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**GERMAN
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SEPTEMBER 1, 1984

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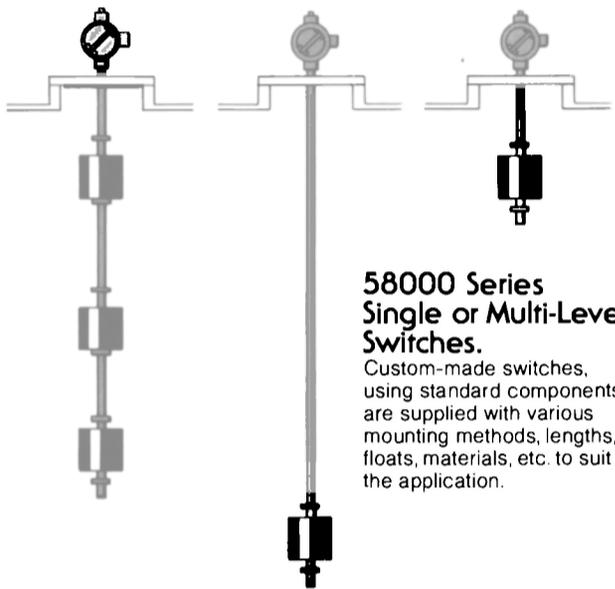
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ON THE COVER

Ship, Machinery, Marine Technology International Exhibition and Congress

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German Shipbuilding Review

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S.N.A.M.E. Symposium Maritime Innovations

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Jeffboat To Build Two Towboats For Luhr Bros.

Jeffboat, Incorporated of Jeffersonville, Ind., has been awarded a contract by Luhr Brothers, Inc. of Columbia, Ill., to construct two river towboats.

The larger boat will measure 170 by 48 feet and be powered by twin GM Electro-Motive Diesel engines with a total output of 7,200 bhp. The other one, also a twin-screw vessel, will have a retractable pilothouse and be powered with two Caterpillar diesels totaling 2,800 bhp.

Both of the towboats are scheduled for delivery in June 1985.

Hill Joins Petromar As Vice President For Corporate Development

Charles LeBlanc, president of Petromar Corporation of Rockport, Texas, has announced that Sam S. Hill has joined the company as vice president-corporate development.

Mr. Hill joined Petromar after eight years in senior management positions with Offshore Logistics, Inc. of Lafayette, La. Previous experience includes serving as vice president-operations for Olympic Shipping, Inc. of Fort Lauderdale, Fla.

Petromar operates a fleet of anchor-handling/tug-supply vessels in the North Sea, Southeast Asia, West Africa, and the Middle East.

MARITIME REPORTER and Engineering News

Editorial and Executive Offices
107 East 31st Street, New York, N.Y. 10016
(212) 689-3266 • ITT Telex: 424768 MARINTI

PUBLISHERS John E. O'Malley
Charles P. O'Malley

EDITORIAL DIRECTOR Charles P. O'Malley

EDITOR Robert Ware

SENIOR EDITOR Thomas H. Phillips

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SALES OFFICES

New York, New York

Maritime Reporter & Engineering News
107 East 31st Street, New York, NY 10016
Telephone: (212) 689-3266

Houston, Texas

Robert Hawley
Gary Lindemberger
Mike Sullivan
11777 Katy Freeway, Suite 155, Houston, TX 77079
Telephone: (713) 870-0470

Italy

Mr. Vittorio F. Negrone
Ediconsult Internazionale
Piazza Fontane Marose, 3-16123 Genova, Italy
Telex: 211197 EDINT I
Telephone: (010) 543.659-268.334-268.513

Scandinavia

Mr. Stephan R G Orn
Ab Stephan R G Orn
Box 184, S-271 00 Ystad, Sweden
Telex: 33335 ORN S, Telephone: 0411-184 00

West Germany

Wolf O. Storck
Schiffahrtswerbung Karl-Otto Storck
Stahlwiete 7, 2000 Hamburg 50,
Federal Republic of Germany
Telephone: 040/850 0071

**MARITIME
REPORTER
AND
ENGINEERING NEWS**

(USPS)016-750

No. 17

Volume 46

107 EAST 31st STREET
NEW YORK, N.Y. 10016

(212) 689-3266

Telex: MARINTI 424768

ESTABLISHED 1939

Maritime Reporter/Engineering News is published the 1st and 15th of each month by Maritime Activity Reports, Inc. Controlled Circulation postage paid at Waterbury, Connecticut 06701.

Postmaster send notification (Form 3579) regarding undeliverable magazines to Maritime Reporter/Engineering News, 107 East 31st Street, New York, N.Y. 10016.

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Metric Constructors Win \$3.3-Million Contract

Metric Constructors, Inc. of Charlotte, N.C. has been awarded a \$3,378,000 contract by the North Carolina Department of Transportation for the construction of a new marine maintenance facility at Manns Harbor. State-owned vessels, including ferries, tugs and

dredges, which operate along the Outer Banks, are serviced and maintained at this location. The new facility will completely replace the existing structure and will increase its service capacity from one vessel to four.

Construction on the bulkheads and decks was scheduled to begin in August with a May 1985 completion date. The project includes the installation of a shiplift, trans-

fer table and work area.

Metric's Construction manager for the project is **Ron Donald**; **Bill Beatty** will serve on-site as project superintendent.

Metric is the open shop arm of the Jones Group, a holding company which includes Metric, J.A. Jones Construction Co., Rea Construction Co., J.A. Jones Applied Research Co., and J.A. Jones Construction Services Company.

Western Gear To Build And Sell Rademakers Epicyclic Transmissions

The Power Transmission Division of Western Gear Corporation, Lynwood, Calif., has entered into a license agreement with Rademakers Aandrijvingen, B.V. of Rotterdam, the Netherlands. The agreement gives Western Gear's Power Transmission Division the right to manufacture and sell Rademakers epicyclic planetary transmissions in the United States, Canada and Mexico.

This particular Rademakers product line is based on the Stoeckicht design which provides for a compact co-axial shaft transmission with low noise levels, high efficiencies and high reliability. Applications for the Rademakers epicyclic planetary transmissions include speed increasers and decreasers for turbine generators, pumps and compressors and various marine propulsion reduction gears.

The Power Transmission Division of Western Gear Corporation manufactures an extensive line of mechanical power transmission equipment including marine propulsion gears for military and commercial vessels; industrial gear drives used in the production, transportation and processing of petroleum, natural gas and chemicals; drives used in the generation of electrical power; and gears used for refrigeration and air-conditioning applications.

For free literature on Rademakers transmissions,

Circle 37 on Reader Service Card

IMO AB Of Sweden Offers New Products Literature

IMO AB of Stockholm, Sweden, one of the companies that will be exhibiting this month at the International Ship Machinery, Marine Technology (SMM) Exhibition and Congress in Hamburg, Germany, has announced some of the new products it will be showing.

Among these products will be the IMO-ACF-pump with "tuning"—a new concept in minimizing vibrations and noise caused by air in the oil. The ACF-pump has been provided with a device that will minimize vibrations and noise caused by air in the oil and it can quietly handle oils with high air content and high suction lifts. The system is adjustable to suit the prevailing conditions—adjustments are made during the pumping operation by turning the adjustment valve with a key.

Also being exhibited are a new hydraulic pump called IMO/D6 for pressures up to 250 bar, and the IMO MCM Blending Unit with a new electronic control system.

