process. Zebra mussels range across the Great Lakes and east to the Hudson River.

The spread of zebra mussels to North America is a classic example of how a foreign organism unchecked by natural predators can multiply and wreak havoc.

The zebra mussel is a freshwater mollusk native to the Caspian Sea and Ural River in Russia. First discovered in 1796, the mollusk apparently traveled to North American waters in the ballast of a ship during 1986. Apparently, it was discharged into Lake St. Clair, between Lake Huron and Lake Erie, and rapidly spread into all of the Great Lakes and adjoining waterways. The mollusks encrust the hulls and engines of boats and water distribution structures situated in the water.

Z-GARD is created by adding certain molluscicidal chemicals to ultra-high molecular weight polyethylene (UHMWPE), a product well known in the power industry for its outstanding abrasion resistance and relative chemical inertness.

Garlock V&IP, based in Camden, N.J., manufactures and markets polytetrafluoroethylene-lined and UHMWPE-lined butterfly and plug valves and components.

For free literature on Z-GARD from Garlock V&IP,

Circle 61 on Reader Service Card

## HHI Set To Build Three Tankers For Saudi Aramco

Hyundai Heavy Industries (HHI), South Korea's largest shipbuilding company, has disclosed that letters of intent recently signed with Saudi Aramco for the construction of three 280,000-dwt tankers will shortly be confirmed.

Delivery is scheduled for late 1993 or early 1994, and the yard is confident the new vessels will be built at HHI's Ulsan facility.

The three vessels are part of a six-ship deal which will form part of Saudi Aramco's future newbuilding program. In addition to these vessels, VLCCs of up to 350,000 dwt are also planned.

A letter of intent for the building of the remaining three VLCCs has already been placed with Odense

Shipyard in Denmark.

Hyundai's VLCC order book has also received a boost following the confirmation that Seatankers in Limassol, the Cyprus-based management arm of Norwegian shipowner John Fredriksen, has confirmed an order for another VLCC of the same design as the Saudi Aramco vessels, for delivery in the second quarter of 1993.

The confirmation of the Seatankers order has led to speculation in the VLCC building market that, contrary to some schools of thought, VLCC building will continue to rise for several years more.

For free literature on the facilities and capabilities of HHI,

Circle 62 on Reader Service Card

## Westinghouse To Become Service Provider Of AMSC's Mobile Satellite Services

American Mobile Satellite Corporation (AMSC) recently announced that Westinghouse Electric Corporation Electronic Systems Group has signed a Memorandum of Understanding under which Westinghouse will become an authorized service provider of AMSC's mobile satellite services.

Westinghouse will initiate market development for end user applications for use through AMSC's mobile satellite system. As a future authorized service provider, Westinghouse will serve as a distributor of AMSC services to various industries requiring mobile satellite communications.

American Mobile Satellite Corporation is licensed by the FCC to operate a full service mobile satellite system for the U.S., including Alaska, Hawaii, Puerto Rico, the Virgin Islands and 200 miles of coastal territorial waters. AMSC's shareholders include companies who have had major influence on the communications industry and continue to advance the world of communications through innovative technology: Hughes Communications, Inc., McCaw Cellular Communications, Inc., and Mtel.

## Propeller Fans Bulletin Offered By Aerovent

Aerovent, Inc. of Piqua, Ohio, now offers a new brochure detailing its complete line of propeller fans with Macheta Airfoil Design.

Available in sizes from 9 inches through 96 inches with flow capacities from 500 cfm to 131,000 cfm, Aerovent propeller fans are designed to handle a wide range of industrial and marine air-moving applications.

General information on fan accessories, specifications, dimensions and performance data for all propeller fan models are described in Bulletin 167. For free copies from Aerovent,

Circle 85 on Reader Service Card

**Singmarine To Build  
LPG Carrier  
For Thai Oil Company**

Singmarine Dockyard & Engineering Pte. Ltd. (Singmarine Dockyard) has won a contract to design and build a liquefied petroleum gas (LPG) carrier.

Worth about \$10.4 million, the contract was awarded by Thai Oil

Company Ltd. This is Singmarine Dockyard's fourth newbuilding project for the same customer, having delivered three clean product tankers in the last three years.

The contract was signed by **Khun Kasame Chatikavanij**, chairman and managing director of Thai Oil Company, and **Loh Wing Siew**, chairman of Singmarine Industries Ltd., the parent company of Singmarine Dockyard.

A sophisticated vessel with many

specialized features, it will be the first such ship to be built in Singapore in more than 10 years.

The LPG carrier will be built to the strict requirements of American Bureau of Shipping with a notation of Maltese Cross A1 Liquefied Gas carrier + AMS and the Thailand Statutory Authority.

For free literature detailing the facilities and capabilities of Singmarine Dockyard,

Circle 86 on Reader Service Card

**POW-R-QUIK Introduces  
New Air Starter Motors  
For Marine Applications**

POW-R-QUIK, Ltd., Houston, Texas, recently introduced the LS Series of lube-free, air starter motors for application on all types of engine-driven equipment. POW-R-QUIK design and development engineers have been working on the new series over the past three years.

The most important features for operators in marine environments are the vane design and construction materials. The spring-loaded vanes, used in addition to the standard air/gas lift system, assure maximum cranking power, even with low supply pressure or in extremely cold starting conditions. The automatically self-adjusting vanes provide virtually maintenance-free operation.

In designing the lube-free air starter, a high tech injection molded plastic was used as the base material in the starter motor vanes, and a special precipitation hardened stainless-steel spring was developed to add corrosion resistance. New high-temperature coatings for the internal components of the starter motor are expected to add longevity and corrosion resistance and contribute to easy air starting under the lube-free conditions.

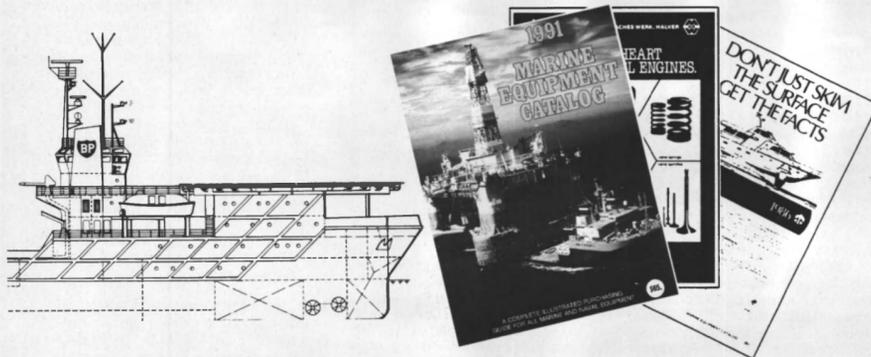
The LS Series lube-free air starters are available for most marine diesel engines up to 50,000 cubic engine displacement.

For more information and a free brochure on the LS Series of lube-free air starters from POW-R-QUIK,

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**Venice Repair Yard  
Sold By Fincantieri**

Italian state-owned shipbuilder and repairer Fincantieri Cantieri Navali Italiani SpA recently sold its ship repair yard in Venice. The yard, sold to local interests, is the first of four facilities designated for sale.

Sold for an undisclosed amount, the Venetian yard will operate under the new name of Arsenale Venezia, and pursue general vessel repair business. Employment levels are expected to be reduced by 40 percent.

The other repair facilities earmarked for sale by Fincantieri include OARN yard at Genoa, SEBM yard at Naples, and the Taranto yard.

**Falcon Drilling Seeks  
Transfer Of Drill Rig  
To Vanuatu Registry**

Falcon Drilling Associates, L.P., is seeking permission from the Maritime Administration to transfer the 1979-built, 1,211-dwt drill rig Rig 46 to the registry of Vanuatu for use in oil and gas contract drilling in the U.S. Gulf Coast.

## Electronics Update

### New Generation Electronics Offered By Atlas Elektronik

New generation navigation, vessel traffic control, hydrographic survey and fish detection systems are available from Atlas Elektronik GmbH (formerly Krupp Atlas Elektronik) of Germany.

The company's line of nav aids includes the new 9600 Series raster scan radar featuring extended operational functions, a four-fold increase in display resolution, ease of installation and provision for input of data from selectable positioning receivers for display of own ship position. Additionally, Atlas Elektronik also offers the new NCIS 1800 Nautical Consulting and Information System, an advanced console and software package designed for voyage planning and basic shiphandling functions.

Among the company's hydrographic equipment is the Polartrack three-dimensional automatic laser positioning and tracking unit with new software for degaussing and other applications; DESO 22 and 25 echosounders; and the new Fansweep multibeam swath sounding system for inshore and coastal surveying.

Fish detection products include the new FINAS 160 multipurpose information system which can process data from more than 10 different sensors simultaneously for presentation on high-resolution color screen.

Atlas Elektronik also recently introduced a radar-based system with integral keyboard for vessel traffic control applications.

The new company name is the

### Tidewater, Zapata Complete Merger

A merger that creates the world's largest fleet of offshore supply vessels has been completed by Tidewater Inc. and Zapata Gulf Corp of Houston.

A total of 576 offshore supply vessels now comprise the merged Tidewater fleet. Most of Zapata's more than 270-vessel fleet operates in the North Sea, the Middle East and Southeast Asia. The bulk of Tidewater's original fleet works in the Gulf of Mexico.

Zapata stockholders receive 23.8 million shares of newly issued Tidewater stock under the merger, which brings to 52.3 million the number of common shares outstanding. The value of the stock going to Zapata owners is \$315.16 million figured at \$13.25 a share.

A total of 45.6 percent of Tidewater stock is now owned by Zapata Gulf's former stockholders Besse-



The navigation system NCIS 1800 from Krupp Atlas Elektronik offers the user versatile decision-making aids for navigation. It performs monitoring and advisory functions, ensuring high operational safety of the ship.

mer Capital Partners L.P. and Corporate Partners L.P., which along with certain related parties each now own 14.9 percent of Tidewater, and Zapata Corp. which now owns 15.8 percent of the common stock.

**John P. Laborde** continues as chairman of the board, president and chief executive officer of Tidewater, which will continue to be headquartered in New Orleans. Tidewater's board of directors will be expanded from seven to 10 members to add three former directors of Zapata Gulf. Joining Tidewater's board are **R.C. Lassiter**, chairman of the board and chief executive officer of Zapata Corporation; **Lester Pollack**, senior managing director of Corporate Partners and general partner of Lazard Freres and Co.; and **Ward W. Woods Jr.**, president and chief executive officer of Bessemer Securities Corporation and managing partner of Bessemer Capital Partners.

Joining the management group will be **Joseph C. Sarne**, executive vice president of Zapata Gulf, and

Circle 28 on Reader Service Card

**Larry T. Rigdon** and **Gary D. Pope**, vice presidents of Zapata Gulf, who will be elected vice presidents of Tidewater to serve in various executive capacities.

### New CRV Seal From Electro-Motive

A new alternative for sealing the Compression Relief Valve (CRV) assembly to the entire crankcase has been developed by General Motors' Electro-Motive Division.

The new design seal features an elastomer bonded to a steel steel which compresses between the crankcase counterbore and the CRV valve body. Designed to mate with the existing CRV valve assembly, this new product is pressed into the crankcase counterbore until the metal flange is flush with the crankcase before the CRV test valve assembly is installed. The compression of the elastomer seals the joint tight and keeps the seal in place.

For more information on the new CRV seal from EMD,

Circle 167 on Reader Service Card

### Circle Seal Offers In-Line Check Valve For Zero Leakage To 6,000 PSI

Circle Seal Controls of Anaheim, Calif., now has available the 200 and H200 Series Check Valves for in-line installations.

The design of this valve features a floating O-Ring to provide bubble-tight sealing with cracking pressures as low as .1 psi. Combined with a metal-to-metal backup seat, the 200 Series valve provides for zero-leakage to 3,000 psi; the H200 Series is designed for 6,000 psi. This unique sealing concept reduces noise, minimizes wear and maximizes service life.

The units are compatible with most fluids with temperatures ranging minus-320 degrees to 400 degrees F, and are virtually maintenance-free. Sizes 1/8-inch through 2-inch female pipe. Valves are available in aluminum, brass and steel, 303 or 316 stainless steel.

For more information, Circle 168 on Reader Service Card

### Watercom Names Gerard D. O'Connell Director Of Sales

Officials at Watercom recently announced the promotion of **Gerard D. O'Connell** from regional sales manager to director of sales.

As director of sales, Mr. O'Connell is responsible for direct sales planning and strategy. His expanded duties include coordinating with Watercom dealers to bring Watercom customers the best service possible and supervising all daily sales activities for the company.

Watercom is a registered trademark of Waterway Communications System, Inc., Jeffersonville, Ind.

### KaMeWa Opens Service Station In Hong Kong

KaMeWa A.B., Swedish-based manufacturer of ship propulsion systems, has opened a new service station in Hong Kong, in addition to its existing sales office there.

Like all the offices in the company's worldwide after-sales service organization, KaMeWa (HK) Services Ltd will be staffed by engineers comprehensively trained by KaMeWa. The new service station will ensure customers in the increasingly important Far Eastern shipping community receive a rapid and efficient response to service calls. Previously, the nearest KaMeWa service station was located at Singapore.

For free literature giving more information, Circle 170 on Reader Service Card

### Racal Adds GPS To Tailbuoy Tracking Systems

Racal Survey has added a global positioning system capability to its existing range of streamer tailbuoy tracking systems. It has been designed to track multiple seismic streamer tailbuoys using miniaturized GPS receivers combined with an intelligent radio-telemetry system. The new system complements existing shore-based Hyper-Fix and Pulse/8 II facilities to provide precise tailbuoy positioning anywhere offshore.

The rapid expansion of SkyFix coverage around the world is expected to make the Racal Survey GPS system particularly attractive to operators in the offshore survey industry.

For free literature giving further information, Circle 171 on Reader Service Card

### Clean Sound Barge To Be Outfitted For Spill Response

Clean Sound Cooperative of Edmonds, Wash., has purchased the 1980-built, 23,400 barrel inland tank barge Phoenix 231 from Phoenix Marine, Wilmington, Calif. The barge, ex-Bear 231, is to be outfitted for use as an oil spill response unit in conjunction with Clean Sound's existing operations in the Puget Sound region. The barge will be stationed in Port Angeles, Wash.

The delivery of the barge from Southern California is being handled by the 1,500-hp tug Daphne, owned and operated by Coastline Pacific, Ltd., Seattle, Wash.



The passenger/train/car ferry Tycho Brahe, built for the Danish Railways (DSB) is shown undergoing sea trials in the Tomrefjord in Norway. MACOR delivered hydraulic equipment for this ship.

## MACOR Marine Systems, Formerly Deutsche MacGregor, Equips New Ferry In Norway

Langsten Slip & Batbyggeri A/S in Norway recently built the passenger/train/car ferry Tycho Brahe (yard No. 156) for the Danish Railways DSB (Dansk Statsbaner).

The ferry is to travel once an hour between Helsingør in Denmark and Helsingborg in Sweden.

This ferry has been equipped with different types of hydraulic equipment by MACOR Marine Systems International GmbH in Bremen.

Notable features of the Tycho Brahe include: (1) Platforms inserted in the train deck which can be hydraulically raised so that the train passengers can get off the train and enjoy the facilities onboard. (2) Movable bulwarks arranged on the south side serving as a support for the quayside ramps provided for the

cars boarding the ferry in the two ports. (3) Two additional car decks arranged side by side on the south side which can be lowered, if necessary from stowing position below the fourth deck to working position so that the cars can pass the quayside ramp and be parked on the deck. (4) Two hydraulically operated two-panel passenger access doors on both sides of the ship. (5) Hydraulic drives for the two "bow" visors.

On both ends of the ship, transverse buffer booms are arranged in way of tracks 1 and 3 which can be lifted or lowered by means of hydraulic jigger winches.

For free literature on the facilities and capabilities of MACOR Marine Systems International,

Circle 81 on Reader Service Card

### Alfa-Laval Strengthens Marine & Power Division

Alfa-Laval has further strengthened its Marine & Power division through the incorporation of the marine and power section of the After Sales marketing department. Marine and power after sales activities are the responsibility of the Marine Marketing Manager, **Goran Bengtsson**, and the Power Marketing Manager, **Michael McConvey**, respectively.

The incorporation of the After Sales marketing department aligns with the overall strategy of Alfa-Laval's Separation business area. The aim is greater commitment towards the end-user throughout the lifetime of the ship or power plant. This commitment includes spares, service, upgrades, retrofits, second-hand equipment, fixed maintenance contracts, operational leasing, and training.

Alfa-Laval is currently intensifying its focus on complete systems and total economy for ship owners and power plant operators.

For free literature giving complete details on the equipment and services offered by Alfa-Laval,

Circle 38 on Reader Service Card

### Martin Elected To Norshipco Board Of Directors



Frederick V. Martin

Norfolk Shipbuilding & Drydock Corp. has announced that **Frederick V. Martin** has been elected to the company's board of directors.

Martin formed Virginia Investment Counselors in 1972 and is now the current president. Before 1972, Martin was vice president and manager of the trust investment department of United Virginia Bank/Seaboard National. He also served as trustee and chairman of the investment committee of the Employees Retirement System for the City of Norfolk.

Norfolk Shipbuilding & Drydock

Corp. is Hampton Roads' largest privately-owned corporation, employing more than three thousand workers.

### FBM Marine Awarded Contract For Submarine Support Vessel

FBM Marine Holdings Limited of Cowes, Isle of Wight was recently awarded a contract by the Ministry of Defense for the construction of a submarine support vessel.

FBM has experience in building high speed, multi hull vessels, as well as offering a wide range of specialized hull forms. The 101 foot long, 25.58 foot wide twin hulled vessel will be powered by twin marine diesel engines and has a design speed of 23 knots.

The submarine support vessel will be used to transport personnel from a support base to submarines offshore. It is scheduled for delivery in November 1992.

### MARAD Awards \$5 Million In RRF Contracts

Sperry Ocean Dock, Ltd., Tacoma, Washington, was recently awarded a \$3 million contract to layberth the Austral Lightning and Green Mountain State, both Ready Reserve Force ships. The one-year contract with four one-year options provides that the vessels be maintained in an idle status and that necessary regulatory repairs be made.

A \$2 million contract was awarded to Industrial Welding, Portland, Maine for deactivation of Ready Reserve Force vessel, SS Cape Clear. The deactivation work is expected to be completed within 60 calendar days.

### Two Ships Ordered From Conoship International

The Netherlands Secretary of Transport, Public Works, and Water Management recently ordered a research vessel for the North Sea Directorate from Conoship in Groningen, the Netherlands. The vessel will be built at shipyard Bodewes Volharding in Foxhol, Groningen, at a cost of over \$15.8 million. Delivery of the vessel is scheduled for early 1993.

The main function of the vessel will be to take soundings of the two deepwater channels on the North Sea approach to Amsterdam and Rotterdam. Other functions that this vessel will be equipped for are the control of disasters on the North Sea and removal of oil spills.

Conoship also negotiated another contract and signed with "Nieuwbouw en Reparatiebedrijf Welgelegen" for a 7500 ton dead-

weight chemical tanker with stainless steel tanks. The 368 foot long tanker will have a diesel engine that will operate at a cruising speed of 14.4 knots. The tanker will carry clay slurry and various chemicals. Scheduled delivery of the vessel is the end of 1992.

For free literature giving complete information on the services offered by Conoship,

Circle 39 on Reader Service Card

### API Issues Study On Cost Of New Federal Environment Requirements

The Oil Pollution Act of 1990 requires that all U.S. tankers be equipped with double hulls between 1995 and 2015. The annualized cost is estimated at \$712 million.

A recent American Petroleum Institute (API) study looked at the cost impact of some of the new federal environmental requirements for the petroleum industry.

The study, "Costs to the Petroleum Industry of Major New and Future Federal Government Environmental Requirements" **Jody Perkins**, Discussion Paper #070, October 1991, found that recently enacted or potential federal environmental requirements could cost the petroleum industry between \$15 billion and \$23 billion per year by the end of the 1990s. (The study does not estimate the value of potential benefits from the new requirements.)

The study presents the various cost estimates as annualized estimates so that they can be compared. Limitations of certain cost estimates, estimate comparisons and estimate aggregations are clearly indicated in the study.

The paper is nontechnical and has an executive summary up front. Single copies are available free of charge from API's Policy Analysis Department (202) 682-8543.

### Alaska Diesel Introduces New Big Boat Engine For Larger Commercial Vessels

Alaska Diesel Electric, Seattle, Wash., manufacturer of Luger marine diesels and Northern Lights generator sets, has introduced a new big boat engine for larger vessels.

The Luger 6170A is an in-line six-cylinder, 23 liter, 170-mm bore, turbocharged-after-cooled diesel. It is rated 640 bhp at 1,800 rpm for continuous duty, 730-bhp at 2,000 rpm medium duty, and 825 bhp at 2,100 for pleasure craft applications.

Advanced design features of the engine include individual four-valve cylinder heads, a freshwater-cooled turbocharger and after-cooler, one-piece nodular iron pistons, and replaceable wet cylinder liners.

For information on L6170A and other Lugers from 61 to 1,300 hp,

Circle 172 on Reader Service Card



## Canadian Maritime Industries Association's 44th Annual Technical Conference

### Event Will Include Canadian Shipbuilding & Offshore Exhibition

The arrangements have been finalized for one of Canada's most important shipbuilding and offshore marine trade shows, the Canadian Maritime Industries Association's 44th Annual Technical Conference, which will be held at the Ottawa Congress Center and the Westin Hotel, Ottawa, Ontario, February 17-18, 1992.

"As a result of the resounding success of the Canadian Shipbuilding & Offshore Exhibition," said CMIA president **J.Y. Clarke**, "we have decided to include CSOE '92 on the program for our 1992 conference. This added feature has resulted in a tremendous interest in the conference, the largest technical marine conference held in Canada. CSOE '92 will be a major component of the conference."

Mr. **Clarke** pointed out that the technical conference's open sessions, which begin at 9 a.m. on February 18, will be presented in adjacent rooms on the Capitol Hall level at the Ottawa Congress Center.

Double-hull ships, offshore technology, high-speed craft, and the marine environment will be among some of the most noteworthy topics addressed by the conference's 15 technical papers and presentations. During the "Shipbuilding and Repairing" session of the conference, for example, "Placing into an Arctic Environment Context the Move Towards Double Hulled Ships" will be presented by representatives from Melville Shipping Ltd. At the same session, Ulstein Maritime will address its new high-speed craft design in "SES Vessels," while Jeumont-Schneider Industrie will present "Ships Electric Drive Machinery and Pollution of Ships Electrical Network."

During the "Allied Industries" session, MIL Davie will present "Total Quality in the Maritime Environment," while Deutsch Metal Components will discuss "Mechanically Attached Swage Fittings takes the Head off Pipe Connecting."

CSOE '92 will be located in the

Congress Hall at the Ottawa Congress Center. Exhibitions such as CSOE '92 help bring together all interested parties in the marine industry. Some 120 booths are available and it is expected that they will all be occupied.

Exhibition hours will be 10 a.m. to 6 p.m. on Monday, February 17, and 10 a.m. to 5 p.m. the following day.

Mr. **Clarke** noted that the 1991 technical conference and exhibition (CSOE '91) attracted well over 1,200 persons from across Canada and around the world, including international media and government officials.

Registration for the Annual Technical Conference opens at 9 a.m. on Monday, February 17, on the Congress Hall level of the Ottawa Congress Center. Registration for the conference entitles visitors to free admission to the exhibition.

For further information on the conference and exhibition, contact: **Joy MacPherson**, director admin-

istration and finance, Canadian Maritime Industries Association, P.O. Box 1429, Station B, Ottawa, Ontario, Canada K1P 5R4; telephone: (613) 232-7127; or fax: (613) 232-2490.

#### TECHNICAL PROGRAM

Group A—Shipbuilding/Repairing  
Capital Hall 1B/2B

"Whole Ship Finite Element Analysis of the Canadian Patrol Frigate," by **Ray Moon** and **Kevin Stone**, Saint John Shipbuilding Ltd.

"Safety Studies on Conventional Submarines," by **Mr. LeTallec**, **Mr. Peyron**, and **Mr. Rotrubin**, DCN International.

"Future Opportunities for Advanced Marine Vehicle Technology in Canada," by **Prof. J.F. Sladky Jr.**, University of British Columbia.

"Placing into an Arctic Environment Context the Move Towards Double Hulled Ships," by **Robert Dick** and **Thomas Anderson**,

Melville Shipping Ltd.  
 "Offshore Engineering Projects at the Institute for Marine Dynamics," by N. Murphy and D.C. Murdey, Institute for Marine Dynamics.  
 "SES Vessels," presented by Ulstein Maritime.  
 "Ships Electric Drive Machinery and Pollution of Ships Electrical Network," presented by Jeumont-Schneider Industrie.

Group B—Allied Industries  
 Capital Hall 3B/4B

"Total Quality in the Maritime Environment," presented by MIL Davie.

"Mechanically Attached Swage Fittings Takes the Head Off Pipe Connecting," presented by Deutsch Metal.

"Computer Numerically Controlled Milling of Model Propellers in Hard Metals," by Dr. Drasko

and Slobodan Gospodnetic, Dominis Engineering Ltd.

"Computer Vision System for Motion Measurement of Small Floating Bodies," by Slobodan Gospodnetic and John Phillips, Dominis Engineering, and Michael Miles, National Research Council.

"Electrical Marine Systems—Improving Productivity with Integrated Solutions," presented by Siemens Electric.

"Energy Conservation, Emission Levels and Reduction through Life Costs," presented by Ruston (GEC).

"The Development of a High Performance Militarized Computer," by Fernand Berard, Paramax Electronics Inc.

"Application of Duralcan 90/10 Thermally Sprayed Coatings to a Defined Zone of the New Bow of the CCGS Louis St. Laurent," by L.D. Parkinson, Welding Institute of Canada; B. Altschuler, Alcan In-

ternational; Dr. V. Mitrovic-Scepanovic, Energy Mines & Resources; and D. Stocks, Canadian Coast Guard.

#### CISOE '92 Exhibitors

Company	Booth
Alfa Laval Marine & Power	403
Allied Signal Aerospace Canada	507
CAF Electronics	217
Canadian Welding Bureau	401
CEL Inc.	226
John Crane Canada/Deep Sea Seals	111
Dayton T. Brown	211
DCN International	202/204
Deutscher Metal Components	310
Dominis Engineering	106
Enirovac	500
Fenco Engineers	307
GEC Alsthom Int'l Canada	517/519
German & Mine	102/104
Halifax/Dartmouth Industries	302
Harnworthy Canada Limited	509/511
Hermont/B. Fortin	505

Indal Technologies	301
Institute for Marine Dynamics	112
International Paints (Canada)	110
JSC Inc. (Joiner Systems)	114
Jordair Engineering	210
Key Marine Industries	400
Krupp MaK Diesel (Canada)	417/516
MAN B&W Diesel (Canada)	515
Martec Limited	402
Martech Equipment	316
MIL Group	201/300
Mitral	303/305
Ministry of Industry & Technology of Quebec	205/207/209/304/306/308
Newfoundland Dockyard	203
Paramax Electronics	105/107
Peacock	311/410
Siemens Electric Limited	101/103/200
Spirax Sarco Canada	108
St. Lawrence College	109
Stone Marine Canada	317
Thomson-CSF Canada	411/510
Thordon Bearings	100
Ulstein Maritime	513
United Marine	216
Westinghouse Canada	117
Wilson Machine	416

### Thrustmaster Offers New Eight-Page Brochure On Steerable Propulsion Units

Thrustmaster of Texas, Inc., Houston, recently announced the availability of a new eight-page, full-color brochure that details the operation and benefits of the steerable propulsion units marketed by the company.

The Thrustmasters are available in HP ranges of 75-1,000. The self-contained outboard propulsion units include features of 360-degree steering, propeller tilt and slow-speed, high-thrust propellers. The units are typically self-contained, including the diesel engine, diesel fuel storage, tiltable propeller stem assembly and either a local or remotely mounted control station.

Typical applications of Thrustmasters include work barges, dredges, ferries, transport barges, crane barges and bow boats.

The Thrustmaster brochure, which is profusely illustrated with color photos, diagrams, drawings, etc., also contains descriptive material on a variety of units to match your hydraulic propulsion application.

For more information and a free copy of the new brochure on Thrustmaster steerable propulsion units,

Circle 83 on Reader Service Card

### ABB Unit Wins \$120 Million Contract

ABB Asea Brown Boveri Ltd. recently reported its Norwegian subsidiary EB Corp won a contract from Saga Petroleum A/S for a subsea oil production system in the Tordis North Sea oil field.

The contract was valued at about \$120 million by the company.

EB Corp is now a fully owned subsidiary and has changed its name to ABB A/S.

### Sea Recovery Introduces Horizontal Split Frame For Needs Of Megayachts

Reverse osmosis (R.O.) systems, developed, designed and manufactured by Sea Recovery Corp., are available in models capable of producing from 1,300 to 4,000 gallons (4,920 to 15,140 liters) per day from either sea or brackish water sources. To ensure trouble-free performance from these systems, three complete research and development laboratories are employed to test each component before it is installed into the final R.O. system.

Sea Recovery's most compact commercial R.O. desalinator is designed to suit the needs of megayachts, as well as onshore facilities (such as private residences, villas, and smaller hotels). The world's foremost and most prestigious motor and sailing yacht builders specify and install this easily maintained R.O. desalinator.

This system is extremely versatile as it comes in a two-piece horizontal split frame which may be separated for installation clearance. The commercial system can now be installed in a wider range of convenient locations on board.

This horizontal frame measures 18 inches high by 26 inches deep, with a 58-inch width. The reverse osmosis membrane frame is 9-1/2 inches high by 26 inches deep, with a 58-inch width. A three-piece vertical frame configuration is also available.

Constructed with a lightweight, epoxy-coated frame, each unit utilizes only the highest quality marine-grade materials and components. Features include a booster pump, oil/water separator, two commercial grade prefilters for added membrane protection and extended filter life. A unique low-voltage solid-state controller for measuring exact water quality with temperature compensated accuracy.

Upgrading a model to higher water-making capacity is done by sim-

ply installing additional membranes.

For additional information and free literature,

Circle 84 on Reader Service Card

### Leback To Be Featured Speaker At IME Meeting, March 11, 1992, At DAC

The Institute of Marine Engineers will hold its first meeting of 1992 at the Downtown Athletic Club (DAC) in New York City on March 11. Warren Leback, the United States Maritime Administrator, will be the featured speaker. Mr. Leback will speak on current national activities and policies affecting the U.S. merchant marine.

For further information, contact Prof. Alan Rowen at 516-671-2215.

### Fred Sherman Elected President Of ABS

Fred S. Sherman was recently elected president of the American Bureau of Shipping by the ABS board of managers. He will join ABS this month at the ABS corporate office in New York.

Mr. Sherman's joining ABS will strengthen the management team so that the organization will be better able to serve its existing and new clients now and in the future.

Mr. Sherman brings to ABS one of the broadest backgrounds in the U.S. today. At age 32 he was made president of Bethlehem Steel Shipping Companies, which included a large international fleet as well as a Great Lakes, intercoastal, and coastwise fleet. He left 10 years later to join Marine Transport Lines as chairman. After turning this company around following a troubled period, he joined SCNO Barge Line as president in 1979. Mr. Sherman took SCNO through an expansion and in 1988 it was sold

to American Commercial Barge Line, a subsidiary of CSX. He retired a year later to establish Plimsoll Marine, Inc., an international marine consulting firm.

### EXPO '92 To Be Held September 9-10, 1992, In Bremerton, Washington

Exhibitors from 12 states across the country will be on hand September 9-10, 1992, for EXPO '92 Industrial Products and Information Management Show in the Pacific Northwest.

Under the sponsorship of the Puget Sound Naval Shipyard, the event will be held at the Kitsap County Pavilion in Bremerton, Wash., near the major city of Seattle.

Exhibitors are wide-ranging and include manufacturers and suppliers of industrial equipment, safety equipment, diagnostic test equipment, quality control products, computer services equipment, and construction equipment.

For further information, contact show chairman Robert Bray at Puget Sound Naval Shipyard in Bremerton, Wash., at (206) 476-4437.

### Espino Named President, Coastal Fuels Marketing

Alberto N. Espino has been elected president and chief operating officer of Coastal Fuels Marketing, Inc., based in Miami, Fla. Previously, he had been executive vice president of this petroleum products marketing and distribution company operating at 36 terminals throughout the Southeast and the Caribbean.

Mr. Espino continues as president and chief operating officer of Coastal Tug and Barge, Inc., also based in Miami. Both are subsidiaries of The Coastal Corporation.

Maritime Reporter/Engineering News



## SEATRADE CRUISE SHIPPING '92

Cruise Shipping Conference & Exhibition Set For March 10-14 In Miami

Seatrade Cruise Shipping '92 Conference & Exhibition is expected to be the largest cruise shipping industry forum ever, attracting more than 3,000 international industry leaders for a full schedule of debates, panel discussions, workshops, and ship inspections, as well as a large exhibition of marine products and services. The show is scheduled to be held from March 10 to 14, 1992 at the Miami Beach Convention Center in Miami, Fla.

The conference is scheduled to open with a "State of the Industry" debate focusing on key issues confronting the cruise industry. Slated to participate in the 1992 opening session are: **Richard Fain**, chairman and chief executive officer of Royal Caribbean Cruises Ltd.; **Tim Harris**, chairman of Princess Cruises; **Trygve Hegnar**, chairman and chief executive officer of Kloster Cruise Ltd.; **Bob Dickinson**, senior vice president of sales and marketing of Carnival Cruise Lines; **Duncan Beardsley**, president of Seabourn Cruise Line; and **Travis Tanner**, senior vice president of

Walt Disney Attractions Sales.

Other conference sessions are to cover such topics as vessel design, destinations and ports of call, the industry's restaurant and hotel element, financing, product development, regulation and technical challenges. A session headed by **Jay Lewis**, president of Market Scope Inc., is to focus on Cuba's cruise industry potential. And Arthur D. Little Inc. experts are slated to discuss effectiveness of cruise line advertising.

"Those exhibitors who already have reserved space this year represent a full spectrum of suppliers from throughout the world," said **Christopher Hayman**, Seatrade's managing director. "Additionally, informative program sessions are scheduled to be devoted to the latest percent each year since 1985.

Exhibitors will include shipyards, coatings suppliers, refrigeration and air conditioning equipment companies, galley suppliers, port and tourism authorities, etc. This year's forum is to feature eight national pavilions—France (with 40 stands),

Norway, the Caribbean, Finland, Great Britain, Italy, Canada, and Belgium—the most ever at the show.

This is to be the first time that Seatrade Cruise Shipping will be held at the Miami Beach Convention Center. The event continues to use the Miami Beach's Fontainebleau Hilton Resort & Spa, which is a short distance from the convention center, as the headquarters hotel. The move to the convention center, according to **Michael Kazakoff**, a representative for the show, will allow the accommodation of all the exhibitors in one area.

For additional information on the show, contact: **Michael Kazakoff**, The Seatrade Organization, 125 Village Blvd., Suite 220, Princeton, N.J. 08540-5703; telephone: (609) 452-9414; or fax: (609) 452-9374.

### CONFERENCE PROGRAM

#### Tuesday, March 10

Official opening of Seatrade Cruise Shipping '92—delegate registration and welcome reception. All sessions will be presented in English, with simultaneous translation into French and Japanese.

#### Wednesday, March 11

**Keynote address**—**Robert H. Dickinson**, senior vice president, sales and marketing, Carnival Cruise Lines, and chairman, Cruise Lines International Association (CLIA).

**Morning Session—"State of the Industry" Debate** Among the topics to be discussed will include: "Cruise and the Leisure Industry: The Case for Strategic Alliances"; "The Airline/Cruise Line Relationship"; "With Thirty Newbuildings on Order can the Passenger Sales Growth of the Eighties be Repeated in the Nineties?" "Discounting, the Economy and the Short-Term Outlook"; and "The 200-Passenger Luxury Cruise Ship Market."

Speakers: **Duncan Beardsley**, president, Seabourn Cruise Line; **Richard Fain**, chairman and chief executive officer, Royal Caribbean Cruise Lines Ltd.; **Tim Harris**, president, Princess Cruises; **Trygve Hegnar**, chairman and chief executive officer, Kloster Cruise Limited; **Travis Tanner**, senior vice president, Walt Disney Attractions Sales; and **Sunil Sreenivasan**, vice president, Citibank, N.A.

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

**Afternoon Session—Product Development** "TV and Print Advertising for Cruise Lines: A Comparison," by **Don Tatzin**, director, Arthur D. Little, Inc., and **Stanley Buchin**, director, Arthur D. Little, Inc.

"The Future for Cruise Retailing," by **Scott Koepf**,

president and CEO, Cruise Holidays International, Inc.

"Meeting the Challenge of Mixed Nationalities on Cruise Vessels," by **Thierry De La Tour D'Artias**, president, Paquet Cruises.

"Alternative Approaches to the Traditional Cruise Product," by **William Vervaeke**, senior vice president, sales and marketing, Club Med.

"The American Family Goes to Sea," by **Bruce Nierenberg**, consultant.

"Capitalizing on Known Demand for the Cruise Product," by **Jim Godsman**, president, Cruise Lines International Association (CLIA).

Buffet dinner hosted by the Port of Miami.

#### Thursday, March 12

##### Morning Session—Regulatory Forum

A panel discussion on the regulatory issues now confronting cruise operators and an assessment of their significance to the future of the industry.

Participants: **Vincent F. Roth**, president, ABS Americas; Rear Adm. **E.E. Mitropoulos**, senior deputy director, Navigation and Related Matters, Maritime Safety Division, International Maritime Organization (IMO).

"How Washington Works," by **Robert S. Dietz**, attorney, LeBoeuf, Lamb, Leiby & MacRae.

##### Finance

"Mergers, Pricing and CRS. Competitive Conditions in the Cruise Market Place," by **John Reilly**, partner, Haight, Gardner, Poor & Havens.

"The Insurance Factor," by **Steve Barton**, direc-

tor, Sedgwick Marine & Cargo Limited.

"Finance for Cruise Projects," speaker to be announced.

##### Afternoon Session

Cocktails and luncheon to be co-hosted by the Puerto Rico Ports Authority, the Puerto Rico Tourism Company and the Port of Ponce.

##### Session I—Destinations And Ports Of Call

"Cruise Europe: The Case for Cooperation in Destination Marketing," speakers to be announced.

"Prospects for the Mediterranean in 1992 and Beyond," by **Art Lubin**, president, Epirotiki Lines.

"The New Atlantic Frontier: A Market Study," by **Walter Johnson**, executive director, Tourism Industry Association of Nova Scotia.

"Cruising as Part of an Overall Strategy for Tourism in the Caribbean," by **Lynette Seebarsan-Suite**, chairman, Port Authority of Trinidad & Tobago.

##### Session II—Designing Ships for the 90s And Beyond

"Using Color and Design to Achieve Your Objectives," by **Shirley LaFollette**, president, Interior Design International, Inc.

"Master Planning a Refurbishment Program to Minimize Downtime," by **Howard Snoweiss**, co-principal, Joyce/Snoweiss Design Group.

"Redesigning the Viking Serenade," by **Tom McGrath**, vice president, sales and marketing, Hopeman Brothers, Inc.

"Building New Vessels for the Riverboat Market,"

by **Edward P. Doherty**, president, Atlantic Marine, Inc.

"The SWATH Concept for a Global Market," by **William Clifford**, president/general manager, Pacific Marine.

"Access, Mobility and Leisure Systems on Cruise Ships—Design for Passenger Total Comfort," by **David Byrne**, head, MacGregor-Navire Transmarine Consultants.

"Sculpture on the Water," by **Susanna Holt**, ARBS.

#### Friday, March 13, Morning Session

##### Session A—Cruise Line Catering and House-keeping

"The Size of the Market—What is the Cruise Line Looking for from Its Suppliers?" by **Randy Doolittle**, director of food and beverage purchasing, and **Carol Alexander**, director of hotel and general purchasing, Royal Caribbean Cruises Ltd.

"Creating the Service-Driven Cruise Line," by **Lawrence Rapp**, vice president, hotel operations, Seabourn Cruise Line.

"Hotel Labor for the Cruise Industry," by **Lewis A. Fraser**, president, WorldWide Catering, Inc.

"Controlling Costs through Advanced Galley Technology," by **Rene Ghiselli**, president, SeaKing International.

Other topics during this session will include: "Public Health: Meeting and Exceeding Requirements" and "The Bar as a Source of Revenue."

##### Session B—Technical Forum

"Purchasing Strategy for Cruise Ship Newbuildings, Organization and Buyer/Supplier Relations," by **Edvard Eriksen**, purchasing coordinator, RCCL newbuildings, Royal Caribbean Cruise Line A/S.

"Risk Management for Fuel Purchasing," by **Ramsey El Fakir**, price risk manager, Trans-Tec Services, Inc.

"Cruise Ship Conversions," by **Carlos Aguado**, repairs and conversions manager, Astilleros Espanoles S.A.

"Noise and Vibration Predictions and Some Solutions," by **Fritz Kunz**, technical investigation department, Lloyd's Register of Shipping.

"Diesel Exhaust Control Technology for Marine Vessels," by **Oerjan A. Goetmalm**, vice president, business development, ABB Flakt Marine, Sweden.

##### Session C—The Expanding Market Place

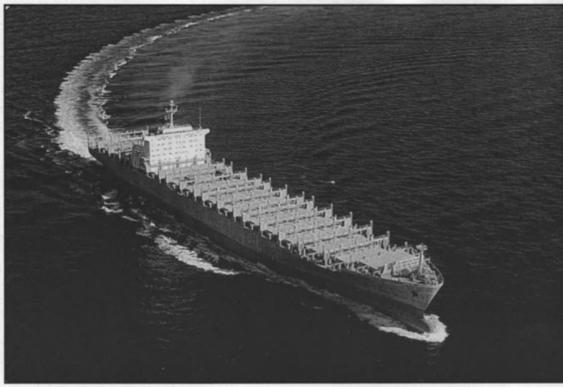
###### Part I—Cuba

"Cuba's Potential for the Cruise Industry," by **Jay Lewis**, president, Market Scope Inc. A panel discussion will follow this presentation.

"Part II—New Approaches to Theme Cruise Planning," by **Josephine Kling**, president, Landry & Kling Inc.

"Conventions at Sea," speaker to be announced. Cocktail luncheon to be hosted by the Port of Bordeaux.

Visit to the Port of Miami, including an inspection of RCCL's Nordic Empress.



The 4,469-TEU container ship Bunga Pelangi, one of the largest in the world, is powered by a single Hyundai-MAN B&W 10K 90MC main engine.

## HHI Delivers 4,469-TEU Boxship To Malaysian Owner

Korean shipbuilder Hyundai Heavy Industries Co., Ltd. (HHI) recently delivered one of the world's largest container ships, the 4,469-TEU Bunga Pelangi, to a Malaysian owner.

The new container ship ordered by Malaysian International Shipping Corporation Berhad (MISC) in January 1990 was handed over to the owner following a naming ceremony. The vessel was christened by **Y.A. Bhg.** Other attendees included **Datin Seri Dr. Siti Hasmah Bte Haji Mohd. Ali**, wife of Rt. Hon. **Datuk Seri Dr. Mahathir Bin Mohamad**, the Prime Minister of Malaysia. Over

140 dignitaries and guests from the Malaysian and Korean authorities including MISC and HHI were present at the ceremony.

The delivery of the Bunga Pelangi, the first ship ordered by MISC from HHI, seems to have paved the way for further business between the two companies.

MISC and HHI signed subsequent newbuilding contracts for four 72,700-dwt Panamax bulk carriers at the Ulsan shipyard the day after the Bunga Pelangi was christened.

The Bunga Pelangi has an overall length of 902 feet, width of 122 feet, and depth of 71 feet, with a design draft of 41 feet.

The ship is the largest of its kind to date, and she is capable of carrying 12 rows and 8 tiers of 40-foot/20-foot by 8-1/2-foot containers in each hold, plus 15 rows and 5 tiers of 40-foot/20-foot by 8-1/2-foot containers on deck.