For more information on these and other IMO AB products,

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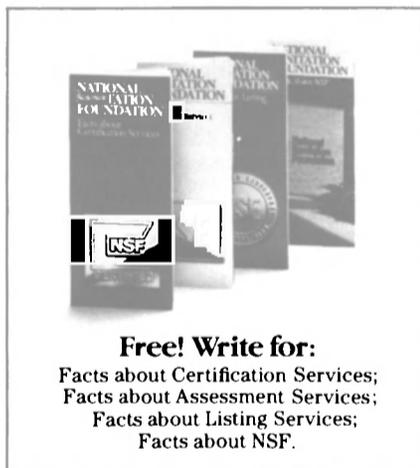
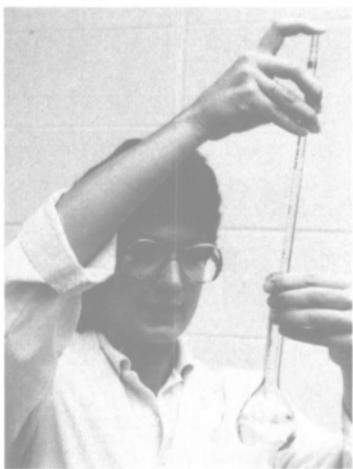


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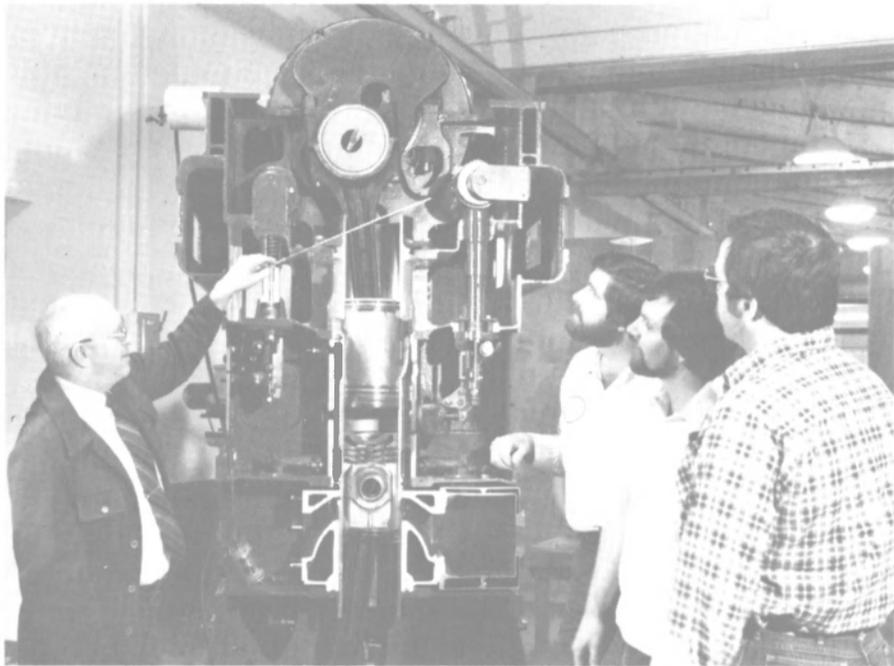
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A class using an opposed piston engine cutaway as a training aid

Fairbanks Morse Taking Major Steps To Improve All Aspects Of Customer Services Worldwide

In a move to strengthen its entire parts and service organization and to coordinate all field service activities for Fairbanks Morse Opposed Piston and Colt-Pielstick engines, the Fairbanks Morse Engine Division of Colt Industries is undertaking a major restructuring designed to improve all aspects of customer services worldwide.

As part of the restructuring, present parts and service facilities are being upgraded and modernized with the latest state-of-the-art equipment, and new centers are being added. In addition, a new centralized warehousing network is being developed to service all locations. At its Beloit facilities, a new training center has been completed to provide hands-on engine service training for Fairbanks Morse and customer personnel.

As one of the first steps in its external restructuring, a regional distribution warehouse was created in Reno, Nevada, and established as its Western Service Region Headquarters. The warehouse is designed to complement the existing service shop in Seattle and sales office in San Francisco with improved inventory control and distribution effectiveness.

The location was chosen as it is central to the region's major markets and can absorb expansion as additional service facilities are added. In addition, a new fuel injection overhaul facility has been located at Reno which provides complete fuel injection service with

new and modern equipment. This will allow Fairbanks Morse to have complete rebuilt and exchange assemblies in all locations to complement its new parts inventory.

Typical of the modernization that is taking place in all Fairbanks Morse Service Centers is the recently completed move in Norfolk, Va. The center now has the capability to handle complete engine rebuilding. In addition, the center is computer integrated with the central warehouse in Beloit to quickly process requirements for special and made-to-order parts.

Recently completed in Beloit is the new training school designed to give Fairbanks Morse and customer service personnel the finest in training on all Opposed Piston and Pielstick engines.

According to **Tim O'Sullivan**, vice president and general manager of the parts and service operation, when completed the Fairbanks Morse service organization will be one of the finest organizations of its type available anywhere in the industry.

Supporting Mr. O'Sullivan in the reorganization are: **Michael Peterson**, manager of marketing who will develop and implement the marketing and sales programs planned for both the parts and service segments of the operation; **Mark Parsons**, manager of distribution, who has the responsibility for parts order service and inventory control for spare and renewal parts in all stocking locations. He also manages the present central parts distribution center in Beloit.

Tom Skinner, manager of product service, who is responsible for developing and implementing all product and technical service programs and **Roger Brenneke**, manager of training.

The business is divided into five regions, four in the United States and one for export to provide a focus on customer activities.

Through its new and revitalized parts and service organization it is Fairbanks Morse's aim to provide every Fairbanks Morse and Colt Pielstick engine owner with the optimum service that will minimize their downtime and assure the maximum return on their engine investment.

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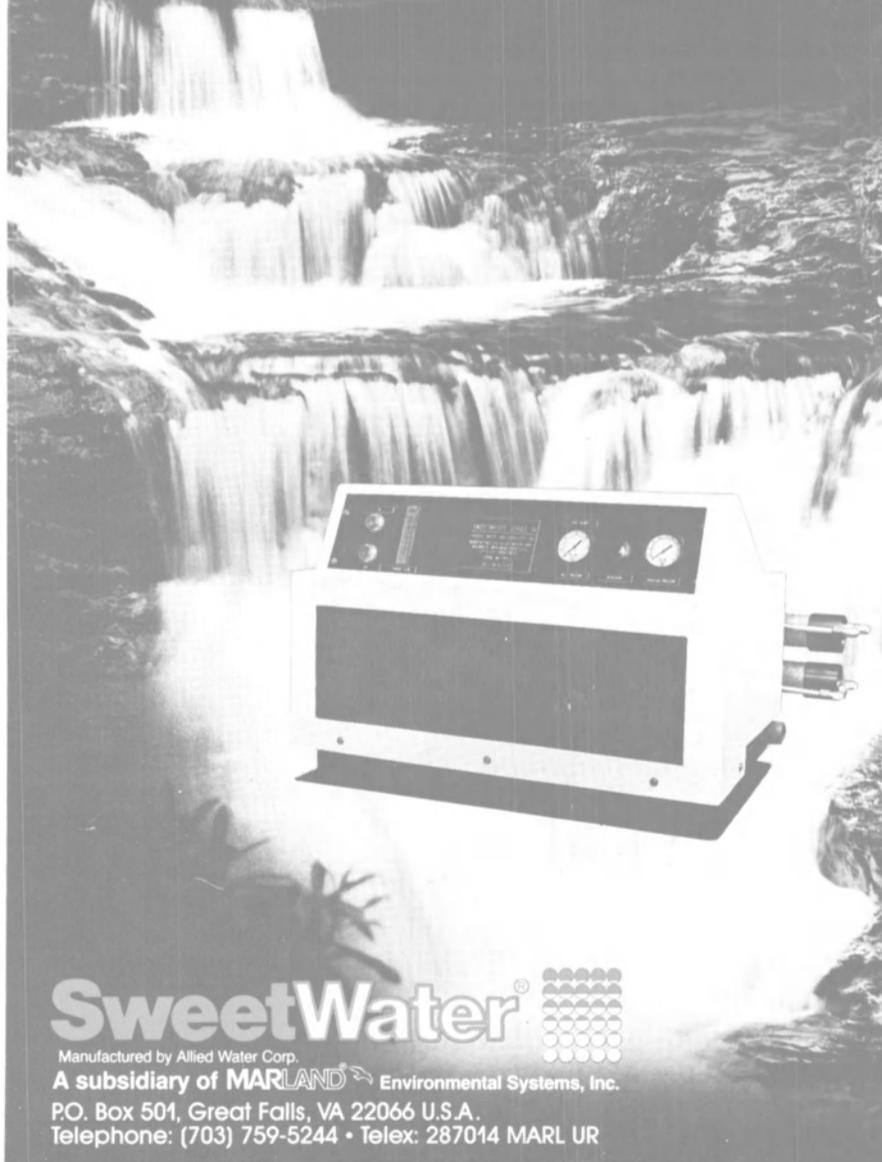
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A.J. McAllister Sr.

Anthony J. McAllister Sr., former president and chairman of the board of the towing and marine transportation company McAllister Brothers Inc., died recently at St. Vincent's Hospital and Medical Center in New York City. He was 85 years old.

Mr. McAllister was one of 10 children of James P. McAllister,

the eldest son of Capt. James P. McAllister who founded the McAllister company in 1864 and put the first McAllister tugboat to work in New York Harbor. The tugboat fleet of the company, distinguished by red and white smokestacks, has long been a familiar sight in the Harbor.

Mr. McAllister attended Stevens Institute of Technology, from which he graduated in 1921, and worked in the family business for his en-

tire life, starting in 1915 as quartermaster on the Bear Mountain, a sidewheeler Hudson River excursion boat operated by the family. A Navy quartermaster during World War I, he later went to sea aboard one of the 40-odd War Shipping Board tankers managed by the McAllister organization, operated coal-fired steam lighters in New York Harbor, installed the first diesel marine engine in a New York tugboat in 1925, and



A.J. McAllister Sr.

worked for McAllisters' Yankee Salvage Company.

Mr. McAllister was principal officer of Sullivan Dry Docks in Brooklyn, N.Y., and during World War II, he supervised 3,500 men in the construction of 20 patrol boats for use by the Navy in anti-submarine operations in the North Atlantic.

For the next 20 years, he and his brothers, James P. and Gerard M., supervised the expansion of the McAllister maritime operations to ports along the East coast, Puerto Rico, the Netherlands Antilles and into deepsea activities. He became chairman of the company in 1954 and retired in 1974.

A founder and commander of the Robert L. Hague Post in Manhattan, the largest marine post of the American Legion, Mr. McAllister was also president and a member of the board of the Prospect Park South Association.

He was awarded the Stevens Honor Award in 1978 by his alma mater, the Stevens Institute of Technology.

Mr. McAllister is survived by his wife, Marjorie Buckley; three daughters, Patrice M. Guiney, Marjorie M. McAllister, and Eileen F. Donovan; five sons, Anthony J. Jr., Donald G., Brian A., Bruce A. and Michael J.; three sisters, Isabel Etzel, Joan Smith, and Justine Roach; two brothers, James P. and Gerard M.; 26 grandchildren, and four great-grandchildren.

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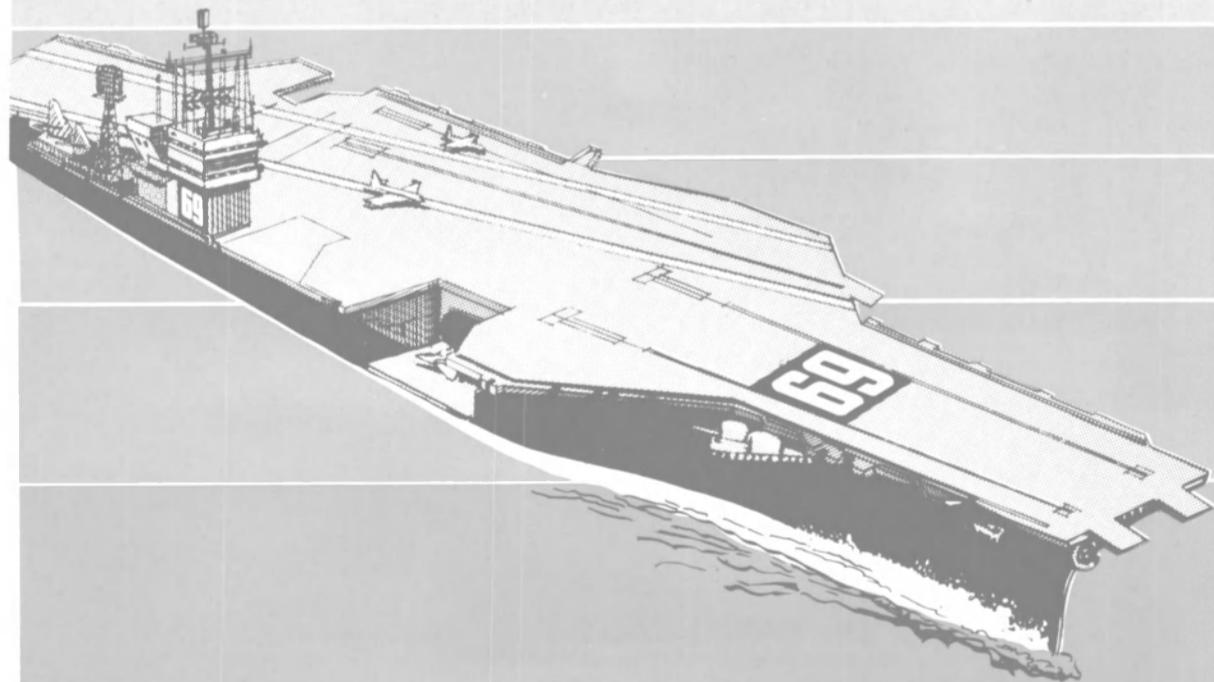
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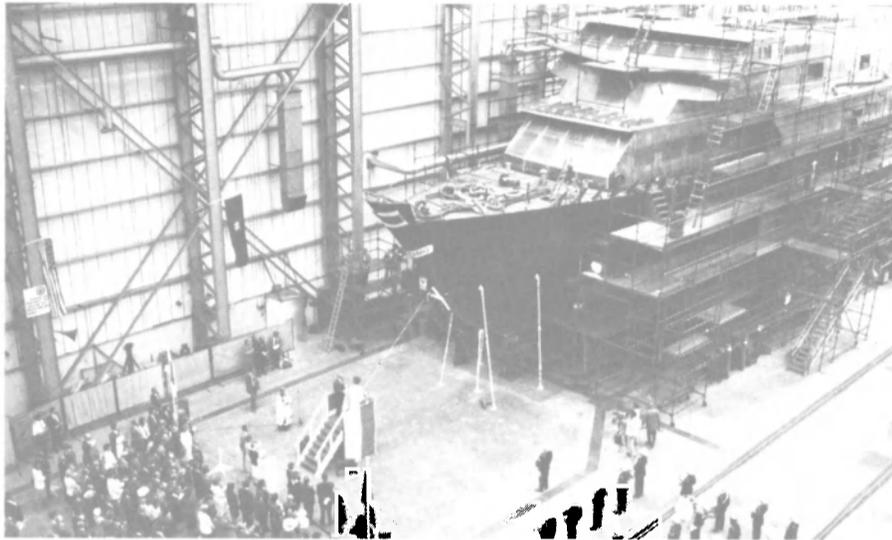
Seatrade Seminar Set For October 2-3, 1984 In New York City

Seatrade is organizing a seminar entitled "Market Predictions For Liner Shipping" being held October 2-3, 1984 in New York City.