The ship's propulsion is supplied by a two-stroke Hyundai-MAN B&W 10K 90MC main engine with an MCR of 55,400 bhp at 93 rpm, producing a service speed of 25 knots. Diesel generators split into two compartments to contribute reduction of high noise for economical operation of the ship. In this context, electric power is supplied by two 2,285-kw and two 1,525-kw generators, and emergency supplies are secured by a 20-kw genset.

The high-torque steering gear of the ship is of electrohydraulic, two ram-four cylinder type incorporated with autopilot system, and the 2,000-kw bow thruster is of stepless controllable pitch propeller type.

For free literature detailing the shipbuilding services of HHI,

Circle 22 on Reader Service Card

## Jet Foil Inventor Joins Art Anderson Marine Division

**Robert Gornstein**, marine design engineer and one of the co-inventors of the Boeing Jet Foil, has joined the Marine Division of Art Anderson Associates, Bremerton, Wash.

**Mr. Gornstein** comes from Todd Shipyards in Seattle, where he was a design engineer for new ship development, ship modifications and repair for projects including those for the U.S. Coast Guard, U.S. Navy and Washington State ferries.

Prior experience includes his development of the Westfoil 149-passenger, fully submerged hydrofoil.

The vessel is now undergoing sea-trials at Gray's Harbor, Wash., and will soon be operating between Los Angeles and Catalina Island, Calif.

At Art Anderson Associates, **Mr. Gornstein** joins the marine design team to work on low wake ferry design and hydrodynamic research.

## Ulstein Receives Orders For 2 More Seismic Ships From Western Atlas

Ulstein Verft A.S., Norway, has received confirmation of two contracts for advanced seismic research vessels for Western Atlas International, Inc., Houston, Texas. The vessels are designed by Ulstein International A.S., in close cooperation with the customer for operation worldwide.

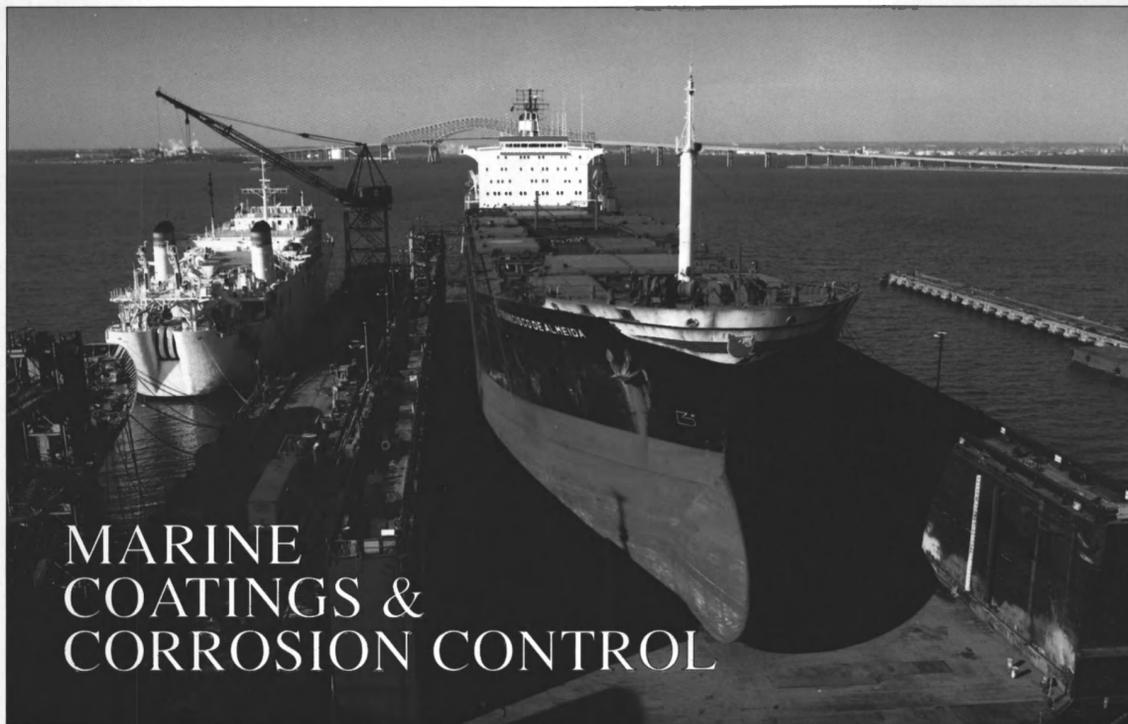
Western Atlas has already taken delivery of three vessels from their building program at Ulstein yards. A fourth vessel is expected to be delivered in April 1992. The confirmation of the additional two UT 700 design vessels will stretch the building program period towards the end of 1993.

Operational experience and performance of the first vessels of the UT 700 designs contributed to the final decision to complete the current newbuilding program as a part of an ongoing modernization of the Western Geophysical fleet, under which the company is further expanding its capabilities.

Western Atlas International is a leading seismic exploration services company and operates over 30 deep sea seismic vessels.

For free literature detailing the building capabilities of the Ulstein Group,

Circle 24 on Reader Service Card



## MARINE COATINGS & CORROSION CONTROL

### —A REVIEW—

In recent years, there has been growing international awareness for the need to protect the marine environment.

Several countries, for example, have already enacted legislation limiting the use of TBT (tributyltin) in marine paints. Regulations are already in place in the U.S., U.K., France and Australia, and other countries are expected to follow suit shortly.

The marine coatings industry has reacted positively to this concern by developing environmentally friendly antifouling, coatings and products. Many coatings manufacturers, in fact, have introduced tin-free coatings to meet these new guidelines.

The performance of these various protective coatings is strongly influenced by the quality preparation of the coating surface. This is dependent on the work performed by the shipyard and the type of abrasives, blasting equipment, grinders, and surface preparation tools used.

The following review is a brief glimpse at some of the coatings products and surface preparation equipment available to the marine industry based on a survey of some of the largest manufacturers and suppliers of these type products.

#### For Further Information

For free literature, technical data, brochures and reports detailing any of the products or services reviewed in this feature, circle the appropriate Reader Service number accompanying the manufacturer's review on the postpaid Reader Service Card

bound into the back of this issue.

#### AMCLEAN

Circle 109 on Reader Service Card

Amclean is a Miami-based company specializing in the removal of marine coatings. Amclean has developed a process that can remove various coatings and fairing materials up to 1-inch thick. Amclean reports that its process is faster and environmentally safer than traditional dry blasting techniques. Using high-pressure water blasting equipment combined with state-of-the-art media-injected nozzles, Amclean is able to remove any combination of coatings.

Amclean's most recent coatings removal project was at Dextor-Gunnell in Dania, Fla., on the *Mystique*, a 160-foot megayacht built by Oceanfast in Australia for a *Jon Bannenburg* design. Amclean was hired to leave a white metal finish on the transom and triple jet drives to accommodate a transom modification being done by the shipyard.

The coatings on the *Mystique* were an advanced two-part epoxy system with six coats of various antifouling. Microbaloon and fairing materials were 10-12 mils thick on the entire transom. Using Mil-spec garnet, Amclean was able to leave the shipyard with a white metal 3.5 mil finish for the new coatings to adhere to.

Amclean has available a coatings removal video for potential clients at no charge.

#### AMERICAN SAFETY TECHNOLOGIES

Circle 94 on Reader Service Card

For more than 75 years, American Safety Technologies, formerly American Abrasive Metals, has been a leading source for non-slip safety systems worldwide. Originally developed as a protective non-skid coating system for U.S. Navy aircraft carriers, American Safety coatings have been applied to virtually all naval flight decks since 1962, where they withstand the constant abuse of heat, rain, snow, frost, strong winds, salt spray, chemical spillage, the impact from chains and leading gear, as well as the abuse of thousands of fighter jet landings.

This experience, coupled with ongoing chemical research, has led to the development of advanced, non-slip, total-protection formulations for above-the-waterline marine applications including boottops, topsides, decks, and deck fittings.

American Safety coating and decking systems now enhance the safety, esthetics and seaworthiness of all types of vessels—from pleasure craft to commercial shipping, fishing, transportation and offshore geologic exploration—becoming an integral

part of ship safety and design. American Safety Technologies offers non-slip coatings for a wide variety of marine applications. All bond easily to wood, aluminum, steel and fiberglass. All provide superior chemical-resistance and excellent surface adhesion, retaining their non-slip integrity for several years in demanding oceangoing and off-shore conditions.

#### AMERON

Circle 3 on Reader Service Card

Over 10 years ago, Ameron developed the formulation techniques which now permit the manufacture of coatings that can stand up in today's tough regulatory climate while maintaining high levels of performance.

In the early 1980s, Ameron introduced Amerlock 400, a high-solids, high-build epoxy which offers surface-tolerant corrosion protection. Even today, Amerlock 400 surpasses all EPA VOC requirements. Several years later, Amershield, a high-build VOC-compliant polyurethane, joined Amerlock.

Based on the experience gained from the successes of Amerlock and Amershield, Ameron now offers its "Environmentally Designed" line—high-performance coatings for users who require the alternative of environmentally sound products.

An Ameron ED coating is made to perform as well as the conventional coating it replaces. This strict ad-

(continued on page 63)

# Sigma Coatings The Complete Choice



## BELOW THE WATERLINE

The build up of marine life on a ship's hull can greatly reduce its operational efficiency. As a result of extensive research, Sigma now produces a comprehensive range of antifouling paint systems designed to prevent fouling, thereby minimising roughness and improving the hydrodynamic efficiency of the hull through the water.

The Sigmaplane line has four premium self-polishing antifouling, each suited to particular operational characteristics. The Sigma Pilot line is a contact leaching longlife antifouling system, while the Classic line offers traditional antifouling formulations providing ship owners with economical fouling prevention.

All three lines have an 'Ecol' version which complies with the latest environmental regulations.

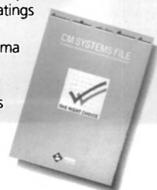


## ABOVE THE WATERLINE

Boottops, topsides, superstructures and decks not only have to look good but must also withstand the rigours of impact, abrasion, weather and extremes of temperature.

Sigma Coatings has perfected a range of paints to meet all these requirements. Based on Sigma CM Coating, a chemically modified, high-build recoatable epoxy, the Sigma CM system provides excellent durability with unlimited overcoating intervals.

When used in conjunction with specialised coatings such as Sigma EP Multiguard and Sigma EP Glasflake, this remarkable system ensures that vessels look their best and perform to the highest possible standards.



## TANKS AND HOLDS

Each year the chemical industry continues to develop more and more products which may need to be shipped in bulk or as parcels in chemical/product carriers.

Sigma Coatings is continually monitoring new products to ensure that it can offer the most suitable tankcoating system for every eventuality.

The 5 Sigma tankcoating systems, developed from an in-depth knowledge of owners' requirements, are designed to provide the perfect solution to every problem, from the transport of dry bulk foodstuffs and mild chemicals, to the constant shipment of highly aggressive chemical cargoes in a variety of sequences.

This specialised range of products, all of which are isocyanate-free, includes phenolic epoxies, optimally crosslinked epoxies, high-build epoxies, solvent-free epoxies and inorganic zinc silicates.



Comprehensive files on the Sigma Coatings specially developed for each area of a vessel are now available.



**SIGMA  
COATINGS**

Sigma Coatings  
8979 Market Street, Houston, TX 77029  
Tel: (713) 672 1175 Fax: (713) 672 1418



THE RIGHT CHOICE

## COATINGS

(continued from page 61)

herence to performance extends throughout the product line, from alkyds and latexes used in less critical areas to tank linings and antifoulings which see the most demanding service.

All ED coatings meet the most stringent VOC regulations in effect in California AQMDs. At this time California is the only state that has imposed VOC regulations on marine coatings.

Furthermore, since OSHA has established reportable limits for lead, arsenic, selenium, mercury, etc., Ameron monitors its raw materials so that all ED coatings contain less than reportable levels of heavy metals.

Ameron reports its ED coatings do not contain methyl and ethyl cellosolves or their acetates. Additionally, ED coatings technology makes it possible to duplicate with lead- and chrome-free pigments the same colors as with conventional lead and chrome pigments.

ED coatings are applicable using standard application techniques and are no more difficult to apply than their conventional predecessors.

### ARNESSEN

Circle 54 on Reader Service Card

Arnessen rust removing equipment first appeared about the time of World War I, and is designed to remove rust and scale from steel vessels, barges, drill rigs and work platforms. Basic operation is a beating action by hardened steel fingers and wheels.

The Arnessen line consists of a broad range of chipping hammers powered by a choice of air or electric drives. These are completely portable units designed for continuous or intermittent use that can be used directly at the work site to clean steel of old paint, epoxy, rust, scale and caked-on residue. They can be used on vertical, horizontal, or irregularly shaped surfaces, with 15 types of rotating heads available to handle everything from thick to fine residue removal. No special training is required, even for unskilled labor, and a single operator can easily clean over 900 square feet of plate in an 8-hour shift.

Arnessen deck scalers are specifically engineered for heavy duty removal of undesirable deposits from large flat areas. These units are available with air, electric, or gasoline power and are built to give years of reliable duty; some 30-year-old machines are still in regular service. They are easy to maintain, with 44 hardened steel striking wheels that can be quickly replaced when worn.

Additionally, Arnessen has a line of universal needle scalers designed to work in confined spaces and uneven areas. These are rugged, dependable hand-held units easily operated by the hand-grip throttle.

### BARTELL

Circle 4 on Reader Service Card

Improper surface preparation can be a major source of coating failures.

Bartell Industries Inc., Brampton, Ontario, Canada, offers what it believes is a cost-effective, efficient solution.

Called the S.P.S., the unit is an extremely versatile surface preparation device. Equipped with optional power plants, including air for marine applications, and a variety of multipurpose interchangeable tools that make surface cleaning easy, the S.P.S. can be operated by one man, combining light weight

with compact size and high performance.

S.P.S. removes coatings such as standard and epoxy paints, oil and grease deposits, urethane, rubber membranes, and marine non-skid. Developed specifically for marine usage, the silicon carbide disc attachment cleans aluminum and removes coatings from aluminum and stainless steel surfaces.

Engineered to be durable, the S.P.S. offers users a scabber and

shot blast in one machine and has been used around the world in fleet maintenance and surface preparation applications.

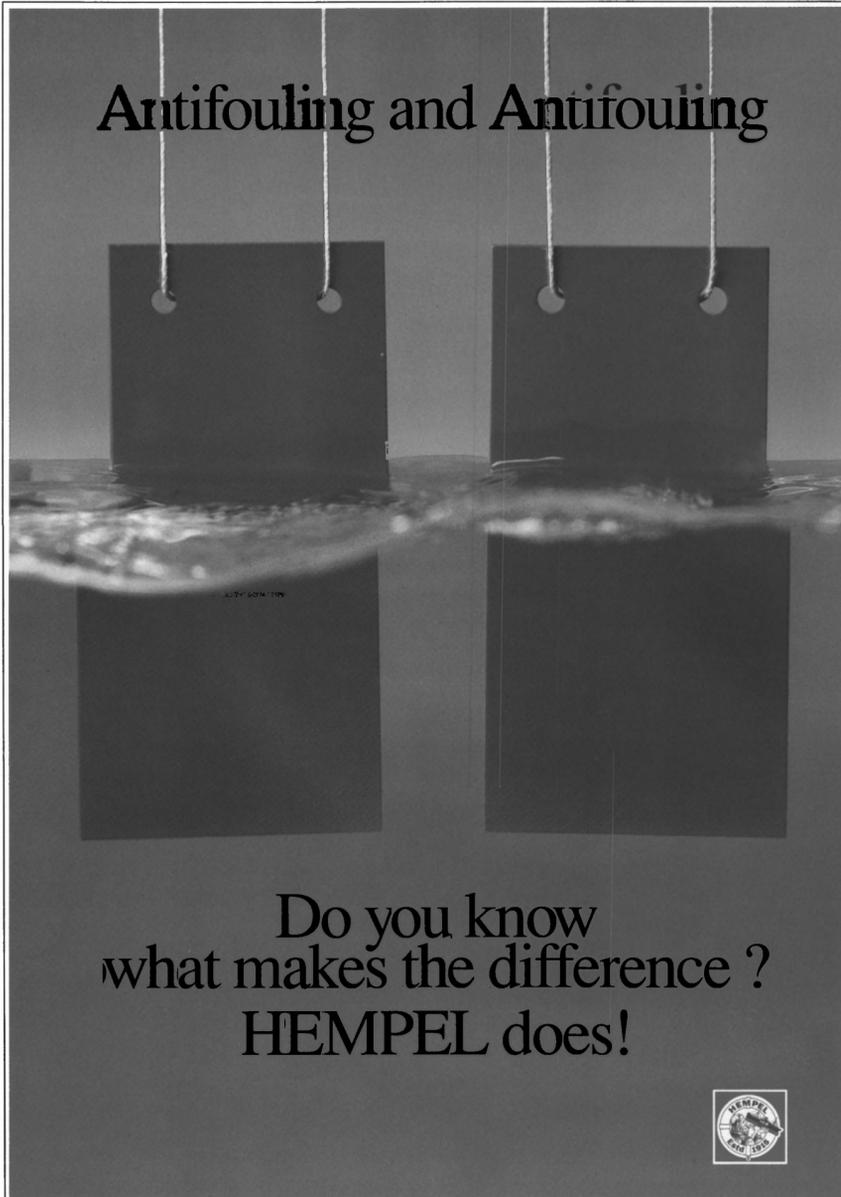
### BARTON MINES

Circle 51 on Reader Service Card

Barton Mines Corporation, Golden, Colo., is said to be the world's leading producer of industrial almandite garnet for a wide range of

(continued on page 64)

## Antifouling and Antifouling



Do you know  
what makes the difference?  
HEMPEL does!



Circle 210 on Reader Service Card

## COATINGS

(continued from page 63)

abrasive applications.

Through its Australian joint venture, Barton produces GMS garnet blast media for worldwide marine and petrochemical markets. Barton reports that GMA garnet is a cost effective replacement for silica sand and mineral slags materials and for aluminum oxide.

The GMA material is noted for

high levels of productivity with minimal levels of dust generation. Higher initial costs are offset by reduced materials requirements, reduced disposal costs, and reduced environmental impact and liability. GMA Garnet (along with Barton's 1640 material mined in New York) is said to be the only natural mineral abrasive clean enough to earn a position on the U.S. Navy's QPL-22262 for blast media.

Barton says users of GMA garnet

blasting media are assured the highest quality surface preparation together with the lowest level of environmental and safety risk.

## CARBOLINE

Circle 58 on Reader Service Card

To provide long-term corrosion protection to the mile-long array of interconnected steel platforms and bridges that form the world's largest offshore mining development, Free-

port-McMoRan Inc., recently selected a three-stage coating system supplied by Carboline, St. Louis, Mo., comprised of a zinc primer with an epoxy mid-coat and a polyurethane topcoat. The coating was applied to all exposed steel surfaces—from the top of the 340-foot-high sulfur-mining production platforms to the mudline, more than 200 feet below the surface of the Gulf of Mexico.

Mitch Braun, marketing services manager for Carboline, said: "Because the steel structures of the huge mining complex will be continually exposed to salt air, seawater and sulfur, Freeport-McMoRan needed a tough, durable coating system that could provide outstanding, long-term corrosion protection. Our Carbo Zinc 11 primer over-coated with Carboline 890 epoxy and Carboline 134 polyurethane offered the ideal solution for the tough coating project."

Carbo Zinc 11 is an inorganic zinc primer coat that protects steel galvanically to eliminate sub-film corrosion.

Carboline 890, based on a high-performance Ciba-Geigy epoxy resin, is a two-component, high-solids, high-build coating.

Carboline 134 polyurethane is a two-component coating designed to produce a glossy, smooth, hard-film surface finish.

## CHESAPEAKE SPECIALTY

Circle 56 on Reader Service Card

In early July 1991, the U.S. Navy conducted a deck blasting test comparing the cleaning effectiveness of Chesapeake Specialty Products' METgrain steel abrasive with conventional steel shot. Chesapeake Specialty Products' METgrain steel abrasive was found to be more effective in removing deck coatings and underlying corrosion than conventional steel shot. The unique, irregular shape of METgrain particle combines peening energy to remove the coatings with a scouring action to remove rust scale. A side benefit of METgrain is that because it is an irregular rounded particle rather than a sharply angular grit, METgrain does not cause excessive wear on the deck blast units.

The deck blast machine used for the test requires that the abrasive ricochet off the deck and into the blaster's recovery and recycling unit. METgrain's rounded, irregular shape was readily recycled similar to steel shot. Another benefit of METgrain's irregular shape is that it is not hazardous under foot when particles escape from the deck blast unit.

## CORROLESS INTERNATIONAL

Circle 110 on Reader Service Card

With over 30 years' experience in providing effective corrosion control services to industries ashore, Corroless International has now developed a range of systems and technologies for the marine industry, specifically aimed at reducing shipowners' maintenance costs. Corroless, a wholly owned subsid-

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ary of Norway's international ship service company Unitor AS, offers shipowners four distinct technologies which effectively combat the problem of marine corrosion in virtually all areas onboard ship: Corroless Rust stabilizers; Corroless Reinforced Finishes; Corroguard Reinforced Rust Stabilizers; and Corroless Corrosion Inhibitors.

Areas such as ballast tanks, double bottoms, void spaces, wire ropes/hawsers, electrical/mechanical equipment, decks, hatch covers and coamings, can all be effectively treated by the above technologies.

Since launching its range of products and services into the marine market, Corroless' technologies have been used worldwide on a wide variety of vessels, from small coasters and offshore support vessels, through general cargo ships, tankers, containerships, passenger vessels and bulk carriers to warships.

Recently, in fact, the world's largest tanker, the 564,739-dwt Jahre Viking, benefited from Corroless' technology as part of her \$60 million rebuilding program.

#### DEVOE

Circle 17 on Reader Service Card

Founded in 1754, Devoe Coatings is one of the oldest companies in the U.S. and reportedly the oldest paint company in the world. Over the years, Devoe has been a major contributor to coating technology. From Devoe's original invention and patent of the epoxy resin back in the 1940s, the company has maintained a leading position in epoxy technology.

Devoe offers a diverse range of products under trade names Devran and Bar-Rust. The company product range includes coatings designed for aircraft carrier decks, underwater applications, low temperature curing, (dry and cure at 0 degrees F), and 100 percent solids epoxies that have extended pot or working life.

Not only has Devoe been a leader in epoxy technology, but the firm also was one of the first companies in the world to offer organotin-free ablative antifouling. Its ABC #3 has up to 64 months of proven performance in waters around the world.

#### ERVIN INDUSTRIES

Circle 1 on Reader Service Card

The first cast steel shot and grit abrasives were produced by John F. Ervin, who was awarded a U.S. patent in 1939 for his unique discovery of using alloyed steel to make a technically advanced abrasive product for blast cleaning and surface preparation.

Mr. Ervin founded Ervin Industries, Inc., one of the largest manufacturers of cast steel abrasives—trade name Amasteel—in North America.

Ervin Industries remains a family-owned business. A new product development center located in Tecumseh, Mich., is now being completed. This new research facility will support the continuous improve-

ments that provide customers of Amasteel with excellent product performance for surface preparation.

Ervin Amasteel comes in three forms: shot, grit, and a blend of the two.

It has long been recognized that the life performance of various protective coatings is directly influenced by the quality and degree of pre-coating surface preparation. Two basic factors have to be considered

in evaluating the quality of surface preparation: degree of cleanliness and profile, or anchor pattern.

The fundamental requirement is removal from the steel surface of any contaminants that would be conducive to premature paint failure.

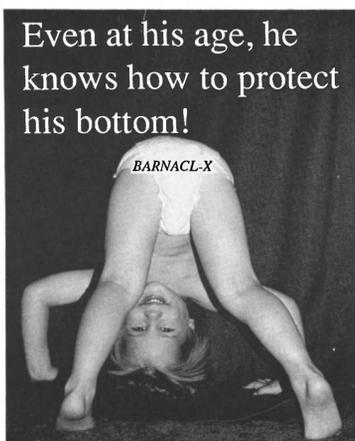
Three principal degrees of blasting cleaning cleanliness are specified and described by both the Steel Structures Painting Council (SSPC) and the National Association of Corrosion Engineers (NACE).

#### ESGARD

Circle 52 on Reader Service Card

Esgard, Inc. offers development of specialty coatings designed to offer optimum protection of marine equipment while preserving operators dollars and minimizing any environmental hazards. The company's primary product line includes ballast coatings, protective gear oils, and a complete line of paints.

(continued on page 66)



Even at his age, he knows how to protect his bottom!

New! Improved!

BARNACL-X

from

MARINE COATINGS INTERNATIONAL

The registered coating with the 3 YEAR GUARANTEE

- 100% epoxy system - no V.O.C.'s
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- Environmentally safe, completely inert and pollution free
- No need for Primer and Base coat on all but Aluminum (calls for our primer)
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- Extremely durable (8 times more durable than 3,000 # concrete)
- Low friction, high hull protection
- Can be used on aluminum, no blisters on fiberglass
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MARINE COATINGS INTERNATIONAL

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Circle 308 on Reader Service Card

## DECK SCALER

The Arnessen large area deck scalers will remove just about anything from flat areas of steel and concrete. Designed for simple one-man operation, these machines cut a big 11-inch swath, are easily maintained and are available with 3 different drives. Arnessen scalers will give years of service and easily outlast anything else on the market. Send for our complete catalog today.



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Circle 311 on Reader Service Card

February, 1992

## COATINGS

(continued from page 65)

One of the company's products is Esgard Bio Kote, which offers safe, nonhazardous protection for ballast tanks, cofferdams and void areas. Bio Kote is a single product for application over minimally prepared surfaces.

At the request of the State of Alaska, a priority pollutant scan was conducted on simulated ballast wa-

ter taken from a tank coated with Bio Kote. The results showed no pollutants attributable to the coating, according to the company. Bio Kote is 100 percent solids, is applied via airless spray and cures to a firm film which resists washout.

Protection of power transmissions, gears, reducers and associated lubricating oil components is accomplished using Esgard PL-2. A qualified product under Mil-C-16173D grade 2, PL-2 offers superior protec-

tion, ease of removability and is VOC compliant.

Esgard sales, service and products are available worldwide.

### EUREKA CHEMICAL

Circle 55 on Reader Service Card

Eureka Chemical Company, South San Francisco, Calif., is introducing a new salt-water ballast tank coating designated Fluid Film BHT. This solvent-free coating is designed for

use in areas of high water turbulence and high temperature—200 degrees F. A one component rust protective that is highly flexible and self-healing. Application on new construction and in-service vessels where loose rust and peeling paint are removed. Chemical carriers, where hot bulkheads have been a problem area for corrosion, may find that Fluid Film BHT will provide effective protection.

The company advises that third party comparative testing of the Fluid Film wire-rope dressings, WRN-EP and WRO-EP (Mil-G-18458), has reported 90 percent better performance than all other products tested. Fluid Film products do not dry-out and harden compared with some solvent base dressings and lubricants.

For general maintenance, an environmentally friendlier non-solvent, non-aerosol pump can is available in both regular and food grade forms.

### HEMPEL'S

Circle 21 on Reader Service Card

Hempel's Marine Paints A/S, a leader in antifouling technology, recently introduced its second generation of tin-free self-polishing antifouling.

Called Hempel's Nautic Tin-Free 7190, the product is based on extensive research carried out at Hempel's research centers in Copenhagen and Barcelona.

According to Hempel Group's technical director, Niels Conradsen, the company has invested heavily in antifouling research and, while the new product is a major step forward, it will be followed by further advances in the years to come.

Hempel's Nautic Tin-Free 7190 will perform on a level approaching Hempel's Nautic 7690 and has the additional built-in benefits of: high build; high solids (56 percent); lower VOC; short drying time; and fast film hardening.

According to Hempel's worldwide marketing manager, Svend Johnsen, Hempel will continue to market antifouling according to the "tailor-making" philosophy, which means that the new product will be specified according to the vessel's operating conditions. Mr. Johnsen said that Hempel is confident that the new product will be able to provide drydocking intervals up to 5 years, but that until the firm has sufficient practical results to prove that, Hempel will only specify it for up to 48 months.

Provided that the existing primer and antifouling system is sound, the new antifouling can be applied directly on top of tin containing self-polishing antifouling, ablative antifouling and Classic types.

The new product will be available at major drydocking centers shortly.

### INTERNATIONAL PAINT

Circle 59 on Reader Service Card

The launch of the world's first tin-free SPC antifouling by U.K.-headquartered International (Courtauld's Coatings) last year has really caught the attention of ship opera-

## FOR SALE

### STEEL DIESEL CATCHER PROCESSOR

This vessel is in excellent physical and mechanical condition, and ready for work...

Dimensions: 154.7' X 38.5' X 12.5'  
Gross Tonnage: 286  
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- 2 - Mo. 3198, Caterpillar hydraulic clutches with 3.95:1 gear ratio driving four blade propellers
- 2 - 300 KW, 110/408 V AC generators driven by keel cooled, Mo. 353 Caterpillar diesel engines
- 2 - Two stage, Gardner-Denver, air compressors and tanks
- 1 - 3" Aurora bilge pump, 3" Aurora fire pump, 3" FO transfer pump
- 2 - 1" Deming FW pumps and system
- 1 - 4" Ammonia compressor cooling water pump
- 1 - 1-1/4" SW wash down pump

There are approximately 1400 wood lath traps on the vessel with 30 miles of 9/16" polypropylene rope with floats, etc. necessary for the operation of the traps.

There is a material lift from the ice hold to the processing room that is electrical operated.

There is a hydraulic crane on the second deck for lifting stores, catch boats, etc.

There are ten (10) hydraulic fishing reels on the main deck.

On the second deck of the vessel there is a processing room certified by the U.S.D.A. (composition covering).

The vessel is renovated with a total of 11,000 cu. ft. of below freezing, cargo hold with a plate freezer that has an estimated capacity of 1500# of frozen product per three (3) hours of operation

There are ammonia compressors on the vessel with 100% redundancy for the protection of the frozen product, and 6" of insulation through out the refrigerated spaces.

There are packaging machines, conveyors, stainless steel work tables, sinks, etc. for processing the product.

On the second deck port side there is a laboratory, to be used in the quality control of the product.

This vessel has an appraised value of \$2,450,000.



### DIVERSIFIED MARINE BROKERAGE, LTD.

1201 Northern Boulevard, Manhasset, New York 11030  
Telephone: (516) 365-5650 Fax: (516) 627-5329  
Contact: Gil Castro - President

tors around the world. As of December 1991, a total of 32 vessels aggregating over 1 million deadweight tons have been secured for coating with this high-performance tin-free antifouling, from fishing vessels, through offshore diving support vessels, tankers, bulk carriers, RO/ROs, to passenger cruise vessels and warships.

Intersmooth Tin-Free SPC has attracted the attention of ship operators not just for repair and maintenance, but also for newbuildings.

Intersmooth Tin-Free SPC provides ship operators with the following benefits: a high level of fouling control (85 percent) without the use of TBT; self-polishing action; control of hull roughness by self-smoothing characteristics; and extended in-service periods of up to 48 months.

The coating also meets all current and impending TBT legislation worldwide.

International's range of tin-free polishing antifouling has also been well received by ship operators worldwide since being launched in 1987. The company's Interclene BRA 500 series, developed specifically for the U.S. market, has been applied to nearly 400 vessels to date, while Interviron BQ series is being used on 250 ships.

#### JOTUN VALSPAR

Circle 93 on Reader Service Card

Current thinking on below-waterline hull treatments increasingly focuses on easy-to-apply coatings which both offer extended periods of protection, and are friendly to the environment. Anticipating this trend for some years, Jotun Protective Coatings (JPC) has already developed a range of appropriate treatments.

Included in this range is Jotamastic 87, a high-solids epoxy coating which can be applied in dry-film thickness up to 400 microns in a single coat. Requiring only nominal pretreatment of the steel surfaces to be protected, it has the further "green" advantages of a low solvents content and complete exclusion of isocyanate. Successful applications include the repair of self-polishing antifouling.

Ordinary repair methods for such antifouling involve three coats of primer. As these are applied, each successive coat tends to "grow" over the edges of its predecessor, the final coat often forming a largely continuous sealer over intact antifouling. Wasteful retreatment with antifouling is then needed over these areas.

Jotamastic 87 offers an alternative repair method which eliminates "sandwich" build-up. Used as a drydocking primer in conjunction with self-polishing antifouling, the single coat of "Jotamastic 87" is applied only to the damaged areas, leaving intact antifouling to continue its work when the vessel again puts to sea.

Combined with the easy application of Jotamastic 87, this protection method can result in major long-term savings in maintenance costs. By avoiding hull roughness, fuel consumption is also minimized.

#### LTC INTERNATIONAL

Circle 20 on Reader Service Card

Preservation of the environment has become a priority issue. For shipyards and ship repair facilities, this specifically means that the days of conventional open sandblasting are quickly coming to an end.

Since 1985, LTC International has been working to develop alternative solutions to the problems associated with sandblasting, by designing and

manufacturing the most productive, portable, Vacuum Blasting Equipment available. Within the last two months, LTC has introduced one of the largest Vacuum Blasting Systems manufactured to date, originally designed specifically for large ship hull blast cleaning. The LTC Mobile Platform System (MPS) and the LTC Under Hull System (UHS) are currently undergoing field trials in the U.S. The company anticipates their factory will be gearing

up for production of the new systems shortly.

#### MARINE COATINGS INTERNATIONAL

Circle 2 on Reader Service Card

Barnacl-X is manufactured by Marine Coatings International. After 10 years of research, development and testing, the product was approved for use on boats by the Envi-  
(continued on page 68)

# How To Prevent A Part Attack.

When it comes to finding or selling marine parts and equipment, Inventory Locator Service, Inc. (ILS) can put you in touch with the world. We list the inventories of suppliers industry-wide on our data base for easy access by buyers in need of marine equipment.

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## COATINGS

(continued from page 67)

ronmental Protection Agency, the U.S. Department of Agriculture and the Food and Drug Administration.

Barnacl-X differs from anti-fouling paints because it is a two-part, 100 percent epoxy coating. This coating dries to an extremely hard, smooth flexible finish in which metallic copper particles are permanently suspended. Copper makes it

highly resistant to barnacles, mollusks, annelids, bryozoa, algae and scum.

Tests indicate this epoxy coating retains its antifouling capabilities longer than some antifouling paints.

In addition to its antifouling properties, Barnacl-X also seals the gelcoat, preventing water from passing into the fiberglass and providing excellent blister protection.

Except for aluminum hulls, no primer is necessary, and it can be

applied to any clean wood, steel, fiberglass or aluminum hull.

For aluminum hulls, Barnacl-X Special Primer prevents an electrostatic process occurring by isolating the copper-laden epoxy from the aluminum surface.

### SCHMIDT

Circle 19 on Reader Service Card

Engineered and manufactured by Schmidt Manufacturing, Inc., the

Accustrip System is a new generation of safe, non-sparking and non-toxic abrasive blasting equipment utilizing a patented formulated blend of sodium bicarbonate blast media.

The Accustrip System is said to be the only process that can remove typical surface corrosion and coatings in the same step from virtually any surface without additional tools or chemicals.

The Accustrip System can clean or remove many layers of coating or one layer at a time from soft substrates without the need to pre-wash to remove dirt, grease and oils in a fraction of the time when compared to hand tooling or sanding.

This environmentally sensible decoating process gives the user the ability to blast soft substrates and sensitive surfaces of virtually any material. When blasting rotating equipment, the Accustrip System will not damage pumps, motor bearings, packing, mechanical seals, or polished rods.

The Accustrip System, Schmidt reports, is safe for the operator and the environment and can be operated and maintained with minimal operator training. Portable or stationary systems are available with various media storage capacities for one or more operators.

### SHERWIN-WILLIAMS

Circle 108 on Reader Service Card

The Sherwin-Williams Company, Coffeyville, Kan., manufacturing site has been in continuous operation since 1906. The plant, originally designed and constructed to produce pigments for use in Sherwin-Williams paints, still produces pigments for the coatings industry under the Moly-White and Kemgard names.

Moly-White products are pigments used in coatings to prevent corrosion. These products are used by all the major paint producers and are specified in coatings by the Navy and other government agencies because of their non-toxic properties. Concern for the environment has led to increased usage of these functional products. These highly specialized pigments which are now sold worldwide are produced at the Coffeyville site.

### SIGMA COATINGS

Circle 57 on Reader Service Card

Sigma Coatings, a member of the Petrofina Group, is a recognized as a major international manufacturer of marine, industrial and domestic paints.

The Sigma portfolio of problem-solving reinforced, epoxy paint systems now features the new generation of high-solid, coal tar-free coatings, such as Sigma Multigard and Sigmacover Glassflake. These products combine safety-conscious formulation with maximum impact and abrasion resistance over an extended lifespan. These Sigma anticorrosive systems are all designed for easy application, using standard spraying equipment, and can be used in widely varying climatic conditions. Sigma Coatings also manufactures a range of antifouling systems to

(continued on page 70)

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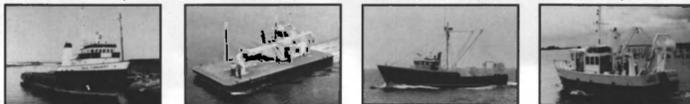
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Circle 331 on Reader Service Card

## COATINGS

(continued from page 68)

meet different criteria to provide tailor-made protection for each operator's needs.

The company's Sigmaplane line consists of four distinct self-polishing coatings—Sigmaplane HB (High Build) antifouling, Sigmaplane HA (High Active) antifouling, Sigmaplane TA (Tough Ablative) antifouling, and Sigmaplane Ecol (Tin Free) antifouling. Based on carefully formulated copolymers, these antifouling coatings depend on the controlled release of toxins. The surface material is gradually polished away, to continually expose fresh layers.

The Sigmapilot line of antifouling coatings, which employs the contact diffusion method of biocide release, has two members—Sigma Pilot LL (Long Life) antifouling and Sigma Pilot Ecol (Tin-Free) antifouling.

Sigma's third range of antifouling coatings is the Sigma Classic line. This line includes Sigma Antifouling IV and Sigma Ecol (Tin Free) Antifouling. The Classic range employs the traditional concept of biocides dispersed

in a soluble matrix medium. This antifouling allows the biocides to leach into the sea water and the matrix assists in the process by slowly dissolving in time.

## STAN-BLAST ABRASIVES

Circle 50 on Reader Service Card

Stan-Blast Abrasives Company, Harvey, La., offers safe, clean and efficient abrasives to the marine industry for coating preparation. The company has been manufacturing abrasives and service since 1971. Stan-Blast reportedly has become the leading abrasives supplier on the U.S. Gulf Coast.

Stan-Blast abrasives offer a safer and cleaner environment for shipyard employees and on-site personnel, according to the company, because they contain less than 0.1 percent free silica and are virtually free of all heavy metals. It is also a harder abrasive which means less particle breakdown and better cutting, less dust and more surface cleaning. The sharp, angular form of each particle creates a more pronounced profile for improved coating adhesion.

## THIN FILM TECHNOLOGY

Circle 18 on Reader Service Card

Thin Film Technology, Inc. (TFT), Houston, Texas, which took over the coating formulation and manufacturing interests of CTI Industries in June 1991, specializes in very high performance coatings for use underwater or on compromised above-water surfaces. Bio-Dur coatings, as described by manufacturer TFT, are 100 percent solvent-free and formulated for maximum "friendliness" in the field since typical applications on offshore structures or ships are very demanding.

Bio-Dur coatings are applied by brush, roller, mitts or pad below water. Surface preparation is usually by air/abrasive blasting or by high pressure water blasting, although needle-gunning and discing have been successfully employed on small jobs. Absence of solvent ensures no shrinkage on curing or softening of sensitive underlying paint residues. TFT reports that the application rate for Bio-Dur is many times greater than that of "splash-

zone" type putties and the film thickness of only 15-20 mils translates to economical jobs. Excellent chemical and physical properties ensure good performance in mud handling and other aggressive areas.

## U.S. PAINT

Circle 53 on Reader Service Card

U.S. Paint Corporation, St. Louis, Mo., offers Awlgrip's Awl-Star Gold Label tin-free antifouling. It is now available in bright blues, green, black, and red—a revolutionary breakthrough for a non-tin containing copolymer. Formerly only muted colors were available to the passenger vessel market.

One boat owner who used Awl-Star Gold Label reported that after one year and 27,000 miles the hull surface remained protected and clean. U.S. Paint, a world recognized yacht finish innovator, is the pioneer of the first tin-free copolymer yacht antifouling as a response to environmental concerns.

Free Awl-Star Gold Label technical data and material safety bulletins are available upon request.



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Circle 254 on Reader Service Card

## Electronics Update



Turnkey HyDroGraphic Systems recently introduced by Trimble Navigation represent the latest in convenience, economy, and reliability for hydrographic and dredging professional.

### Trimble Introduces Turnkey Hydrographic Systems

Hydrographic surveyors and dredge operators can now increase their productivity and reduce costs by using new integrated systems recently announced by Trimble

Navigation Ltd., Sunnyvale, Calif. Trimble's new Turnkey HyDroGraphic Systems combine the convenience of differential Global Positioning System (DGPS) technol-

ogy with the economy of PC-based hydrographic software, providing The new systems are also fully properly matched. They feature: one or more sets of TNL 4000 series DGPS receivers with antennas and power supplies; a full range of tested and matched real-time DGPS data communication radios, modems and antennas; complete hydrographic and DGPS software; industry standard PCs, plotters and printers; helmsman displays and operator monitors; peripherals and upgrades; interconnecting cables and selected accessories.

Another key benefit of the new turnkey systems is increased system reliability. Because Trimble was a pioneer in commercial GPS systems and has been testing them in demanding field environments since the mid-1980s, the company's 4000 series reference GPS stations and mobile GPS receivers are extremely reliable.

For free literature on Trimble Navigation Turnkey HyDroGraphic Systems or other navigation equipment,

Circle 164 on Reader Service Card

### Braswell Doing Steady Ship Repair Business in Panama

Braswell Services Group, Inc., is doing a steady repair business at its

ship repair facility in Balboa, Panama, since its take over of the shipyard in the fourth quarter of last year.

Braswell, which has a 20-year lease with the Panama National Port Authority to operate the yard, has already repaired three containerships owned by Flota Mercante Grancolombiana, a Columbian steamship line, since it began operations.

The facility has three drydocks and employs about 300 tradesmen, and is equipped to work on any vessel that utilizes the Panama Canal.

At present, Braswell is marketing its services to China Ocean Shipping Co. (COSCO), which has a fleet of about 600 ships.

Most of Braswell's customers at the Panamanian facility are foreign, but the yard's convenient location might also be attractive to U.S.-flag owners in need of emergency repairs.

### \$4.3 Million Contract Awarded By U.S. Navy To Continental Maritime

The frigate USS Mahlon S. Tisdale (FFG-27) will undergo a drydocking restricted selected availability at Continental Maritime of San Diego, Inc., San Diego, Calif. The contract for the work, awarded by the Supervisor of Shipbuilding, Conversion and Repair, San Diego, Calif., is worth \$4,339,476.

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Circle 279 on Reader Service Card

The Shipbuilders of Spain

**McDermott Completes  
First Phase Of Mobile Bay  
Pipeline Project**

McDermott Marine Construction recently completed the installation of the 1991 phase of Exxon's Mobile Bay offshore pipeline system. This first phase of the project included the laying of flowlines made of corrosion resistant alloy in the Bon Secour field.

The joint project team of Exxon and McDermott were challenged by stringent environmental restrictions established by the State of Alabama. In order to meet zero discharge regulations in the Mobile Bay area, McDermott installed perimeter containment curbing around construction vessels. Mesh screens and covers were also installed around dredged spoil areas to reduce turbidity.

Four drilled crossings were required during the first phase.

A specially converted barge used to lay multiple lines in shallow water laid as many as five lines at a time. Line sizes varied from four inch epoxy-coated to twenty-four inch concrete coated pipe.