Some issues to be covered in the seminar are: The Shipping Act of 1984; Cargo Volumes and Realignment on the Pacific; Moves Towards Application of the EEC Competition Rules To Liner Shipping.

Speakers will include shippers, carriers and port executives, government spokesmen and economists. The seminar will be structured to allow ample time for questions from the floor and panel discussion.

For further information write Seatrade North America Inc., The Whitehall Building, 17 Battery Place, New York, N.Y. 10004. Telephone (212) 422-6740



High-Speed Ferry For Hong Kong Owner Launched At Vosper Thornycroft Yard

A double ceremony took place recently at Vosper Thornycroft (UK) Limited's Portchester Shipyard involving two high-speed ferries being built for Hong Kong owners. **Mrs. Rosemary Lamont**, wife of MP **Norman Lamont**, Minister of State for Industry, named the *Ju Kong* and launched the *Cheung Kong*. These names were selected to represent the two large rivers in China, the Pearl and the Yang Tze, respectively.

The two vessels are being built for Hong Kong owners Nuirhill

Limited and New Hey Limited, each company being the customer for one ship. They will be used on the important Hong Kong to Macao route, and will utilize new terminal facilities under construction in both ports.

Overall length of the vessels is 205 feet with a beam of 33.5 feet. They will have a displacement of about 500 tons and a speed of 27½ knots. Facilities will be provided for up to 700 passengers; crew will number about 20.

The final design for these high-

speed ferries is the culmination of several years of research and development. The overall philosophy for the project has been to provide the utmost in passenger comfort, entertainment, and safety. Seating for the passengers has been specially designed and manufactured in the U.K. using the latest biotechnological concepts for maximum seagoing comfort.

Additional care has been taken

in every aspect of the vessel planning to insure a minimum of noise and vibration, along with the installation of the latest in roll-dampening equipment, to make riding the new vessels a most pleasurable experience. All accommodation spaces are fully air conditioned, and ample food and beverage services will be available on all three decks.

Marinette Marine Lays Keel For Second Mine Countermeasure Vessel

Marinette Marine Corporation (MMC) recently laid the keel of the MCM-4 *Champion*. The *Champion* is the second MCM class ship to be constructed by MMC under contract to the Naval Sea Systems Command.

The ceremony took place in MMC's MCM Ship Erection Building, a 339-foot-long by 207-foot-wide by 95-foot high-facility which enables MMC to more efficiently meet the Navy's long range needs for MCM construction by providing the capability to construct two or more ships per year.

The MCM vessel class is the first new mine-warfare ship developed by the U.S. Navy in nearly 30 years. Navy plans are to provide for the construction of a total of 14 MCM vessels.

The ship will be equipped with state-of-the-art systems for mine detection and neutralization, as well as conventional acoustic, magnetic and mechanical mine-sweeping systems. These systems will enable them to neutralize any type of mine threat encountered in the performance of their mission.

The vessel will be 224 feet long with a beam of 39 feet, have a draft of 10-1/2 feet and an approximate displacement of 1,100 tons. Accommodations will be provided for a crew of 81 men. Stringent measures have been taken by the Navy to keep the vessel's magnetic and acoustical signatures as neutral as possible, and as a result



Among those present at the ceremony, pictured from left to right: the Honorable **Vernon L. Anderle**, Mayor of Menominee, Mich.; **Roger Derusha**, president of Marinette Marine Corporation; The Honorable **Harold Pierce**, Mayor of Marinette, Wis.; Capt. **John Young**, project manager for the MCM Program representing the U.S. Navy; and Commander **Paul Robinson**, supervisor of shipbuilding, Sturgeon, Bay, Wis.

the hull will be made of laminated wood sheathed in glass reinforced plastic for preservation and maintainability. Equipment will be designed to keep operational noise levels to a minimum and are to be constructed of non-magnetic material wherever possible.



Ferry *Cheung Kong*, built for New Hey Limited of Hong Kong, following launch.

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*The complete Fish Expo Exhibitors' Survey can be obtained from show management.

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S.N.A.M.E.

Maritime Innovation — Practical Approaches '84 International Symposium

New York — September 27–28

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers, in conjunction with the SNAME T & R Ship Production Committee, will present its Third International Symposium, "Maritime Innovation—Practical Approaches '84," at the Waldorf-Astoria Hotel in New York on September 27–28.

Innovative and practical approaches are essential in today's ever-changing and demanding maritime industry. This symposium will address many new and innovative methods of ship design, construction, and operation. In addition, the Ship Production Committee will highlight new ideas and methods in shipbuilding by presenting papers that detail the activities of its panels.

This committee's participation in the symposium continues its mission of publicizing the work done in this country to improve production methods. This symposium is this year's replacement for the annual symposia formerly sponsored by IREAPS and the Ship Production Committee.

The symposium will begin with three keynote presentations that will address "innovation" in terms of naval procurement, ship production, and ship operation. The keynote speakers will be Comm. **Stuart Platt**, Completion Advocate General, U.S. Navy; **William Hagggett**, president and CEO of Bath Iron Works; and **W.B. Hubbard**, senior vice president, American President Lines. The program will then split into three concurrent technical sessions that will present a total of 37 papers.

Luncheons have been scheduled for both the 27th and 28th of September in the Hilton Room on the main floor at the Park Avenue side of the Waldorf. Luncheon speakers had not been announced as we went to press with this issue. A no-host general reception will be held from 6:00–7:30 pm on September 27 in the Basildon Room on the third floor.

The registration desk will be located on the third floor of the hotel in the Jade and Astor Foyer. It will be open from 7:30 am to 4:00 pm on September 27, and from 8:00 am to 11:30 am on September 28. Registration at the symposium is \$225 for members and \$250 for non-members.

Anyone wishing to present a formal discussion on any of the papers listed below may do so by con-

tacting **David Rodger** at (212) 702-9300.

TECHNICAL PROGRAM Thursday, September 27

ROOM A

8:30–10:00 am—Keynote speakers (listed above).

10–11 am—"Proposed Criteria for General Subdivision and Damage Stability for Dry Cargo Ships," by **F.Y. Michael**, U.S. Coast Guard.

11–12 am—"Installation Techniques for Integrated Decks," by **Dr. F.A. Ramzan**, Brown & Root (UK) Ltd. and **P. Rawstron**, Brown & Root, Inc.

12 noon–2 pm—Lunch (speaker to be announced).

2–3 pm—"Fin/Ducted Propeller Interaction," by **M.W.C. Oosterveld**, **E.J. Stierman**, and **J. Aufm Keller**, Maritime Research Institute, Netherlands.