For further information on McDermott Marine Construction, Circle 49 on Reader Service Card

**New Control Lever Simplifies  
Boat Steering Operation**

Small enough to be mounted almost anywhere and sealed to withstand saltwater corrosion, a new full follow-up control lever has been introduced to the marine industry.

The model #7171 follow-up control lever is made of weather-resistant bronze and stainless steel by Kobelt Manufacturing.

A centered lever notch guarantees easy straight-ahead positioning. Simply adjusting the control lever to any degree port or starboard causes the rudder to follow proportionately.

For more information and free literature from Kobelt, Circle 107 on Reader Service Card

**New Anschuetz Brochure  
Features 'Nautoyacht'  
Navigation System**

Anschuetz of America, Division of Carl Zeiss, Inc., Rutherford, N.J., a leader in supplying Integrated Bridge Systems for MegaYachts, announces the availability of a new 16-page, full-color brochure, titled "Nautoyacht," picturing representative MegaYachts and proving that well-designed equipment can be beautiful as well as functional and worthy of a place in the center of the bridge.

For a free copy of the new brochure from Anschuetz, Circle 106 on Reader Service Card

February, 1992

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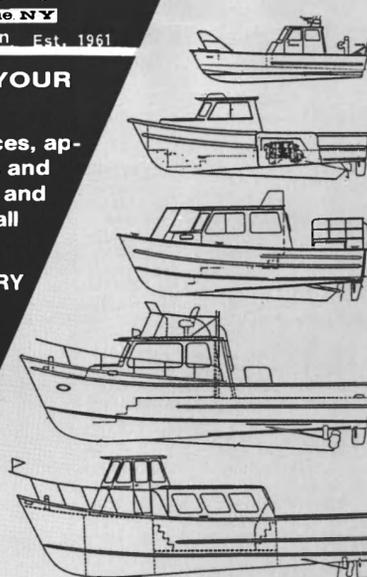
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Circle 215 on Reader Service Card

## Strategy In Global Container Shipping

### Stabilization Agreements Will Be Key To Profitability

The relative profitability of the world's main container trades is poised to shift radically in the next five years, as the beneficial effects of capacity regulation across the conference/independent divide become apparent. Carriers on the trans-Pacific route, the world's largest container market, are set to reverse the downward drift in eastbound rates and recoup some of the multimillion-dollar losses which had been accumulated in the late 1980s. For this, they will have to thank the pioneering Transpacific Stabilization Agreement (TSA) which, despite manifest imperfections, is nevertheless the only mechanism that the industry has yet developed to reproduce the authority and discipline formerly provided by conferences.

After a largely ineffectual initial phase, the capacity restraint introduced by the TSA is set to lead a recovery in freight rates which, allied to a period of modest growth in cargo volume, should make the trans-Pacific trade the most profitable of the axial east-west routes in

the next few years with annual service results registering a \$40 million improvement by 1995 compared to their unsatisfactory 1991 level. For operators in the presently booming Europe-Far East trade and in the contrastingly depressed trans-Atlantic market, though, prospects for the first half of the 1990s are distinctly less favorable.

This is just one of the conclusions arrived at in a new Drewry Report which analyzes the operations, performance and prospects in the world container market. The current westbound cargo bonanza from the Far East to Europe has led to a major upturn in profitability, but has coincided with a radical restructuring of the major consortia on the trade which, logically, will make it very difficult to reproduce any TSA-style agreement while carriers are establishing a new pecking order and fighting for market share. As a consequence the infusion of new slot capacity and continuing weakness in European export volumes (plus the probable entry to the trade of

Hyundai) are likely to hit vessel utilization and profitability, which could show an adverse swing of up to \$70 million per annum for each nine-month service from a 1991 high point to the nadir in 1995.

#### Revenues and Costs

One of the major causes of unprofitability in container shipping has been the separation of revenues and costs. The growth of intermodalism in North America, and the consequent development of through rates, has meant that carriers have lost much of their ability to recoup additional service costs through rate adjustments and surcharges. The revenues of container shipping have simply ceased to reflect its costs, while the mounting burden of fixed service costs has encouraged the adoption of marginal pricing with calamitous results for freight rates. Carriers have virtually given away the financial benefits of new, larger vessels; of faster port working; and of double-stack intermodal technology in lower prices, and now threaten to do the same in the value added logistics market. Without a rate discipline which prices services more accurately, the promised land of profitability will continue to prove elusive. The continued regulatory pressures on conferences and stabilization agreements (now at their most intensive level ever in the USA, Europe and the Far East) are cer-

tainly not helping carriers to organize themselves effectively to achieve this pricing discipline.

#### Empty Containers—The Achilles Heel

Modern container shipping services are provided at very high levels of efficiency and very low unit costs. The profitability squeeze of the 1980s has, often belatedly, produced a much leaner industry which exudes operational and organizational competence, but one major problem area for the industry is the cost of empty container movements. Too many boxes are deployed in world container trades, and too many empty container moves are incurred. On a global basis, an estimated 13.5 million TEUs of empty container handling operations were performed at ports during 1989, costing carriers something in the order of \$1.5 billion in terminal costs alone. The single major commodity carried in containers is fresh air—good news for terminals, lessors, haulers and ports, but potentially ruinous for carriers. Equipment management will be one of the major operational issues in the 1990s as carriers pay more attention to the whole range of indirect costs—costs which are indirect in name but have a direct effect on bottom-line profitability.

For further information, contact Drewry Shipping Consultants Ltd., 11 Heron Quay, London E14 4JF.

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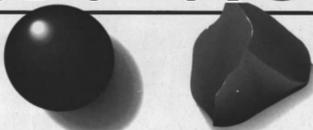
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Circle 258 on Reader Service Card

**Energy Transportation Offers New Oil Leakage Control System**

In the wake of the Oil Pollution Act of 1990, New York-based Energy Transportation Group has introduced a new system for the control of oil leakage from a tanker during a grounding or collision. Called SCOL (System for Control of Oil Leakage), it is reportedly able to reduce the outflow of oil from tankers in cases of collisions or groundings by 75 to 90 percent.

Tankers built after 1979 are required by MARPOL regulations to have segregated ballast tanks distributed among the cargo tanks. These ballast tanks are empty when the cargo tanks are loaded. Energy Transportation Group's SCOL system takes advantage of these empty ballast tanks in an emergency and allows cargo which would otherwise be lost overboard to be transferred by gravity flow, without pumps, from the damaged cargo tank to an empty ballast tank.

The SCOL system consists of specially designed valves in the bulkhead between the cargo and ballast tanks which are automatically opened by the detection of falling level in the cargo tank. The opening of the correct valves for any cargo tank is assured by a pre-programmed control system.

The SCOL system reportedly will reduce oil outflow to 10 to 25 percent, depending on the severity of the damage, of what it would be without SCOL. It is estimated to cost about \$1 million for a VLCC.

For a free eight-page color brochure detailing Energy Transportation Group's SCOL,

Circle 29 on Reader Service Card

**Viking Fender Offers Free 20-Page Color Brochure**

Viking Fender Company, Sea Bright, N.J., is offering a free 20-page color brochure detailing the full line of Goodyear marine fenders.

Besides concise and information text, the publication uses color photographs, specification tables, performance graphs and dimensional drawings, to provide relative data on the cylindrical, rectangular, trapezoidal, V-Series, D-Shaped and Wing-Type fenders. Each fender type is detailed in a two-page spread format, with photos, specs and drawings on the lefthand page and performance graphs on the righthand page. The fenders are used in a variety of applications, from docks, piers and terminals to tugs, barges and workboats.

For a free copy of the color brochure from Viking Fender,

Circle 30 on Reader Service Card

**Newport Marine Offers New Engine Monitor—Literature Available**

Newport Marine Electric, Portsmouth, R.I., is offering a new engine monitoring system which utilizes 3-inch gauges designed to "look" at all critical engine functions.

Called Alarm-Gauge, the system package features built-in visual go/no go red and green warning lights which work in conjunction with an audible alarm for each separate gauge/function.

Alarm-Gauge electronically "looks" at the gauge pointer position in order to generate the required signal to set off the warning lights and alarm. This new method of electronic comparing provides a highly accurate, adjustable, extremely reliable engine monitoring unit. Alarm-Gauge utilizes precision engine transducers, undampened jeweled meter movements and solid-state electronics.

The Alarm-Gauge package is available with many gauge combinations—engine temp, oil pressure, gear oil pressure, system voltage, alternator output, exhaust temperature, tank levels, or fuel burn rate. Gauges may be ordered separately to replace mechanical switch gauges.

For free literature detailing Alarm-Gauge from Newport Marine Electric,

Circle 31 on Reader Service Card

**COMSAT's Partnership In Russia Providing Satellite Services**

COMSAT Mobile Communications recently announced that Western business interests in the former Soviet Union and other Eastern Republics now are being equipped with satellite services through a recent agreement between COMSAT and Morsviasputnik.

Last August, the two Signatories to the international mobile satellite partnership, Inmarsat, entered into a series of agreements to provide a broad range of telecommunications services for Inmarsat mobile users throughout Russia and other Eastern Republics.

According to George Zachmann, COMSAT's vice president for land mobile and special services, mobile satellite services are now being provided at a number of hotels, oil exploration sites, broadcast facilities, and business ventures throughout Russia and other Eastern Republics.

For free literature detailing the communication services of COMSAT,

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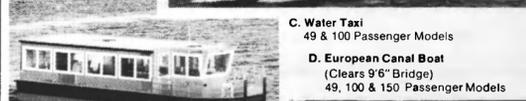
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Circle 31C on Reader Service Card

### Ship Analytics Full Mission Shiphandling Simulator Selected

The Port of Singapore recently awarded a \$10 million contract to British Aerospace Simulation, Ltd. and Ship Analytics to supply a Full Mission Shiphandling Simulator (FMSS). The simulator will fulfill the needs of the PSA in a wide variety of training programs for marine personnel, together with providing valuable research facilities for the future management and development for the port.

The simulator will consist of a replica of a ship's bridge, including IMO-Compliant ARPA/Radar, navigational aids, engine vibration and aural sounds and a visual projection system presenting a full color computer generated visual scene over a 240 degree field of view.

A separate Tugboat/Ownship Station Simulator with features similar to the ship's bridge, can be used as a "standalone" training system as well as operate in an "integrated" two-ship mode with the ship's bridge.

Extensive monitoring and tug control facilities will be provided to enable the instructional staff to manage and control a wide range of exercises in collision avoidance, navigation, pilotage, and berthing. A complete classroom with monitoring, debriefing, and feedback capabilities will serve to maintain high levels of training effectiveness.

A full Research and Development/Data Input Station facility will be provided to enable not only the preparation of the exercises/databases, but also the necessary software tools and equipment to undertake research programs into Port Management and other investigatory assignments.

The FMSS project schedule calls for comple-

tion of installation and site testing of the full system by January 1993. Early delivery of the Research and Development/Data Input Station will allow simulation training and research work to commence in January 1992. For free literature on Ship Analytics,

Circle 96 on Reader Service Card

### MAN B&W Holey Enters Agreement With Niigata Engineering

MAN B&W Diesel A/S, Holey, recently entered into a manufacturing agreement with Niigata Engineering Co., one of the largest 4-stroke engine manufacturers in Japan, primarily supplying engines to the propulsion and stationary markets.

By co-operating with Niigata, Holey Diesel will play an increasing role in the market for HFO GenSets in Japan. In addition, in October 1990, a department was established in MAN B&W Diesel's office to provide complete customer support in Japan.

This agreement eliminates the need to transport GenSets from Holey to Japan. The agreement will cover the manufacture of the GenSets. Holey will be responsible for the contractual aspects, and Niigata will be responsible for the production, testing, transport, and final commissioning at the yard.

After the vessel has left the yard, the MAN B&W Diesel A/S world-wide service network will take over as if the engines were produced in Holey.

For further information on MAN B&W Diesel, Inc.,

Circle 90 on Reader Service Card



The new waste water treatment facility at Bourg Dry Dock & Service, Bourg, La., handles oil waste waters at a rate of 300 gpm.

### Bourg Dry Dock Adds Treatment Facility For Waste Water

Bourg Dry Dock & Service of Bourg, La., has recently completed the construction of a waste water treatment facility at its shipyard on the Gulf Intracoastal Waterway West, Mile Marker 49.

Originally conceived for "in-house" use, the treatment facility can handle waste water at a rate of nearly 300 gpm.

The facility can not only treat oil waste waters generated by the shipyard, but also from a variety of other generators—wash waters from ships, tank cleaning operations, and other shipyards.

Bourg Dry Dock's waste water treatment facility is a "thru-system," (meaning the water can be discharged after treatment) with a large amount of tankage utilizing two 10,000-barrel hopper barges.

One entire barge is used as a gravity separator for the primary separation and removal of oils and solids from the waste water. A series of corrugated baffles were installed to aid in this process.

The water is then transferred to the second barge. The second barge serves as a bio-treatment facility, where any residual hydrocarbons that may remain in the water are degraded down to acceptable discharge levels. This degradation is the result of a bacterial attack upon the hydrocarbons that actually reduces the hydrocarbons into carbon dioxide and water. The water is then clarified, tested, and discharged.

This system allows the facility to treat most oily type waste waters. And, the volume capabilities are especially suited to oily waters that are recovered during oil spill clean up operations or other high volume generators.

The plant's location next to a major waterway also allows for bulk transportation by barge to the facility.

Since lab analysis is crucial in monitoring several stages of the treatment operation, as well as the effluent quality, Bourg also built a laboratory at the treatment facility.

For free literature detailing the ship repair services of Bourg Dry Dock,

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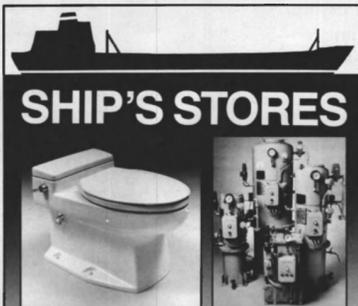
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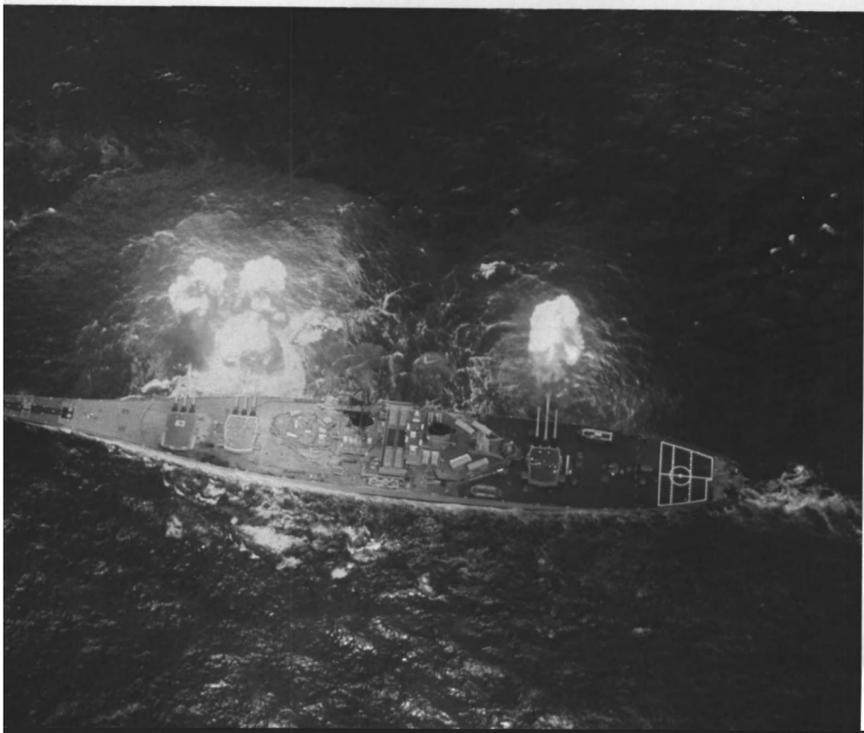
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## Materials Handling In The Shipbuilding, Offshore And Heavy Industries

*Tomorrow's shipbuilding technology for line production and materials handling is available already today, claims Stellan Carlsson, shipbuilding specialist within The Esab Group, in this interesting report on modern shipbuilding.*

By Stellan Carlsson

It is estimated that about 5-8 percent of the total production time in the mechanized industry is accounted for by operations like welding, cutting and so on.

The rest is assembly, intermediate storage and handling. This means there is great potential for reducing capital expenditure in production through the correct choice of handling and transportation methods.

In this paper we shall be concentrating on heavy materials handling within the fields of shipbuilding, offshore and similar heavy industries. In this type of industry, some 75 percent of production time is accounted for by materials handling.

TTS—Total Transportation Systems A/S in Norway is an affiliated company to The Esab Group and specializes in heavy materials handling and production lines for the shipbuilding and offshore industry.

It is a fact when it comes to shipbuilding that completed ships are—at least in the case of the largest vessels—the most massive man-made objects which have to be moved on land, although some offshore structures pose similar problems.

Until recently, the only available means of launching large vessels was to build them on inclined berths and let gravity convey them to their true element when their time came. This could be a delicate operation and was definitely a one-way trip.

Today, as a result of experience from the offshore industry, a number of techniques have been developed which make it possible to move quite large ships around in a yard and to handle large prefabricated

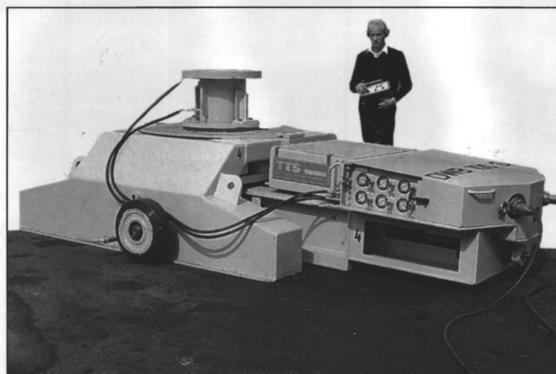


Fig. 1. Typical 100-ton DWB unit.

sections.

The normal handling method in a yard is to use cranes; jib-cranes for loads of up to 100 tons and gantry cranes over that weight. The largest gantry crane in use today can carry 1,500 tons. These types of crane run on rails and have a given working range.

In order to reduce the time it takes to build a ship, modern yards want a more flexible system and need to handle ship units of up to 3-4,000 tons. The basic idea is to produce the ship in the largest sections possible indoors, outfitted to the maximum level, and then to transport the sections to the building berth or dock for final assembly.

TTS has developed this type of

system to meet the requirements for a trackless transport system with the ability to move heavy sections or modules on a building site.

This system, the DWB. (Dual Walking Beam), consists of three or more DWB units, a power source and internal control system, Fig. 1.

The DWB unit is a hydraulic-mechanical construction which "walks" at a speed of one m/min.

Each DWB unit can carry 100-400 tons (depending on the unit type); the total load capacity is a multiple of the number of DWB units in the system, Fig. 2.

The system can carry the load across uneven surfaces with coarse surface material such as gravel.

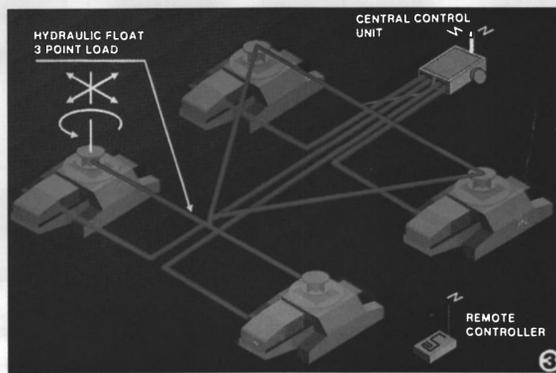


Fig. 2. Basic DWB system. By combining several groups of DWB units, loads in excess of 10,000 tons can be handled.

Hydraulic interconnection enables the DWB units to "float" the load, thereby preventing bumps in the road from inducing stress forces in the load construction.

The DWB system can turn and maneuver the load in very narrow areas and can also move up an incline, such as a slipway.

This heavy load system now makes it possible for the yard to produce a complete ship indoors and transport it greater distances than would ever be possible using cranes.

The system has a positioning accuracy of within one mm.

The DWB system has been installed at DCAN Cherbourg, the French nuclear submarine construction yard. The system will carry loads of up to 14,000 tons.

### TTS Kenmark Docklift System

The TTS Kenmark Docklift System is part of the cost-effective TTS Kenmark Shiplift Concept. The new removable docklift and DWB "Loadwalkers" move ring sections from the indoor assembly floor and directly onto the keel blocks in the dry-dock. No cranes are needed for the entire operation and DWBs move the sections without tracks across unprepared ground surfaces and permit the alignment of the sections within very small tolerances.

*"It is not a question of inventing something new, but rather of applying known technologies in the most efficient manner."*

Since the system can be installed either permanently or semipermanently, it permits very flexible utilization of the drydock for newbuilding, ship extensions or combined newbuilding and repair.

No major civil engineering work is required when installing this docklift and the compact arrangement makes it possible to cover the entire drydock with a movable light-weight construction building.

By employing DWB technology the ship or construction yard will improve its flexibility in production. This will have a tremendous impact on the total steel manufacturing cost.

The investment level compared with a heavy gantry crane system could be reduced to about 30 percent and the handling capacity of heavy blocks for the yard will be increased.

For detailed information on this report contact the author at: ESAB AB, Business Communications, Box 8004, S-402 77 Goteborg, Sweden.

## Propulsion Update



Principals at the recent SNAME New York Metropolitan Section meeting included, left to right: **Philip B. Kimball**, SNAME Section vice chairman; **Claus Windelev**, author; and **Richard A. Gilmore**, SNAME Section chairman.

### SNAME Paper Discusses Upgrading Of MAN B&W Diesel MC Engine Program

At the December meeting of the New York Metropolitan Section of the Society of Naval Architects and Marine Engineers (SNAME), held at the Downtown Athletic Club in

New York, N.Y., a paper was presented on MAN B&W Diesel's low-speed, two-stroke marine diesel engine program. The event was also hosted by the Eastern U.S.A. Branch

of the Institute of Marine Engineers and the Society of Marine Port Engineers of New York. Prior to the meeting, Goltens-NY and MAN B&W Diesel, Inc., sponsored a social hour.