4–5 pm—"Improvement in Maneuverability of Ships in Operation and Adjustment of Torque on Rudder Stock," by **Prof. V. Asinovsky**, J.J. McMullen Associates, Inc.

5–6 pm—"Effects of Resiliently Supported Decks and Bulkheads on Shipboard Noise," by **D.L. Nelson**, **R.W. Fischer**, and **A.W. George**, Bolt Beranek & Newman Inc.

6–7:30 pm—General Reception (Basildon Room).

ROOM B

10–11 am—"Improving Shipboard Automation System Specifications," by **William McLean**, M. Rosenblatt & Son, Inc.

11 am–noon—"Sludge Burning in Auxiliary Boilers," by **I. Salomonsen**, Aalborg Vaerft A/S.

2–3 pm—"Innovative Uses for Surplus Tanker Tonnage," by **P.G. Noble**, Maritime Technology Corporation, and **P.M. Swift**, Shell International Marine, Ltd.

3–4 pm—"Rudder Carrier Bearing Retrofit for LNG Tankers," by **G. Schmucker**, FAG Kugelfischer Georg Schafer & Company, **J.E. West**, FAG Bearings Corporation, and **E.G. Tornay**, Energy Transportation Corporation.

4–5 pm—"An Economic System for the Liquefaction, Transportation, and Regas of Natural Gas Using Surplus LNG Carriers," by **G.W. Van Tassel**, Ocean Technical Services, and **J.W. Boylston**, Seaworthy Systems, Inc.

5–6 pm—"Design for Productivity—A Standardized Coal-Fired

Propulsion Plant," by **D.J. Yuen-gling**, M. Rosenblatt & Son, Inc., and **T.J. Pakula**, Seaworthy Systems, Inc.

ROOM C

10–11 am—Ship Production Committee Introduction—**E.J. Petersen**, Todd Pacific Shipyards Corporation.

"Interim Products—An Essential Innovation in Shipyards," by **L.D. Chirillo**, L.D. Chirillo Associates.

11 am–noon—"Accuracy Control Variation Merging Equations: A Case Study of Their Application in U.S. Shipyards," by **R. Storch**, University of Washington.

2–3 pm—"The Effect of Edge Preparation on Coating Life—Phase One," by **Dr. L. Sandor**, Franklin Institute, and **J.W. Peart**, Avondale Shipyards, Inc.

3–4 pm—"CAD/CAM Applications to Mass Properties," by **J.C. McNeal**, **G. Nilsen**, and **J.H. Matthews**, J.J. Henry Co., Inc.

4–5 pm—"SPC Education Panel's Program to Stimulate Innovations and Productivity in the U.S. Shipbuilding Industry," by **Dr. H.M. Bunch**, University of Michigan.

Friday, September 28

ROOM A

8–9 am—"Advanced Design of Ship with SSG Mark III System and IHI Ed-Drive," by **S. Hieda** and **M. Utsumomiya**, Ishikawajima-Harima Heavy Industries Co., Ltd.

9–10 am—"Improving Plant Efficiency Through Increased Monitoring," by **R.J. Stinner** and **C.T. Tucker**, Offshore Technology Corporation.

10–11 am—"A Practical Approach to Shiprepair Innovation," by **A. Korsche**, Amsterdam Drydock Company.

11 am–noon—"Shipboard Load Management System for Refrigerated Containers," by **R.F. Sahae**, Matson Navigation Company.

Noon–2 pm—Lunch

2–3 pm—"Practical Results of Maritime Innovation—Matson Navigation Company's Four-Year Program to Maximize Fleet Profitability," by **J.J. Sweeny**, Matson Navigation Company.

3–4 pm—"Modernizing Training in the Naval Shipyards," by **J.W. Hartigan**, Naval Sea Systems Command.

ROOM B

8–9 am—"Emergence of Reinforced Thermosetting Resin (RTR) Pipe as a Proven Commercial Ma-

rine Technology," by **George C. Cassa**, J.J. Henry Co., Inc.

9–10 am—"Marine Desalination: Technological Developments," by **Y.Y. Tom**, Aqua-Chem, Inc.

10–11 am—"The Use of Proximity Probes for Sterntube Boring Verification and Tailshaft Monitoring on Trials and in Service," by **L. Vassilopoulos**, Maritech, Incorporated.

11 am–noon—"Assessment of Submerged Pump Cargo Pumping Systems," by **A.D. Isaacson**, **J. Kron Jr.**, and **E.A. Endregaard**, Frank Mohn Houston, Inc.

2–3 pm—"An Onboard Automatic Ship Performance Monitoring System for Improved Ship and Fleet Management," by **R.E. Reed**, Erskine Systems Control, Inc., and **V.E. Williams**, U.S. Maritime Administration.

3–4 pm—"The National Research Council Study of Productivity Improvements in U.S. Naval Shipbuilding—A Perspective on the Status of the Industry," by **C.A. Bookman**, National Research Council.

ROOM C

8–9 am—SPC Panel SP-4: "Design Production Integration and Innovative and Practical Approach to Increase Productivity," by **F. Barham Jr.**, Newport News Shipbuilding and Dry Dock Company. "Ship Production Committee—023-1—Research and Development Program: An Overview," by **J.W. Peart**, Avondale Shipyards, Inc.

9–10 am—"SNAME/SPC Welding Panel SP-7—Past, Present and Future," by **B.C. Howser**, Newport News Shipbuilding and Dry Dock Company.

"Ship Productivity Research Program," by **J.E. Demartini**, Bath Iron Works Corporation.

10–11 am—"SP-6: Standards and Specifications, The Need for Published Shipbuilding Standards," by **T.M. O'Toole**, Bath Iron Works Corporation.

"SNAME Panel SP-8: Shipyard Implementation of Advanced Technology—The Dual Role of Industrial Engineering," by **J.R. Phillips**, Bath Iron Works Corporation.

11 am–noon—"Panel SP-1 Shipyard Facilities and Environmental Effects," by **R.A. Price**, Avondale Shipyards, Inc.

"SNAME/SPC Panel SP-10 Flexible Automation," by **J.B. Acton**, Todd Pacific Shipyards Corporation.

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Grumman is uniquely qualified to design such a system. Because the Navy's proposed ships control system is the same kind of system we've already installed in Grumman-built hydrofoils.

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Grumman's partner for the ships control program is TANO Corporation — one of America's leading ships control designers. Together, we are the answer to distributed digital ships control.

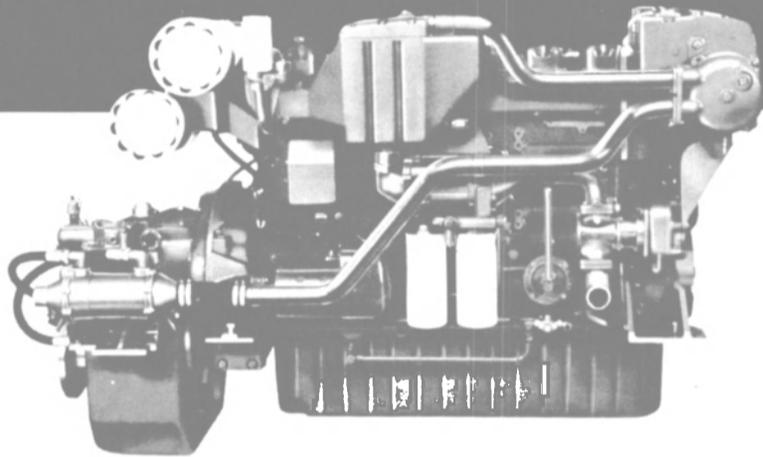
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The TAMD 121 C, a turbo charged in-line six fitted with aftercooler.

Ask commercial operators who use a Volvo Diesel work engine how they rate it for steady reliable operation, operating economy and easy maintenance.

They'll relate to the engineering fine points that Volvo pioneered in diesel technology, by talking about extended range and lower fuel bills. And while low fuel consumption is a major engine consideration, you'll probably hear more about the fact that a Volvo Diesel is designed and manufactured as a marine work engine.

Engineering detail becomes evident when you size up the compact in-line six cylinder Volvo Diesel. Advanced metallurgy and precise engineering have been combined to help produce a diesel with low noise and vibration levels.

Installation costs can be kept down since a Volvo Diesel comes off the production line as a marine work engine, ready to go into a boat. The uncomplicated engine design and a generous number of power take offs allow you to fit extra equipment (compressors, bilge pumps, hydraulic pumps, etc.) easier.

Easy maintenance features can help you lower your operating costs. Since the Volvo Diesel was built as a marine diesel, you'll find easy accessibility for cleaning, repair or replacement. And if you're in need of parts or service you have a well developed network of Volvo representatives, independent distributors and dealers in North America and 120 other countries backing you up.

Take stock in what operators who power with a Volvo Diesel say. Specify a Volvo Diesel when you build or repower.

Continuous flywheel power			Specific fuel consumption* at 270 kW, 1800 r/min	
kW	hp	r/min	g/kWh	lb/hph
270	367	1800	217	352

*These results are obtained under laboratory and ideal conditions. Not necessarily obtainable under normal use. Fuel consumption may vary according to hull type, weight, speed, prop application, sea conditions, type of operation and maintenance. Note: Illustrated engine fitted with optional equipment.

Marine work engines in a power range from 65 to 408 hp.

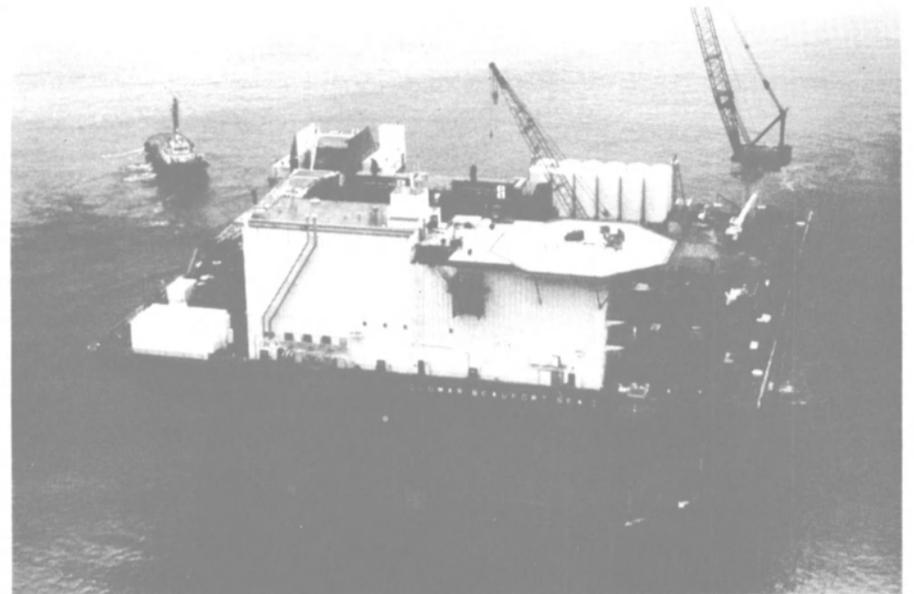
U.S. Distributors are located in California, Connecticut, Florida, Hawaii and the state of Washington. Canadian Distributors are located in British Columbia, Newfoundland, Nova Scotia, and Ontario.

If you need information, specifications or assistance for a Volvo Diesel contact:
Commercial Marine Manager, Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647. (201) 767-4837

VOLVO PENTA

IN THE SPIRIT OF PERFECTION

Volvo Penta of America, The Marine Division of Volvo of America Corporation, Rockleigh, New Jersey 07647 ©1984
See us at Boston Commercial Fish Expo, October 17-20 - Booth 524



The concrete and steel drilling structure Glomar Beaufort Sea I, with a deck as large as two football fields, will begin exploratory drilling for Exxon Company, U.S.A. this winter in Alaska's Beaufort Sea.

NKK Completes World's First Offshore Steel/Concrete Drilling Platform

The world's first composite steel/concrete offshore drilling platform, a 59,000-ton giant fabricated and assembled in Japan for an American owner, is destined for oil and gas exploration in the Beaufort Sea near Alaska's North Shore.

Named the Glomar Beaufort Sea I, the concrete island drilling system (CIDS) was built by Nippon Kokan (NKK) in only nine months after order placement, and turned over to its owner/designer/operator, Global Marine Development, Inc. of Newport Beach, Calif., recently. Six days after delivery, GDMI, a subsidiary of Houston-based Global Marine, Inc., began towing the huge structure from Japan to Point Barrow, Alaska, for August transshipment east to Harrison Bay during the brief summer thaw. Initial drilling operations for the CIDS are scheduled for November this year.

Nearly as tall as a 10-story building at 95 feet high, with a square deck of nearly two acres (87,000 square feet), the CIDS is built like a towering steel-concrete-steel sandwich. The structural steel base, which will rest on the sea bottom, supports a midsection fashioned from lightweight concrete, atop which is attached a steel deck barge containing crew quarters and six primary drilling modules.

Global Marine Development chose the hybrid steel/concrete design to utilize steel's strength and concrete's durability to resist the Arctic's rugged environment, which can include ice more than six feet thick, temperatures as low as minus 58 F, and winds of more than 100 mph. In service, the CIDS's steel base will be completely submerged, shielding it from the ef-

fects of wave action and contact with floating ice.

The concrete center section is expected to provide long, minimum-maintenance service in spite of the severe operation conditions it will encounter. A pair of deck-mounted 10,000-gpm water guns will be used to break up approaching ice floes to create a cushioning barrier of ice rubble around the concrete structure.

NKK fabricated approximately 12,000 tons of a newly developed, low-temperature-service plate steel from which it erected the base structure. A lattice spike board will help hold the CIDS in place and transmit ice pressures against the sides of the structure on the ocean floor. NKK also built the upper deck barge, including the six primary drilling modules. The latter work was performed under a contract awarded by Parker Drilling Company of Alaska.

Under the supervision of NKK civil engineers, the 35,000-ton concrete component with honeycomb core was constructed by a joint venture of Penta-Ocean Construction Company and Shimizu Construction Company. Design provisions have been made to add a second concrete segment if the CIDS is to be operated in waters deeper than 55 feet.

\$3.6-Million Contract To Moss Point Marine

Moss Point Marine Incorporated, Escatawpa, Miss., is being awarded a \$3,682,455 firm-fixed-price contract for the construction of 15 YC open lighters. The Naval Sea Systems Command, Washington, D.C. is the contracting activity.

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with powerful and efficient tugs,
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The harbor tug Makona, one of two completed recently by Krupp shipyard for Guinea.

Krupp Shipyard In Duisburg Delivers Two Harbor Tugs To Guinea

After a construction time of only 10 months, Krupp Ruhrorter Schiffswerft GmbH in Duisburg, Federal Republic of Germany, recently completed two harbor tugs destined for Conakry, the capital of Guinea. The tugs, ordered by the African country's Ministry of Transport, concluded extensive trials in the port of Rotterdam before sailing to their home port.