"The MC Engine—Marine Propulsion of the 90s" was presented by **Claus Windelev**, president of MAN B&W Diesel, Inc. The paper presented aspects of the company's recent upgrading of the low-speed, two-stroke MC engine series. The author described how the company had adapted this engine program for changing market requirements through increased efficiency and reliability, decreased production cost, greater shipboard integration and improved environmental considerations. According to the paper, improved output per cylinder has led to increased power ranges from 5 to 11 percent. In-service experience over 9 years has led to component development and changes to the operating conditions for improved reliability. Physical shipboard integration was discussed by Mr. **Windlev**, particularly with respect to vibration considerations. Power Take-Off Generation through RCF (Renk Constant Frequency) gearing and Turbo Compound System were outlined as possible integrated power systems. Environmental considerations center around the problem of high nitrous oxide emissions from diesel engines. Of the primary methods aimed at reducing the amount of nitrous oxide formed during combustion only a combination of water-emulsified fuel and reduced maximum pressure has been feasible. This method can produce a 30 percent reduction in emissions, although fuel consumption will increase by about 3 percent. The secondary method, aimed at removing

nitrous oxide from the exhaust gas, centers around the use of Selective Catalytic Reduction (SCR) with the introduction of ammonia at temperatures of between 300 degrees C and 400 degrees C. Reportedly more than 90 percent nitrous oxide reduction can be obtained by using the SCR method. An additional benefit is that part of the soot and hydrocarbons in the exhaust are removed by oxidation in the SCR reactor.

For free literature containing complete information on the MC engine program,

Circle 5 on Reader Service Card

### Japan To Ban Driftnet Fishing By End Of 1992

Japan, which has been under strong pressure from the U.S. and the United Nations, has agreed to reduce its driftnet capacity by half by June 30, and to ban driftnet fishing altogether by the end of 1992. Japan's driftnet fleet of about 10,000 will face extinction.

Known as "walls of death," the 30-mile driftnets indiscriminately trap tens of thousands of fish, dolphins, sharks and other marine life.

Japanese fishermen say the government surrendered too easily to U.S. pressure without winning a compromise allowing driftnet fishing but with better conservation methods.

Experimental driftnets that sink several yards below the sea surface rather than floating near the top are being worked on by the Japan Driftnet Fishery Association.

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### Seattle To Spend \$75 Million On Port Expansion

The commissioners of the Port of Seattle recently approved the expansion of the port's largest marine terminal at a cost of \$75 million. The multimillion-dollar project would increase the size of the 109-acre East Waterway terminal by 50 percent.

**Keith Christian**, the port development chief, was granted permission by the commissioners to purchase 55 acres of land on Harbor Island for use in expanding container storage areas, an intermodal railyard and street access.

According to a port spokesman, the extra space will be needed to handle the expected growth in demand for container storage as steamship lines begin to use larger ships at the Seattle port. The port is looking to acquire the extra acreage as fast as possible, and development it within three to four years.

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### OSHA Updates List Of Agencies To Perform Maritime Certification

OSHA recently announced the availability of a list of 128 agencies currently accredited to perform maritime certification functions of cargo gear and material handling devices. Each accredited maritime agency is listed with its area of operation, the expiration date of its

certification, and accreditation code. The agencies listed are accredited in one or more of the following: floating cranes and derricks; full function vessels; loose gear and wire rope testing; non-destructive examination; and shore-based material handling devices.

Cargo gear and material handling devices are required to be certified under OSHA's various maritime regulations. Accreditation requirements for gear certification are provided under CFR Part 1919.

### National Association Of Marine Services Hosts 1992 Annual Convention

"The New World of Ship Supply" is the theme for the 37th Annual Convention and Trade Fair of the International Ship Suppliers Association. The National Association of Marine Services is hosting the convention from October 11-14, 1992, to be held at the Contemporary Resort Walt Disney World Orlando,

Florida.

The ISSA '92 organizing committee has put together an informative and educational program. The theme for the convention is consistent with the Oslo '91 convention, Adjusting to New Realities. Ship suppliers must be aware of the changing business methods around the world and adapt to the needs of their customers and suppliers in the worldwide competitive environment. The convention program will address current issues and subjects relevant to the ship supply industry in the 90's.

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- Design specifications: Built to U.S.C.G. and ABS. Certified. Full set of drawings available.
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### Crosby Awarded Contract For 47-Foot Tourboat

Crosby Yacht Yard, Inc. of Osterville, Massachusetts, was recently awarded a contract from Charles River Tours to construct a 47 foot Tour/Excursion Tugboat. The boat will be certified to carry 49 passengers for scenic tours and dinner excursions on Boston Harbor and Charles River.

This will be the largest tug built by the boatyard, and on Cape Cod in many years. The boat will feature a raised pilothouse, wetbar, restrooms, convertible seating arrangements, and canvas topped aluminum frame to protect passengers from inclement weather. Power will be supplied by a single diesel engine. The vessel will have a beam of 13 feet and a draft of 4 feet. Delivery is scheduled for May 1992 in order to allow the boat to be ready for the Tall Ships' visit to Boston Harbor during the season.

Established in 1850, Crosby Yacht Yard, Inc. has continuously built power and sailboats for commercial and pleasure use.

### Maritime Services Corp. Signs On New Managers

Maritime Services Corporation of Hood River, Oregon, supplier of quality marine interiors worldwide, recently employed two new managers to aid their expanding operations.

**Marshall Aggen**, the new Northwest Regional Manager for MSC, will coordinate sales, marketing, and installation efforts from Maritime Services' recently opened Seattle office.

**Tony Holloway** will function as Head of Purchasing for MSC, working from the main offices in Hood River. His duties include purchasing, inventory control, and cost containment.

Both **Aggen** and **Holloway** come to Maritime Services with extensive background and experience in their respective fields. "Increasing market share and a desire to provide excellent service to our customers led to the decision to hire **Aggen** and **Holloway**," explained Charles Capovilla, President of MSC.

For more information about Maritime Services Corporation,  
Circle 43 on Reader Service Card

### Patterson Introduces New 40-Ton Barge Connector

The W.W. Patterson Company of Pittsburgh, Pa., has introduced a new 40-ton barge connector specially designed to replace ratchet turnbuckles for increased speed and versatility.

The Patterson M40LP series barge connectors are low-profile winches which offer enough speed to make or break a tow in less than half the time needed with conventional rigging.

A geared handwheel with an optional spinner is used for fast take-up. A built-in ratchet assembly tightens up to 4,000 pounds, and an extension bar is used for final tightening up to 10,000 pounds.

Release is even faster—a matter of throwing a pawl and controlling the release speed with Patterson's foot brake. The foot brake offers safety and prevents wire rope bird nesting.

Patterson's M40LP barge connectors are built with traditional Patterson quality using 5/8-inch steel sideplates, 1-inch tie-rods and heavy all-steel construction to guarantee years of maintenance-free operation.

For more information and free literature from W.W. Patterson, Circle 67 on Reader Service Card

### Keppel Completes Self-Discharging Bulk Carrier Conversion

Keppel Shipyard, a major operating division of Keppel Corporation Limited, has successfully converted River Yarra (formerly M V Audax), a 32,452-dwt conventional bulk carrier into a self-discharging bulk carrier. It is the first shipyard in Singapore to have carried out such a conversion.

The project, worth about \$16 million, involved design, steel fabrication, piping, electrical and instrumentation work and equipment installation.

Upon arrival at Keppel Shipyard, the deck cranes were removed, the five hold configuration was altered to four by relocation of one bulkhead, the hatch coaming height was increased and the Bulklift self-discharging equipment was installed.

For free literature detailing the facilities and capabilities of Keppel Shipyard, Circle 69 on Reader Service Card

### Five AHTS Vessels Bought By Oil Offshore

The purchase of five anchor handling tug supply (AHTS) vessels from Norway's Stavanger Anchor Handlers has been completed by U.K.-

based support vessel operator OIL Offshore.

The five 8,160-bhp vessels have been fixed to Brazil's state oil company Petrobras, and all five have been chartered by Petrobras for \$7,950 per day, market sources have indicated.

The market for supply vessels remains demand driven, the executive committee of the International Support Vessel Owners' Association (ISOA) claims.

### \$44 Billion Japanese Port Plan Gets Go-Ahead

The Japanese cabinet has given the go-ahead to a \$44 billion investment program in the Japanese ports and harbors industry.

The follow-up to the seventh program which ended on March 31, 1991, the eighth port and harbor expansion and improvement program will cover five years.

The new program was drawn up on the basis of recommendations made at the U.S.-Japan Structural Impediments Initiative Talks, and proposals made by the Ministry of Transport on how the port and harbor industry should function in the 21st century Japan.

To cope with projected growth in container traffic and the needs of new large-sized containerships, Japan must construct highly efficient loading-unloading container facilities at the ports across the country.

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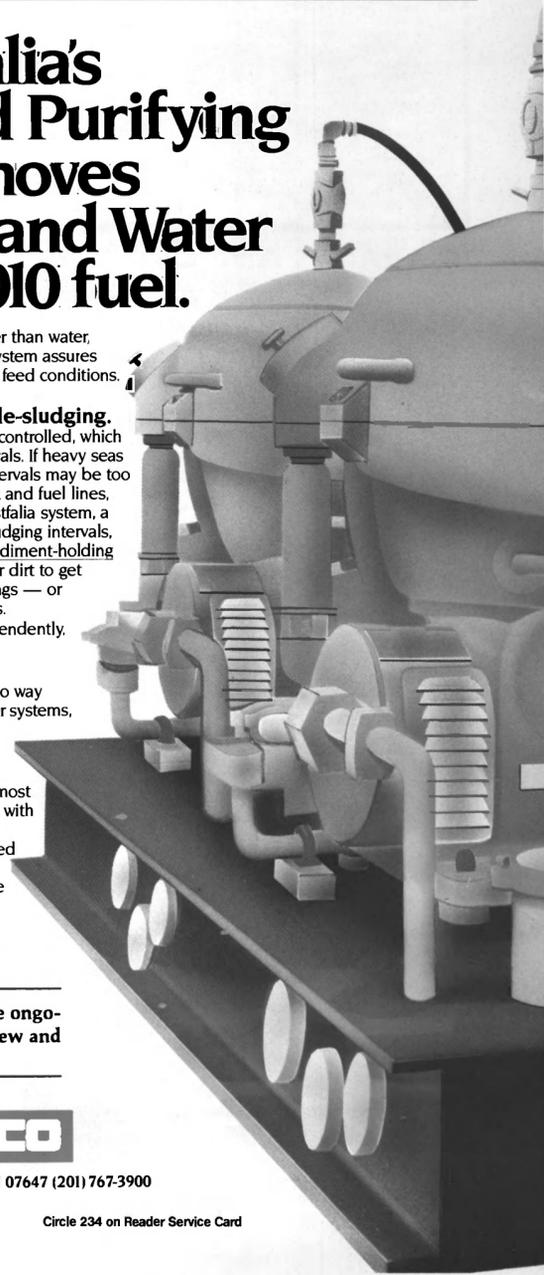
No matter how wide the variations in density or feed characteristics, you get the most efficient, reliable purification. Automatically, with no need for gravity disc changes.

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

## Maltese Cross A-1 Deck Barges



## CRANES AND LIFT TRUCKS

### Level Luffing Crane

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

Excellent Condition

### Revolver Crane

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

### Whirley Crane

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

Excellent Condition

### Bridge Crane

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

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

*Priced at a fraction of today's new replacement cost.*  
Immediately available. From LASH Ships. Late Model. Manufactured by PACEO.  
Suitable for Ship, Barge or Land use. Manufactured to ABS and MARAD requirements  
AC Power Input with Cable Reel  
MG set: 250 HP-AC-170 KW Z30 DC.  
200 HP DC Hoist Motor  
100 HP DC Trolley Motor  
2-40 HP DC Gantry Travel Motors  
Trolley Travel 275 F.P.M.  
Gantry Travel 100 F.P.M.  
Hoist Speed: 30 LT @ 85 F.P.M.; 20 LT @ 100 F.P.M.; Empty Spreader 200 F.P.M.  
32'0" Maximum Outstretch  
Hoist, Trolley Travel and Gantry Motors are DC and have VSR and VSX regulation.  
*Other areas of possible use: Pipe and steel yards, Barge building, Concrete pre-fab plants*

### Two Taylor Lift Trucks, Model TE 220S

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

## SPLIT TYPE SELF-DUMPING SCOWS



Length	180'0"	Hydraulic Pumps 12 GPM & 75 GPM
Beam	50'0"	Time to Open
Depth of Mid-Body	14'0"	(Fully Closed to Fully Open) . . . 6 Min. 5 Sec.
Hopper Length	128'0"	Time to Close . . . . . 4 Min. 34. Sec.
Level Hopper Volume	1421 cu. yd.	Hopper Angle Fully Open . . . . . 53.78 degrees
DWT @ d = 10.22 ft.	1615 L.T.	Fuel Tank Capacity . . . . . 445 Gal.
Rake Lengths F. & A.	26'0"	Hydraulic Cylinders . . . . . 18" Diam. 120" Stroke
Twin Skegs		(2 Fwd & 2 Aft)
Stern & Fwd. Rake Decks Stepped up 2'0"		Plating . . . . . Side, 9/16"
Engine GM 671		Bottom, 5/8"
		Hopper, 5/8"



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

# FOR SALE OR CHARTER

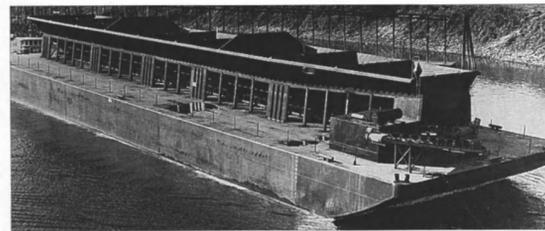
## MALTESE CROSS A-1 OIL TANK BARGE

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



## SELF-UNLOADING AGGREGATE BARGE

**Billie-K** Maltese Cross A-1 Ocean Aggregate Barge



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

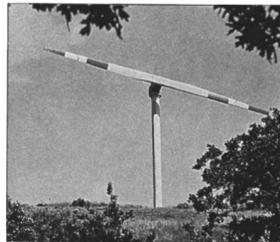
### TANKS

#### Steel Skid-Mounted Liquid Storage Tanks

10 Available

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

### WIND TURBINE



#### Three Wind Turbines

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

### AMERICAN CRANE BARGE

#### Barge Data

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

#### Crane Data

Manufacturer . . . . . American Hoist & Derrick Co.  
 Model & Type . . . . . 305 Revolver  
 Capacity . . . . . 125 Tons  
 Boom (Certified Rating with 140' Length, 160' Available)  
 20 Part Rigging . . . . . 2,200', 7/8"-6x36 I.P.S.  
 4 Part Standing Bail . . . . . 2-186', 1-3/4"-6x36 I.P.S.  
 Main Hoist  
 (Certified Rating: 58.5T @ 50' to 100', 8 part rigging)  
 20 part rigging . . . . . 3,250 ft., 1"-6x36 I.P.S.  
 Aux. Hoist (Certified Rating: 10.0 T @ 100') 15 T. Capacity  
 2 part rigging . . . . . 635 ft., 7/8"-6x66 I.P.S.



**ZIDELL**  
 MARINE GROUP

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 Phone: 1-800-547-9259, In Oregon (503) 228-8691 Fax: (503) 228-6750

For quiet, vibration-free operation and improved service life in passenger, commercial and naval vessels.

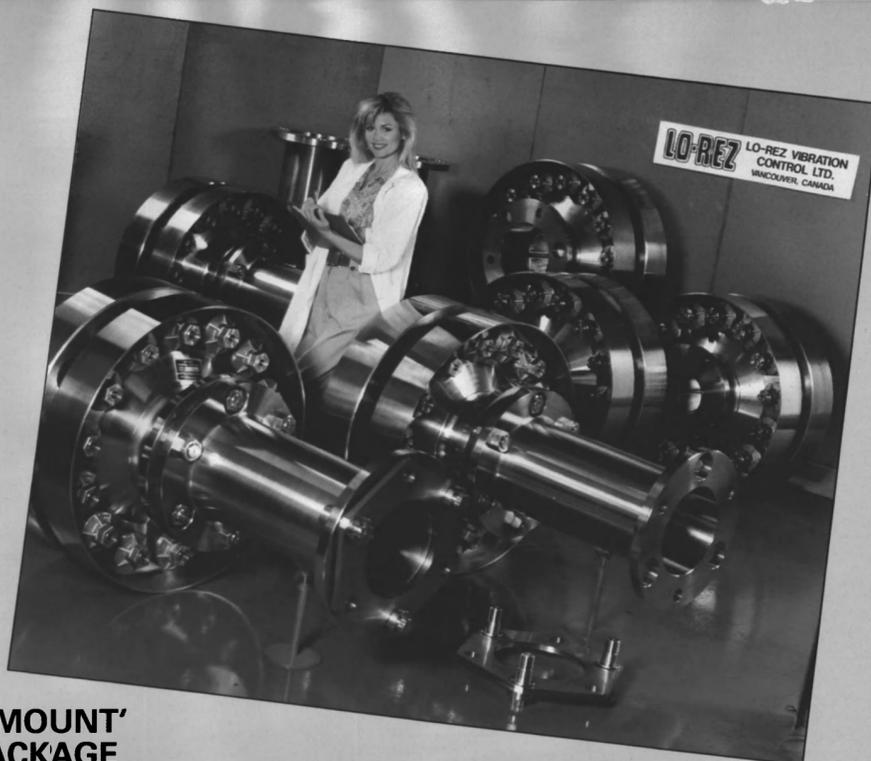
## LO-REZ

Shown are six 38RT/HLF flexible coupling assemblies as used on naval propulsion systems.

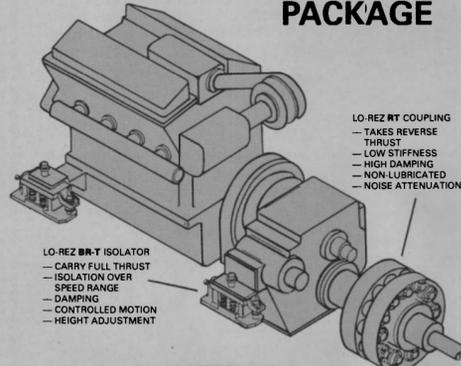
The 38RT couplings, which utilize elastomer cylinders pre-loaded in compression, have three dimensional lateral and torsional flexibility. They provide a high degree of noise attenuation, there being no metal-to-metal contact.

The HLF multiple-lamination coupling components have high Lateral Flexibility and allow the ship propulsion systems to accommodate very high lateral (and associated) excursions.

The particular assemblies shown here have been qualified for accelerations in excess of 35.0 G.



### THE LO-REZ 'SOFT MOUNT' PACKAGE



LO-REZ RT COUPLING  
 — TAKES REVERSE THRUST  
 — LOW STIFFNESS  
 — HIGH DAMPING  
 — NON-LUBRICATED  
 — NOISE ATTENUATION

LO-REZ BR-T ISOLATOR  
 — CARRY FULL THRUST  
 — ISOLATION OVER SPEED RANGE  
 — DAMPING  
 — CONTROLLED MOTION  
 — HEIGHT ADJUSTMENT

The configuration of the LO-REZ RT coupling provides many important characteristics such as two directional thrust and torque capability, shock absorption, **excellent noise attenuation**, high misalignment capability, etc.

The LO-REZ BR-T isolators have special thrust carrying devices which permit them to carry full thrust load without 'locking up' so that they are capable of **providing effective isolation of the engine-generated vibration over the entire speed range**.

With the installation of the LO-REZ soft mount package there is no requirement for a thrust bearing in the low-speed shafting so that the full thrust is transmitted through the RT coupling into the gearbox thrust bearing, and out to the gearbox/engine or raft brackets, to the LO-REZ isolators.

Our goal and commitment is to provide the highest possible quality of vibration control products and services to the Marine Industry.

*T.W. Spaetgens*  
 T.W. Spaetgens, P.Eng., Pres.



1. 'MISS VIRGINIA BELLE'  
 Your vibration-control products are the best on the market. I would not build another single-hulled passenger vessel without your Soft Mount System. LO-REZ has gained a lot of prominence.  
 Frank Patti, Owner, Patti Shipyard, Inc

2. 'ISLAND QUEEN V'  
 Passengers are constantly remarking on the quiet and vibration-free performance. I will often take them down to the engine room and point to the LO-REZ Twin Isolation Systems.  
 Ron Anderson, Owner, 30,000 Island Cruise Lines, Inc.

3. 'TSRV' VESSELS  
 These Torpedo and Ship-ranger vessels operate in an acoustically-sensitive area. The sophisticated LO-REZ systems make a significant contribution towards the quietness and smoothness, meeting various noise criteria neatly.  
 Malcolm Wall, P.Eng., TSRV Project Manager, National Defence Hdqrs., Ottawa

4. 'ODYSSEY'  
 I found the LO-REZ system to more than meet my expectations, (it is) uncanny, like a sailboat or being towed. When standing on the bridge, I have to look at my instruments to see if the engines are running, so quiet and vibrationless is the machinery.  
 Capt. John B. Buwen, Master, MV Odyssey



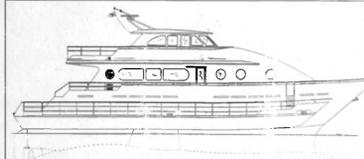
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**LO-REZ VIBRATION CONTROL LTD.**

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**New SWATH Design From Metal Boat Inc.**



New SWATH Design

Metal Boat Inc. of Vancouver, Washington, is close to completion of a new SWATH (Small Waterplane Area Twin Hull) vessel, entirely designed and built in the northwest.

The submerged hulls, which give the SWATH ship its remarkable seakindliness, displace 86,000 lbs fully-loaded, and are connected to the superstructure by slender fore and aft struts which also provide ladder-access to the engine rooms. The extreme stability and lack of motion of the SWATH concept is complemented by 60 foot long, external sidedecks which bring guests closer to the water for better fishing or wildlife viewing. The draft is variable, from 4 feet to 8.5 feet, depending on ballast state.