Each tug has an overall length of about 87 feet, beam of 28.9 feet, and loaded draft of 9 feet. The boat is powered by two diesel engines with a total output of 1,860 bhp at 720 rpm. Free-running speed is 12

knots and bollard pull is 27 tons. The tugs are classed by Germanischer Lloyd +100a, 4K, +MC, "Coastal Tug."

In accordance with the contract, Guinean crews consisting of two engineers, two seamen, and an electrician were trained at the Krupp yard during the vessel's construction, and they delivered the vessels to Guinea. Upon reaching Conakry, all on-board equipment was rechecked during a six-hour test. Subsequent handover of the tugs took place in the presence of Members of Parliament.



Getting Burned by Cheaper Fuels?

Tired of that extra maintenance work and delays for repairs?

Worried about increased engine wear, cost of spares or heavier boiler deposits?

Fed up with fuel additives that sound good but don't work?

Are the "bean counters" on your back to burn even cheaper fuels?

Here's hope: Ferrous FE4 Fuel Oil Catalyst for marine diesels and boilers. It lets you burn cheaper fuels just as easily as higher grade fuel.

No Magnesium Oxide

Unlike most fuel oil additives, FE4 does not contain magnesium. It won't leave efficiency robbing magnesium ash deposits or cause accelerated wear. And it won't settle out of the fuel, even while in storage.

A gallon of FE4 treats 3,000 gallons of fuel oil and produces less than 2 grams of ash. That's 150 to 450 times less ash than you may have experienced with other additives. Our best customers are probably just like you. They tried everything and gave up on additives. Then we convinced them to try FE4. It worked.

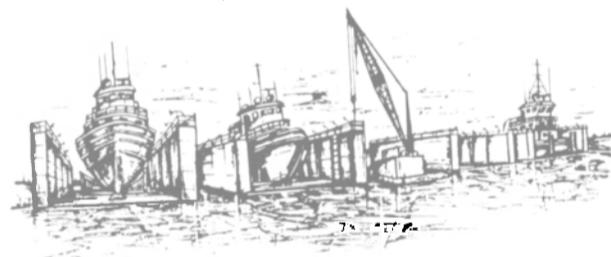
Ferrous has the proof:

Maybe you already know some of our satisfied customers. More than 50 ships use FE4. Like to find out who they are? Please contact K Chorlton:

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3500 Ton Dock
200' x 100'
90' Between
Wing Walls

1500 Ton Dock
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Wing Walls

300 Ton Dock
50' x 80'
40' Between
Wing Walls

HISTORY

Founded in 1948, Main Iron Works, Inc.'s current facilities are available for construction of new vessels ranging in size from 45' to 250' in length. Dry docking and a full range of repair services are also available, including a complete machine shop facility, sandblasting and painting services.

With over thirty years experience and our record of service to the towing industry, Main Iron Works, Inc. is ready to serve the needs of our past, present and future clients.

GENERAL SERVICES

Air control mechanics
Electrical repairs, trouble shooting
Hydraulic mechanics
Piping and plumbing repairs
Sandblasting and Painting
Complete machine shop service
A B S approved for stainless steel
Cladding on main shafts
Complete wood working shop

Four Dry Docks:

300-Ton Capacity
850-Ton Capacity
1500-Ton Capacity
3500-Ton Capacity completed 1st qtr. 84

All of the services listed above are available on a 24-hour basis, seven days a week. Quotation and price schedules are available upon request.

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Lathes: Capacity in feet — 36 Feet
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Wet Slips:

Three slips available for your boats or barges to tie up while repairs or supplies are being completed.

Shaft Storage Rack:

To avoid costly delay in waiting for transport of shafts, we provide our customers storage for their spare main shafts and rubber shafts.

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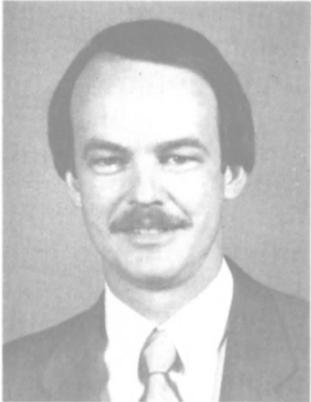
Along with our parts inventory, we keep a stock of steel plates, pipe, angles, flat bars, and channels, all American Bureau of Shipping approved.

We also have a supply of forgings and bar castings which enable us to supply your needs efficiently.

Crane Service:

100 Ton Fixed Stiffleg for Offloading and Loading Supplies

Brown Named Engineering Vice President at Colt's Fairbanks Morse Division



Peter W. Brown

Peter W. Brown has been appointed vice president of engineering at Colt Industries, Fairbanks Morse Engine Division, in Beloit, Wisc. In making the announcement, Division president M.D. Maddox said that all functions of the Engineering Department, including product design, engineering services, analytical engineering, and the mechanical laboratory will report to Mr. Brown.

He comes to Fairbanks Morse from Teledyne Continental Motors, where for the past five years he has held positions of increasing responsibility, most recently as vice president-engineering. His responsibilities included the design and development of a new family of spark-ignited and diesel industrial engines.

Rockwell Int'l. Awarded \$19.3-Million Contract

Rockwell International Corporation, Anaheim, Calif., is being awarded a \$19,343,000 face-value increase to a previously awarded cost-plus-incentive-fee contract for the production of six Electrostatically Supported Gyro (ESG) navigators and conversion of five ESG monitors to ESG navigators. The Naval Sea Systems Command, Washington, D.C. is the contracting activity.

Lykes Gets Title XI Guarantee To Upgrade Fleet Operations

Maritime Administrator Harold E. Shear has announced the approval in principle of an application by Lykes Bros. Steamship Co. for Title XI guarantees to assist the company in modernizing and upgrading its fleet operations. The guarantees will aid in financing the construction of U.S.-built chassis and containers, refinancing of existing Title XI indebtedness (principal only) applicable to 12 Lykes Clipper-class vessels, financing construction of U.S.-made equipment pertaining to marine operations and the reconstruction/

reconditioning of two Express-class vessels (the Margaret Lykes and the Sheldon Lykes) at Todd-Pacific Shipyard Corp.'s Seattle division.