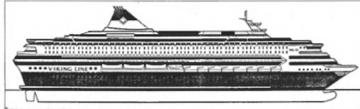
The twin, circular-section hulls, sheathed in 1/4 inch aluminum, are enlarged in way of the aft engine compartments, each of which holds a 450 HP Merlin turbocharged diesel, turning a 44x44, Rice four-bladed propeller through a 5:1 Twin Disc reduction gearbox. Cruising speed is 14 knots and the economical speed is 12 knots for a 1,000 mile range on 2,000 gallons of fuel.

The spacious aft deck may be fitted with sport-fishing chairs and bait tanks, extra seating, or catering facilities. The main salon is entered through sliding glass doors, and forward of this are two main cabins with three smaller cabins adjoining. There is also a captain's cabin at the back of the upper-deck pilot house.

This latest evolution of SWATH technology has combined the proven lack of motion with an attractive, streamlined overall appearance which will have considerable appeal in the charter market. Metal Boat Inc. is a full-service, custom builder constructing yachts, charter, and workboats since 1982.

For more information about the SWATH design or Metal Boat Inc.,  
**Circle 132 on Reader Service Card**

**Meyer Werft Begins Building Cruise Ferry**



Cruise ferry for Rederi A/B Slite

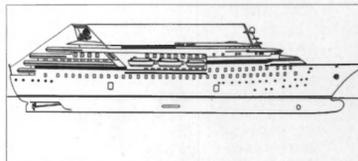
The first section of a cruise ferry under construction at Meyer Werft Papenburg, Germany, was recently lifted into position and then lowered onto the blocks by the 600-ton gantry crane inside the shipbuilder's covered building dock. The section, which is intended for a 55,000 grt newbuilding for Rederi A/B Slite, Sweden, is 42.64 feet long, 104.96 feet wide and weighs almost 400 tons.

The cruise ferry, with a length overall of 656 feet and a breadth of 104.96 feet, will have a capacity of 3,000 passengers. The engine output of about 43,200 hp will then provide the vessel with a speed of 21.50 knots.

Upon delivery early in 1993, the newbuilding will be employed by Viking Line on the Stockholm-Helsinki route.

For free literature describing the shipbuilding facilities offered by Meyer Werft,  
**Circle 41 on Reader Service Card**

**Alfa-Laval Systems Chosen For Major Greek Rebuild**



Cruise ship Ocean Majesty

The Chios Breeze Marine Company has selected complete oil cleaning and conditioning systems from Alfa-Laval for the conversion of a roll-on/roll-off vessel to a luxury liner.

The rebuild is one of the most extensive of its kind undertaken in Greece. The only part remaining of the original vessel is the hull. All furnishings and equipment throughout the ship are from top European suppliers.

The cruise vessel, Ocean Majesty, will be worth \$60 million when completed and will operate on a time charter in the Mediterranean. Headquartered in Sweden, Alfa-Laval is a major supplier of oil treatment systems, hardware, and software to the marine and power industries worldwide.

For more information about Alfa-Laval  
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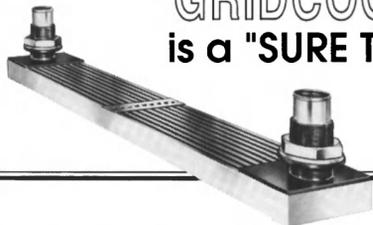
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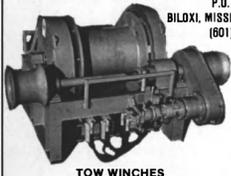
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TOW WINCHES

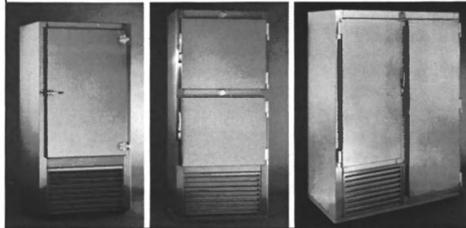


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# BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.

## ABRASIVES

Barton Mines Corp., 1658 Cole Blvd., Golden, CO 89401  
Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219  
Ervin Industries, Inc., 3893 Research Park Drive, P.O. Box 1168, Ann Arbor, MI 48106-1668

StanBlast Abrasives, P.O. Box 968, 3300 River Road, Hawey, LA 70059

## AIR CONDITIONING AND REFRIGERATION—Repair & Installation

Adrick Marine Corp., 320 Cantor Ave., Linden NJ 07036  
Bailey Group, 2323 Randolph Ave., Avenel, NJ 07001  
Carrier Transicold, P.O. Box 4805, Syracuse, NY 13221  
Stal Refrigeration AB, Butangsgatan 16, S-601 87 Norrköping, SWEDEN  
York Intl, P.O. Box 1592-083G, York, PA 17405

## BALLAST

Chesapeake Specialty Products, 5055 Northpoint Blvd., Baltimore, MD 21219  
Genstar Stone Products, Executive Plaza IV, Hunt Valley, MD 21031  
Mineral Research & Recovery Inc., P.O. Box 986, Sonoma, AZ 85637  
Queen City Iron & Steel, P.O. Box 7205, Charlotte, NC 28241-7205

## BARGE BUILDING

Conrad Industries, P.O. Box 790, Morgan City LA 70381  
Mason, South Boundary Street, P.O. Box 69, Tei City, IN 47586

## BARGE—Leasing

McDonough Marine Service, 2300 Surekote Road, New Orleans, LA 70117  
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

## BASKET STRAINERS

Beard Industries, P.O. Box 31115, Shreveport, LA 71130

## BEARING—Rubber, Metallic, Non-Metallic

B.F. Goodrich, Engineered Polymer Products, 150 Division Dr., Wilmington, NC 28401  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Thomson Gordon Ltd., 3225 Mainway, Burlington, Ont., CANADA L7M 1A6  
Waukesha Bearings, P. O. Box 1616, Waukesha, WI 53187-1616

## BOILER—Manufacturers

Aalborg Ciseriv (Miami) Inc., 1539 SW 21st Avenue, Ft. Lauderdale, FL 33312

## BROKERS

Captain Astad Company, Inc., P.O. Box 350486, Ft Lauderdale, FL 33335, 2900 Energy Centre, 1100 Poydras Street, New Orleans, LA 70163-2900  
Diversified Marine Brokerage, 1201 Northern Blvd., Manhasset, NY 11030  
Jack Faulkner, 2419 Caddy Lane, P.O. Box 371, Flossmoor IL 60422  
Mowbray's Tug & Barge Sales Corp., 35 De Hart St., Morristown NJ 07960

## BUNKERING

Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

## CABLE ASSEMBLIES

Revere Aerospace, 845 N. Colony Rd. Wallingford, CT 06492

## CARGO ACCESSORIES

Morgan Crane Company, Inc., 1300 Normandy Place, Santa Ana, CA 92705

## CHAIN

Baldi, Inc., 6 M. Butler St., Chester, PA 19013  
Crandall Dry Dock Engineers Inc./Marit Chain, 21 Pottery Lane, Dedham MA 02026  
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston TX 77020  
G.J. Worleboer Jr. B.V., Postbus 5003, 3008 AA Rotterdam, NETHERLANDS

## CHOCKING COMPOUNDS

ITW Philadelphia Resins, 130 Commerce Drive, Montgomeryville, PA 18936

## CLAMPING—Pipe, Tubes, Hose

ZS, 32497 Schoolcraft Road, Livonia, MI 48150

## CONFABCTORS

International Compressor, Inc., P.O. Box 5918, Hilton Head, SC 29938  
A/S Vesta, Skudehavsvej 27, DK-2100 Copenhagen, DENMARK;  
Sales Agents: American United Marine Corp., 5 Broadway, Rt 1, Saugus, MA 01906, USA

## COMPUTERIZED INFORMATION SYSTEMS

TIMSCO, P. O. Box 91360, Mobile AL 36691  
Coastdesign, Inc., Unit 201, 12837 76th Avenue, Surrey, BC CANADA V3W 2V3

## CONDENSERS/SEPARATORS

Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130  
Standard Refrigeration Co., 2050 N. Ruby, Melrose Park, IL 60160  
Wright Austin Co., 3250 Franklin St., Detroit MI 48207

## CONTROL SYSTEM—Monitoring

Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950  
MO Industries, Gems Sensors Division, One Cowles Rd., Plainville CT 06062  
Lyngso-Valmet Marine A/S, P.O. Box 130, N-3430 Spikkestad, NORWAY  
MMC International, 60 Trip Dr., Inwood NY 11696  
Marine Electric RFD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135  
Norcontrol A/S, P.O. Box 1024, N-3191 Horten, NORWAY  
Robertson Marine Systems, 3000 Kingman St., Suite 207, Metairie, LA 70006  
Robertson-Shipmate, 400 Oser Avenue, Hauppauge, NY 11788  
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406

## COUPLINGS

Lo-Rez Vibration Control Ltd., 156 West 8th Avenue, Vancouver, BC CANADA, V5Y 1N2

## CRANE—HOIST—DERRICK—WHIRLEYS

The Crosby Group, Inc., P.O. Box 3128, Tulsa OK 74101  
Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072  
Liebherr-Werk Neuenburg GES.mbh, P.O. Box 10, A-6710 Neuenburg, AUSTRIA  
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235  
Morgan Crane Company, Inc., 1300 Normandy Place, Santa Ana, CA 92705  
J.D. Neuhaus Hebezeuge GmbH, D-5810 Witten, GERMANY  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150  
Pettibone-Tiffin Corp., 235 Miami St., Tiffin, OH 44883  
Reco Crane Co., 5734 Jefferson Highway, New Orleans LA 70181  
Zidell Explorations, Inc., 3121 SW Moody Ave., Portland OR 97201

## DECK MACHINERY—Cargo Handling Equipment

All Set Marine Lashing AB, P.O. Box 14112, S-161 14 Bromma, SWEDEN  
Braden Carco Gearmatic, P.O. Box 547, Broken Arrow, OK 74013  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150  
Markey Machinery Co., Inc., P.O. Box 24788, Seattle, WA 98124-0788  
Morgan Crane Company, Inc., 1300 Normandy Place, Santa Ana, CA 92705  
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Bilozi MS 39535-4454  
Seattle Crane & Equipment Co., Inc., 4403 20th Street East, Fife, WA 98424

Skookum/Rope Master, P.O. Box 280, Hubbard, OR 97032

Willem Pot b.v., P. O. Box 29102, 3001 GC Rotterdam, The Netherlands

## DECK MACHINERY

New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

## DIESEL ACCESSORIES

Coltec Industries Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511  
Diesel America Inc., 5217 River Rd., New Orleans LA 70123  
Gearhardt's Inc., P.O. Box 10161, Jefferson, LA 70181  
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360  
Giro-Engineering Ltd., 370 Brook Lane, Sarisbury Hampshire, ENGLAND SO3 6ZA  
Kiene Diesel Accessories, 325 S. Fairbanks St., P.O. Box 386, Addison IL 60101  
Pow-Rok, 5518 Mitchelldale, Houston, TX 77092

## DIESEL ENGINE—Spare Parts & Repair

Aalborg Cserv (Miami) Inc., 1539 SW 21st Avenue, Ft. Lauderdale, FL 33312  
Caltax Marine Diesel B.V., Frankijkweg 11, 4455 TR Nieuworp (Wissinger Oost), THE NETHERLANDS  
Caterpillar, Inc., Engine Div., P.O. Box 610, Mossville, IL 61552-0610  
Coltec Industries, Parts & Service Div., 701 Lawton Ave., Beloit, WI 53511  
Cummins Engine Company, Mail Code 60011, Box 3005, Columbus, IN 47202-3005  
John Deere, John Deere Road, Moline, IL 61265  
Global Maritime Services, 247 SW 33 Court, Ft., Lauderdale, FL 33315  
Gotten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231  
Hatch & Kirk, 5111 Leary Avenue NW, Seattle, WA 98107  
Pacific Rim Diesel, 3842 W. Marginal Way SW, Seattle, WA 98106  
Paxman Diesels, P.O. Box 8, Paxman Works, Colchester, Essex, CO1 2HW, ENGLAND;  
Paxman Diesels USA (A Div. of Ruston Gas Turbines, Inc.), 15950 Park Row, Houston, TX 77084  
Suizer Brothers Inc., 200 Park Ave., New York, NY 10166

## DIVING & SALVAGE

H.J. Menzies, P.O. Box 23123, New Orleans LA 70183  
Mudboon Marine Services, Inc., P.O. Box 3221, Terminal Island, CA 90731  
Sea-Size Diving, 28612 Harper Ave., St. Clair Shores, MI 48081

## DRY DOCKS—Design

Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381  
Ferrosal AG, D-4300 Essen, Hehenzollernstrasse 24, GERMANY  
Marine Design Services, P.O. Box 928, Bonita CA 92002

## ELECTRICAL EQUIPMENT

L.F. Gaubert & Co., Inc., P. O. Box 50500, New Orleans LA 70150  
MMC International, 60 Trip Dr., Inwood NY 11696  
SPD Technologies, 13500 Roosevelt Blvd., Philadelphia PA 19116  
Universal Marine Electric Co., Inc., P.O. Box 266-923, Houston, TX 77027-6923  
Kim Hotstar Mfg. Co., 5724 Broadway Ave., P.O. Box 42, Spokane WA 99210

## ELECTRONIC DISPLAY

Scandinavian Micro Systems, P.O. Box 155, N-1411, Kolbotn, NORWAY

## ELECTRONIC ENCLOSURES

A&J Manufacturing, 14131 Franklin Ave., Tustin CA 92680

## ELECTRONIC INFORMATION SUPPORT

Inventory Locator Service, 3965 Mendenhall Rd. South, Suite 10, Memphis, TN 38115

## ENGINE TEST EQUIPMENT

General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth, MA 02360  
Instruments, Computers, & Controls, Inc., 6942 Haven Creek Dr., Katy, TX 77449

## EPIRES

ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale FL 33310-5247  
Alden Electronics, 40 Washington St., Westborough, MA 01581  
Litton Special Devices, 750 W. Sprout Road, Springfield, PA 19064  
Koden International, 77 Accord Park Drive, Norwell, MA 02061

## EQUIPMENT—Marine

Byrne, Rice & Turner, Inc., 1172 Camp St., New Orleans, LA 70130  
Gladsky Marine, Garvies Point Rd., Glen Cove, NY 11542  
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302

## EVAPORATORS

Alfa-Laval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974  
Alfa-Laval, Desalt A/S, Slomholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK  
Aqua-Chem, Water Technologies Div., P.O. Box 421, Milwaukee, WI 53201  
Beard Industries Inc., P.O. Box 31115, Shreveport, LA 71130

## FANS-VENTILATORS-BLOWERS

Carling Turbine Blower Co., 110 Nebraska St., P.O. Box 88, Worcester, MA 01613  
Jon M. Liss Associates, Inc., 411 Borel Ave., San Mateo, CA 94402

## FASTENERS

Jamestown Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02635  
Non-Ferrous Bolt & Mfg. Co., 4085 Nevso Dr., Suite C, Las Vegas, NV 89103

## FENDERING SYSTEMS/BUOYS—Dock & Vessel

Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Milligan Marine Supply Inc., 5832 Harvey Wilson, Houston, TX 77020  
Rowe Bumpers, Conveyors & Caster Corp., 3501 Detroit Ave., Cleveland, OH 44113  
Seaward International, Inc., Clearbrook Industrial Park, P.O. Box 98, Clearbrook, VA 22624  
Solidur Plastics Co., 200 Industrial Dr., Delmont, PA 15626  
Standard Refrigeration Co., 2050 N. Ruby, Melrose Park, IL 60160  
Ultra Poly Inc., 2926 South Steele, Tacoma, WA 98409  
Wing Fender Co., 50 Church Street, Sea Bright, NJ 07760

## FIBER OPTIC SYSTEMS

AT & T, Cables System/Fiber Optic Div., 111 Madison Avenue, Morristown, NJ 07962

## FUEL ADDITIVES, CONDITIONING

U.S. Borax/Industrial Chemicals, 3075 Wilshire Boulevard, Los Angeles, CA 90010

## GALLEY EQUIPMENT

Cospolch Refrigerator Co., 949 Industry Rd., Kenner LA 70062  
Gaylord Industries, 10900 S.W. Avery St., P.O. Box 1149, Tualatin, OR 97062  
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Bilozi MS 39535-4454

## GANGWAYS, LADDERS

Coast Marine & Industrial Supply Inc., 398 Jefferson St., San Francisco, CA 94133  
Ramamaster Inc., 3825 Oceola Blvd., Vero Beach, FL 32966  
Westmont Industries, 10805 Painter Ave., Santa Fe Springs, CA 90670  
Wooster Products Inc., 1000 Spruce St., P.O. Box 896, Wooster, OH 44691

## HEAT EXCHANGERS

Alfa-Laval, Desalt A/S, Slomholmen 93, DK-2650 Hvidovre, Copenhagen, DENMARK  
Alfa-Laval Separation Inc., 955 Mearns Rd., Warminster, PA 18974  
Beard Industries Inc., P.O. Box 31115, Shreveport LA 71130

## HORNS/WHISTLES

Kahlenberg Bros Co., P.O. Box 358, Two Rivers, WI 54241

## HYDRAULICS

Aerogrip Corporation, 3000 Strayer, P.O. Box 631, Maumee, OH 43537-0631  
Cunningham Marine Hydraulics Co., 201 Harrison St., Hoboken NJ 07030  
Del Gavio Marine Hydraulics Inc., 619 Industrial Rd., Carlstadt, NJ 07072

## INCINERATORS

Teamtec A/S, P.O. Box 100, N-4912 Gjeving, NORWAY  
A/S Vesta, 27 Skudehavsvej, DK-2100 Copenhagen DENMARK. US Agent: American United Marine, 5 Broadway, Rte 1, Saugus, MA 01906

## INSULATION

Soundcoat Company, 1 Burt Drive, Deer Park, NY 11729  
JOINER—Watertight Door—Paneling—Ceiling System—Decking  
Cupples Products, 2650 S. Hanley Rd., St. Louis, MO 63144  
GEC-Marconi Electronic Systems Corp., 550 S. Fulton Ave., Mt. Vernon, NJ 10550  
IMAC AB, Berga Alle 1, S-252 55 Helsingborg, SWEDEN  
U.S. Rep. Hopeman Brothers, Inc., P.O. Box 820, Waynesboro, VA 22980  
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Avenue, Boca Raton, FL 33431  
Marine Accommodations Inc., 8535-3Baymeadows Road, Suite 140, Jacksonville, FL 32256  
Maritime Services Corp., 3457 Guignard Drive, Hood River, OR 97031  
Walt & Krenzer Inc., 1390 Mt. Read Blvd., Rochester NY 14606

## KEEL COOLERS

R.W. Ferntstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858  
Kahlenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
The Walter Machine Co., Inc., 84-98 Cambridge Avenue, Jersey City, NJ 07307

## LEGAL SERVICES

John Jozwick, c/o Bryan, Schiffrin & McMonagle, First & Cedar Bldg., Ste 350, 2701 First Ave., Seattle, WA 98121

## LIFEBOATS/RAFTS

Zodiac of North America, P.O. Box 400, Stevensville, MD 21666  
Willard Marine Co., Inc., 1250 N. Grove St., Anaheim, CA 92806

## LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

ACR Electronics, Inc., 5757 Ravenswood Rd., P.O. Box 5247, Ft. Lauderdale, FL 33310-5247  
Archway Marine Lighting, 4501 Swan Ave., St. Louis, MO 63110  
Carlisle & Finch, 4562 W. Mitchell Ave., Cincinnati OH 45232  
The L.C. Doane Co., P.O. Box 975, Essex, CT 06426  
Nautilus Equipment Ltd., P.O. Box 66, Station M, Halifax, Nova Scotia J8S 2L4, CANADA  
Phoenix Products, 6161 N 64th St., Milwaukee WI 53218

## LINE BLINDS

Stacey/Fetterolf, P.O. Box 103, Skippack, PA 19474

## LOGISTICS

VL Logistics Consultants, Inc., 3420 Bienville Blvd., Ocean Springs MS 39564  
GED, 4546 N. Wiltchuck Road, Virginia Beach, VA 23455

## MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING

Del Gavio, 619 Industrial Rd., Carlstadt, NJ 07072  
Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315  
Gotten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231  
New England Trawler Equipment Co., 291 Eastern Avenue, Chelsea, MA 02150

## MACHINING—On Site Repair

Global Maritime Services, 247 SW 33 Court, Ft. Lauderdale, FL 33315

## MARINE ACCOMMODATIONS

Hopeman Brothers, P.O. Box 820, 435 Essex Ave., Waynesboro, VA 22980  
Jamestown Metal Marine Sales, Inc., 4710 Northwest Second Avenue, Boca Raton, FL 33431

## MARINE ACCOMMODATIONS Inc.

8535-3Baymeadows Road, Suite 140, Jacksonville, FL 32256  
Wilson & Hayes, 1601 Eastlake Avenue, East, Seattle, WA 98102

## METAL PRODUCTS

Jamestown Metal Marine Sales, Inc., 4710 N.W. Second Ave., Boca Raton, FL 33431  
Harrington Metal Fabrication, P.O. Box 410, 6720 M 89, Fernville, MI 49408  
Williams & Co., 901 Pennsylvania Ave., Pittsburgh, PA 15233-1495

## NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Hwy., Arlington, VA 22202  
Aero Nav Laboratories, Inc., 14-29 112 St., College Point, NY 11356  
Artec Offshore Corp., 578 Enterprise St., Escondido, CA 92025  
CDI Marine Co., 9487 Regency Square Blvd., Suite 500, Jacksonville, FL 32225  
CT Marine, 18 Church Street, Georgetown, CT 06829  
Childs Engineering Corp., Box 333, Medfield, MA 02052  
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, MA 02026  
Crane Consultants, 15301 First Ave S., Seattle WA 98148  
C.R. Cushing, 18 Vesey St., New York, NY 10007  
Arthur D. Darden, 3200 Ridgeway Dr., Suite 403, Metairie LA 70002  
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129  
Designers & Planners, 2611 Jefferson-Davis Hwy, Ste. 3000, Arlington, VA 22202  
Diversified Technologies, 812 Live Oak Dr., Chesapeake VA 23320  
Encon Management & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706

## GMI Inc. (Industrial Measurement Consultants), P.O. Box 1836, Newport News, VA 23601

Gibbs & Cox, Inc., 50 West 23rd Street, New York, NY 10010  
The Glosten Associates Inc., 600 Mutual Life Bldg., 605 First Ave., Seattle,

WA 98104  
Morris Guralnick Associates, Inc., 130 Sutter Street, Suite 400, San Francisco, CA 94104  
C. Raymond Hunt Associates, 69 Long Wharf, Boston MA 02110  
Hydrocomp, Inc., 45 James Farm Lee, P.O. Box 865, Durham, NH 03824  
J.H. Inc., No. 4 Executive Campus, Culbert Blvd. & Route 70, P.O. Box 5031, Cherry Hill, NJ 08034  
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073  
James S. Kroger, 1515 NW 7th St., Suite 124, Miami FL 33125  
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225  
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063  
John V. McCollum, Inc., 1199 Long Point Road, Mt. Pleasant, SC 29464  
McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, Biloxi, MS 39535-4454  
John J. McMullen Associates, Inc., 1 World Trade Center, Suite 3000, New York, NY 10048  
MacPherson Maritime Services, 141 Jefferson Ave., Westfield NJ 07090  
Fendal Marbury, P.O. Box 2321, Annapolis, MD 21401  
Marine Design & Operations, Inc., 226 Chestnut St., Roselle Park, NJ 07024  
Marine Management Systems Inc., 102 Hamilton Ave., Stamford CT 06902  
Marine Power Associates, 1010 Turquoise St., Ste 217, San Diego, CA 92109  
Maritech, Seacraft, Bay Road, Newmarket, NH 03857  
Maritime Design, Inc., 3020 Hartley Rd., Jacksonville, FL 32257  
R.J. Mellusi & Co., 71 Hudson St., New York, NY 10013  
Nautical Designs, Inc., 2101 S Andrews Ave., Suite 202, Ft Lauderdale FL 33316  
Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169  
Northern Marine, P.O. Box 1169, Traverse City, MI 49685  
Ocean Oil International Engineering Corp., 3019 Mercedes Blvd., New Orleans LA 70114  
Olsen Marine Surveyors Co., P.O. Box 283, Port Jefferson, NY 11777  
Omega Marine Engineering Systems, Inc., 11757 Katy Freeway, Ste 1100, Houston TX 77079  
QED Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455  
Donald J. Quigley, Inc., P.O. Box 515 Richboro, PA 18954  
M. Roseblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105  
Sargent & Herkes, 225 Baronne St., Suite 1405, New Orleans LA 70112  
Sea School, 10812 Gandy Boulevard, St. Petersburg, FL 33702  
Seaworthy Systems Inc., P.O. Box 965, Essex, CT 06426; 17 Battery Pl., New York, NY 10004; P.O. Box 975, Barnegat Light, NJ 08006; 2 Skyline Pl., 5203 Leesburg Pike, Suite 700, Falls Church, VA 22041; 1305 Franklin St., Suite 210, Oakland, CA 94612  
Stearns Electrical Systems, 17 Battery Pl., N.Y. N.Y. 10004  
George G. Sharp, Inc., 100 Church St., New York, NY 10007  
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235  
Systems Engineering Associates (SEACOR), 200 East Park Dr., Suite 600, Mt Laurel NJ 08054  
TIMSCO, P.O. Box 91360, Mobile AL 36691

**NAVIGATION & COMMUNICATIONS EQUIPMENT**  
Anschutz & Company, One Madison St., East Rutherford, NJ 07073  
AT&T, High Seas Dept., 412 Kemble Ave., Room C380, Morristown, NJ 07960  
Comsat Maritime Services, 950 L'Enfant Plaza SW, Washington DC 20024  
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080  
Henschel, Inc., 9 Hoyt Drive, Newburyport MA 01950  
IDB AeroNautical Communications, 15245 Shady Grove Road, Rockville, MD 20850  
Kelen Hughes Ltd., New North Rd., Hamault, Bedford, Essex LG6 2UR ENGLAND  
Kenwood USA Corp., Marine Products Div., 2201 E. Dominquez St., Long Beach, CA 90810  
Mackay Communications, 441 US Highway #1, P.O. Box 331, Elizabeth NJ 07207  
Marine Electric RPD, Inc., 50 Carol St., P.O. Box 1135, Clifton, NJ 07014-1135  
Maggulpie, Inc., 8 Preston Court, Bedford MA 01730-2380  
Mobile Telesystems, Inc., 300 Professional Drive, Gaithersburg, MD 20879  
Naval Electronics, 5417 Jetview Circle, Tampa FL 33634  
Norwegian Telecom, P.O. Box 6701, Oslo 1, NORWAY  
Novatech, 820 Cormorant St., Victoria, BC V8W 1R1, CANADA  
Robertson Marine Systems, 3000 Kingman Street, Suite 207, Metairie, LA 70006  
PD Technologies, 13500 Roosevelt Blvd., Philadelphia, PA 19116  
Sinnrad, 19210 33rd Avenue West, Lynnwood, WA 98035  
Singapore Telecom, Orchard Point Post Office, P.O. Box 38, SINGAPORE 9123  
Sperry Marine, Inc., 1070 Seminole Trail, Charlottesville VA 22901  
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009  
Summer Equipment Ltd., 24 West 4th Ave., Vancouver V5Y 1G3, CANADA  
Trimble Navigation, 585 North May Avenue, P.O. Box 3642, Sunnyvale, CA 94086  
Waterway Communications System, Inc., 453 E. Park Pl., Jeffersonville, IN 47130

**NOZZLES**  
Harrington Metal Fabrication, P.O. Box 410, 6720 M 89, Fennville, MI 49408

**OIL—Marine—Additives**  
Mobil Oil Corporation, 3225 Gallows Road, Fairfax, VA 22037-0001  
Shell Oil, P.O. Box 2463, Houston, TX 77252  
Texaco, International, 2000 Westchester Avenue, White Plains NY 10650

**OIL/WATER SEPARATORS**  
AllaLaval Separation, Inc., 955 Mearns Rd., Warminster, PA 18974-0556  
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale NJ 07647  
Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
MMC International, 60 Inp Dr., Inwood NY 11696

**PAINT—COATING—CORROSION CONTROL**  
Ameron, 201 N. Berry St., Brea, CA 92622  
The Amessen Corp., Corrosion Dynamics Division, 1100 Walnut Street, Rosell, NJ 07203  
Enviro Coatings, Inc., 4560 Bell Line Rd., Suite 300, Dallas, TX 75244  
Esgard, Inc., P.O. Drawer 2698, Lafayette, LA 70502  
GlobalTech, 9801 Westheimer St., Ste. 202, Houston, TX 77042  
Jamestown Distributors, 28 Narragansett Ave., P.O. Box 348, Jamestown, RI 02635  
Hempel Coatings, Foot of Curie Avenue, Wallington, NJ 07057  
Melvin Pierce Marine Coating, Inc., P.O. Box 93, Semmes, AL 36575  
Microphor, Inc., Marine Division, 452 E. Hill Rd., P.O. Box 1460, Willets, CA 95490  
Sigma Coatings, 8979 Market St., Houston, TX 77029, 330 Rover Road, Harvey, LA 70059, 1100 Adams St., Hoboken, NJ 07030  
Unitor Ships Service, Unitor Marine Chemicals Division, 3 High St., Rickmansworth, Herts, WD3 1SW UNITED KINGDOM

**PIPE FITTINGS/CONNECTING SYSTEMS**  
Aerquip Corporation, 3000 Strayer, P.O. Box 631, Maumee, OH 43537-0631  
Deutsch Metal Components, 14800 S. Figueroa, Gardena, CA 90248  
Lokring, 396 Hatch Drive, Foster City, CA 94404  
Stanley G. Flagg Co., 1020 W. High St., Stowe, PA 19464  
Thaxton, Inc., 29 Leonburg Rd., Mars, PA 16406-8401

**PORT SERVICES**

Port of Ithaca, P.O. Box 897, New Ithaca LA 70561  
Port of Portland, 5555 N. Channel Ave., Portland, OR 97217

**PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines**  
Avondale Industries, Harvey Quick Repair, P.O. Box 116, Harvey, LA 70058  
American Air Filter, P.O. Box 35690, Louisville, KY 40432  
ASEA Brown Boveri, 1460 Livingston Avenue, N. Brunswick, NJ 08902  
ASEA Brown Boveri (Stromberg), P.O. Box 185, 00081 Helsinki, FINLAND  
Argo International, 140 Franklin Street, New York, NY 10013  
Aquamaster-Rauma Ltd., Box 220, SF-26101, Rauma, FINLAND  
Bergen Diesel A/S, P.O. Box 924, N-5002, Bergen, NORWAY  
Bird Johnson Company, 110 Norfolk St., Walpole, MA 02081  
CWF Hamilton & Co. Ltd., P.O. Box 705, Christchurch, NEW ZEALAND  
Caterpillar, 100 NE Adams Street, Peoria, IL 61629-2320  
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227  
Coltec Industries (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511  
Cummins Engine Company, Mail Code 60011, Box 3005, Columbus, IN 47202-3005  
Fincantieri, Diesel Engines Division—GMT, Bagnoli della Rosandra 334, Trieste, ITALY  
GE Naval & Drive Turbine Systems, 166 Boulder Dr., Fitchburg MA 01420  
Kahtenberg Bros. Co., P.O. Box 358, Two Rivers, WI 54241  
Krupp MaK, 7555 Danbro Crescent, Mississauga, Ontario, CANADA L5N 6P9  
Mapeco Products Inc., P.O. Box 6, 725 Glen Cove Ave., Glen Head NY 11545  
Marine Gears, Inc., P.O. Box 689, Greenville MS 38707  
Marine Systems Inc., 2032 Atlantic Ave., Chesapeake VA 23324  
Markisches Werk, P.O. Box 1442, D-5884 Halver GERMANY  
MAN B&W Diesel, 17 State St., New York, NY 10004  
MAN B&W Diesel A/S, Ostervej 2, DK-4960 Høleby, DENMARK  
MAN B&W Diesel A/S, Alpha Diesel, Niels Juels Vej 15, DK-9900 Frederikshavn TX 7079  
MAN B&W Diesel GmbH, Stadtbachstrasse 1, D-8900 Augsburg 1 GERMANY  
MKW Power Systems, 301 S. Church St., Rocky Mount, NC 27801  
MTK Magnetek Inc., 11150 Santa Monica Blvd., Los Angeles CA 90025  
New Sulzer Diesel Ltd., CH8401, Winterthur, SWITZERLAND  
Northwest Marine Services Corp., 6452 So. 144th St., Tukwila WA 98168  
Nylands Marine Service A/S, P.O. Box 130, N-4819 Faeravik, NORWAY  
Omni-truster Inc., 9515 Sorensen Ave., P.O. Box 2144, Santa Fe Springs, CA 90670  
Ovako Steel Couplings AB Sweden, S-813 00 Hofors SWEDEN  
Propulsion Systems, 1441 N Northlake Way, Seattle WA 98103  
Rolla SP Propellers SA, Via Silva 5, P.O. Box 251, 6828 Balerna SWITZERLAND  
Rolla SP Propellers USA, 4030 Mustang Road, Melbourne, FL 32934, USA  
Karl Seiner Inc., 25 W Third, Kenner LA 70062  
Schottel/Werft, D-5401 Spay, GERMANY  
Stewart & Stevenson, 1400 Destrehan, P.O. Box 8, Harvey LA 70059-0008  
Sulzer/Escher Wyss, Ravensburg GERMANY  
Textron Lycoming, 550 Main St., Stratford, CT 06497  
Trustmaster of Texas, 12227 FM 529, Houston, TX 77041  
Ustien International, A/S, N-6065 Ustetovik, NORWAY  
J. M. Voith GmbH, Marine Division, Postfach 1940, D-7920, Hudenheim/Brenz, GERMANY U.S. Rep: Voith Schneider America Inc., 121 Squeehanna Ave., Great Neck, NY 11021  
Oy Wartsila Ab, Vasa and Abo Divisions, P.O. Box 244, SF-65100 Vasa, FINLAND  
Wes Tech Gear Corp., 2600 E. Imperial Highway, Lynwood, CA 90262  
ZF of North America, Marine Sales, 500 Barclay Blvd., Lincolnshire IL 60069

**PROTECTIVE WRAPS**  
FANA (Film Applicators of North America), 1260 E Woodland Ave., Springfield PA 19064

**PUMP—Repair—Drives**  
Coffin Turbo Pump, Inc., 326 S. Dean Street, Englewood, NJ 07631  
Del Gazo, 619 Industrial Rd., Carlstadt, NJ 07072  
Golten Marine Company Inc., 160 Van Brunt Street, Brooklyn, NY 11231  
Houser Marine, Lario Division, 1713 S McKenzie St., Foley AL 36535  
Jim's Pump Repair, 4855 36th St., Long Island City NY 11101  
Leistritz Corporation, 165 Chestnut Street, Allendale, NJ 07401  
Magator Corporation, 562 Alpha Drive, Pittsburgh, PA 15238  
Wia Motorsator, 99 W Hawthorne Ave., Suite 622, Valley Stream NY 11580  
Widen Pump & Engineering Co., 22069 Van Buren St., P.O. Box 845, Colton, CA 92324

**REMOTE VALVE OPERATORS**  
Elliott Manufacturing, P.O. Box 773, Binghamton, NY 13902  
S. S. White Technologies, Inc., 151 Old New Brunswick Road, Piscataway, NJ 08854  
Teleflex, Inc., 771 First Ave., King of Prussia, PA 19406

**ROPE—Manila—Nylon—Hawsers—Fibers**  
Allied Signal Inc., Fibers Division, 1411 Broadway, New York, NY 10018  
Columbian Rope Corp., P.O. Box 270, Grafton, MA 01869  
Dupont, Monroquiers 403, 1011 Centre Road, Wilmington, DE 19805

**SANITATION DEVICE—Pollution Control**  
Jered Brown Brothers, 56 South Squirrel Rd., Auburn Hills, MI 48326  
Byrne, Rice & Turner, Inc., 1172 Camp Street, New Orleans, LA 70130  
Envirovac, Inc., 1260 Turret Dr., Rockford, IL 61111  
Fast Systems, 3240 North Broadway, St. Louis, MO 63147  
Microphor, Inc., 452 E. Hill Rd., P.O. Box 1460, Willets, CA 95490  
Novatech, 820 Cormorant St., Victoria BC V8W 1R1, CANADA  
Red Fox Environmental Services, Inc., P.O. Box 53809, Lafayette, LA 70505-3809  
Research Products/Blankenship (Incolnet), 2639 Anjon, Dallas, TX 75220

**SCALE MODELS**  
Sturgeon Bay Model Shop, 187 N Ninth Ave., Sturgeon Bay WI 54235

**SCUTTLES/MANHOLE**  
L.S. Baier & Assoc., 7527 NE 33rd Dr., Portland OR 97211

**SHIPBUILDING EQUIPMENT**  
NEI Sincrolift, Inc., 8970 S W 87th Ct., Miami FL 33176  
Offshore Industries, Inc., 144 Railroad Ave., Suite 206, Edmonds WA 98020

**SHIPBUILDING—Repairs, Maintenance, Drydocking**  
Asilleros Espanoles S.A., Padilla 17, 28006 Madrid, SPAIN  
Atlantic Marine, Inc., P.O. Box 3202, Mobile, AL 36652  
Atlantic Marine, Inc., 8500 Heckscher Dr., Jacksonville, FL 32226  
Avondale Industries Inc., P.O. Box 50280, New Orleans LA 70150  
Bender Shipbuilding & Repair, P.O. Box 42, Mobile AL 36601  
Bender Inc., 279 Great Valley Parkway, Malvern, PA 19355  
Bethlehem Steel, Martin Tower, Bethlehem PA 18106  
Bethlehem Steel, Baltimore Marine Div., Sparrows Point Yard, Sparrows Point MD 21219  
Bollinger Lockport & Larose, P.O. Box 250, Lockport, LA 70374-0250  
Chris-Marine AB, P.O. Box 9025, S-2000 39, Malmö, SWEDEN  
Conrad Industries, 1501 Front Street, P.O. Box 790, Morgan City, LA 70381  
Curacao Drydock (USA), Inc., P.O. Box 3012, Curacao, Netherlands Antilles

Equitable Shipyards Inc., Trinity Marine Group, Box 29266, New Orleans LA 70189  
Fincantieri SpA Cantieri Navali Italiani, Via Cipro 11, 16129 Genoa ITALY  
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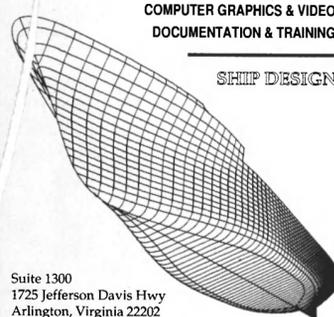
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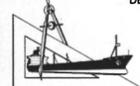
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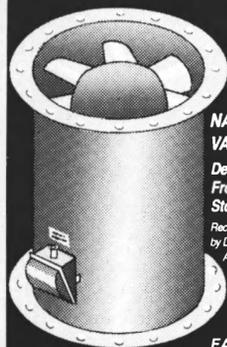
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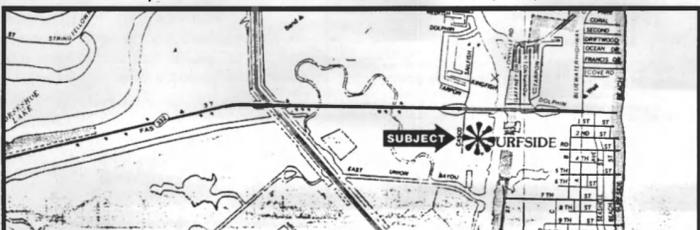


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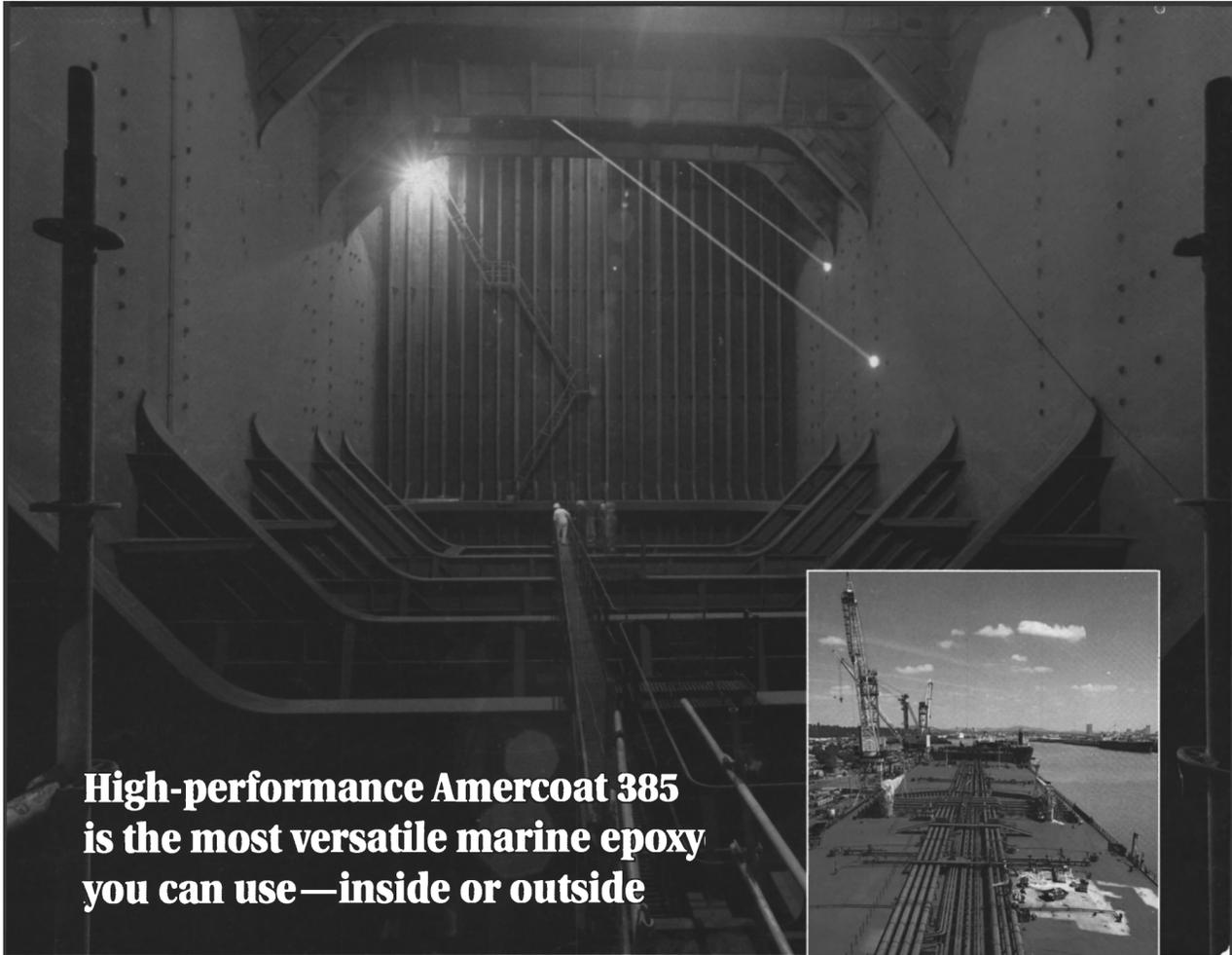
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Amercoat 385 is also available in an inhibitive pigment formula, 385P, that offers enhanced protection without added lead.



*Ameron's Amercoat 385 multi-purpose epoxy coating provides high-performance protection both topside and down in the cargo tanks*

User-friendly Amercoat 385 can be applied by various spray methods to produce a smooth, fast-drying film. You can overcoat it with a wide range of topcoats, including polyurethanes and acrylics.

For more information about versatile Amercoat 385, contact the Ameron Marine Coatings Division, 201 North Berry Street, Brea, CA 92622; (714) 529-1951; Fax (714) 529-8287.

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