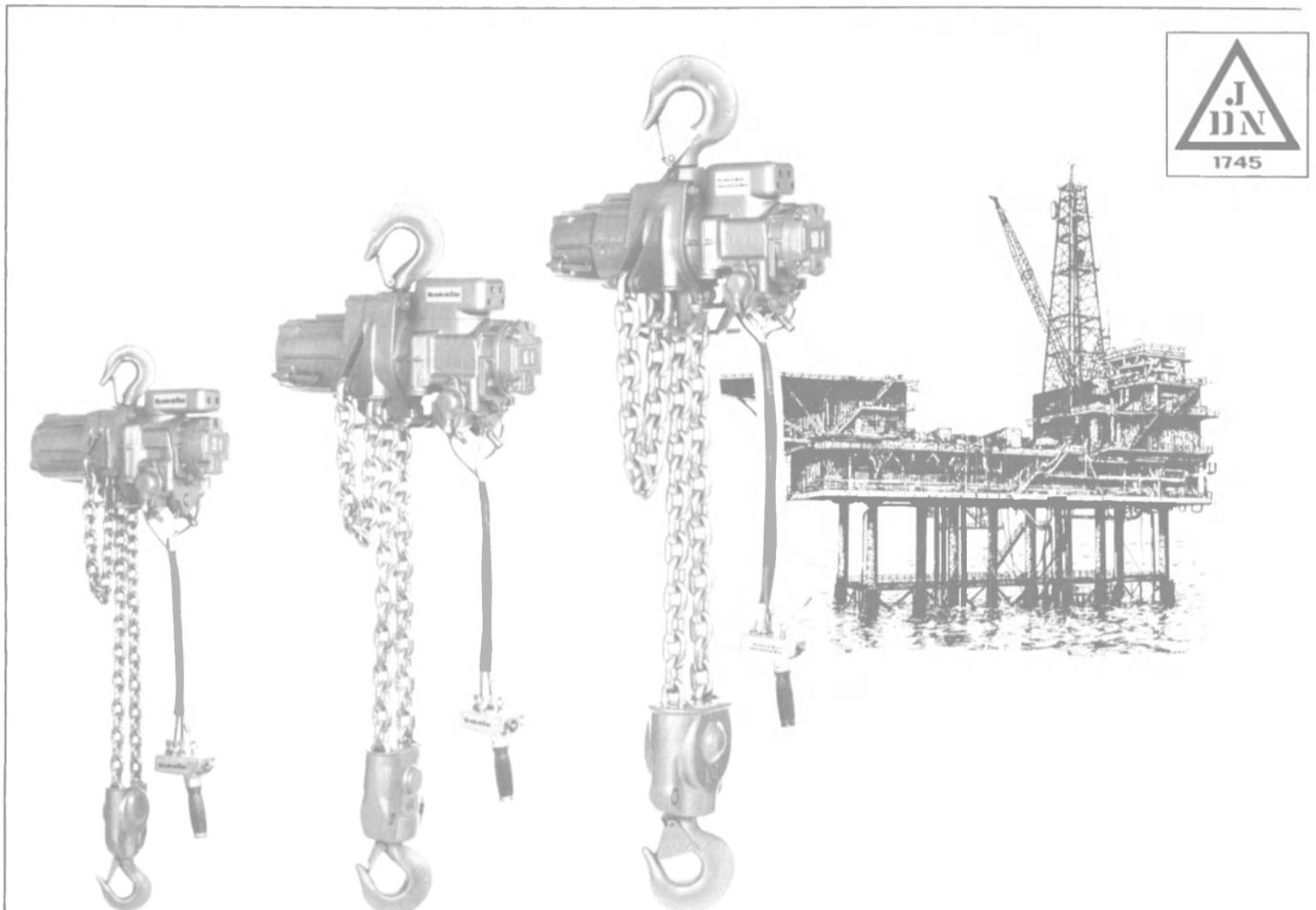
The Title XI guarantee totals \$61,556,000, which represents 75 percent of the depreciated actual cost of 15 ships and 246 Seabee barges offered as collateral vessels.

The Margaret Lykes and Sheldon Lykes were among four containerships acquired by Lykes from Hapag-Lloyd A.G. earlier this year.

The four were built in 1968-69 and reconstructed in 1973. The ships were acquired under Public Law 98-151, passed by the Congress last November. That special legislation provided that two of the ships be reconstructed in a U.S. shipyard.

MarAd's conditional approval of the application requires that the Title XI proceeds be used as follows: finance construction of U.S.-made equipment pertaining to ma-

rine operations, \$15,000,000; finance reconstruction/reconditioning of the Margaret Lykes and Sheldon Lykes at Todd Shipyard, \$9,500,000; finance construction of U.S.-built chassis, \$21,000,000; finance construction of U.S.-built reefer containers, \$2,000,000; refinancing existing Title XI indebtedness (principal only) applicable to the 12 Clipper-class vessels, \$14,056,000; total application of proceeds, \$61,556,000.



Explosion-Proof Operations with JDN Air Hoists and JDN Monorail Air Hoists

Compressed air is the absolutely safe form of drive energy for use in explosion hazard zones. On the one hand, because air does not cause sparks and cannot, therefore, lead to ignition – and, on the other hand, because no potentially harmful or even lethal electric shocks occur, even in wet operating areas. JDN lifting equipment is primarily used in areas of maximum risk, such as BoP zones; here it is fitted with chains and hooks made of special-purpose spark-proof metal, supplied by JDN for custom designs.

Another advantage is that the weight of JDN air hoists is relatively low in relation to their load-bearing capacities – that makes them much easier to transport.

Finally, it should also be mentioned that the lifting and lowering speed can be regulated on hoists with cable control. This is an essential feature in cases where highly accurate position control is required.

If JDN air hoists did not already exist – they would have to be invented for off-shore technology.

Our informational brochure contains detailed data and descriptions. Just write to us – we shall be more than pleased to help.

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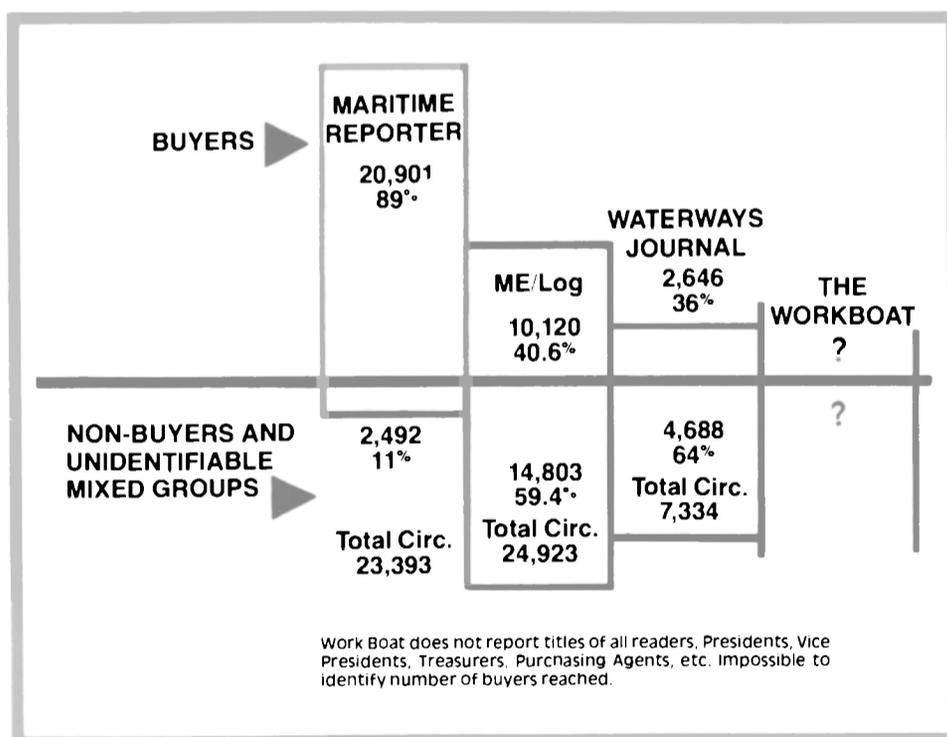
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In 1984, MARITIME REPORTER's total circulation increased by thousands to a record 23,323 copies every issue.

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Paints/Corrosion Control	756
	657
	655
Shipbuilding/Repair	2,147
	613
	547
Deck Machinery/Cargo Handling	523
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ISING RESULTS

and better sales leads than any and three times more than the ad represents inquiries produced ME REPORTER in one year or less.

THE ADVERTISING LEADER

In 1983, and for years, more media buyers placed more pages of advertising, for a larger number of advertisers, in MR than in No. 2, ME/Log.

Diesel Engines

1,168
1,153
1,123

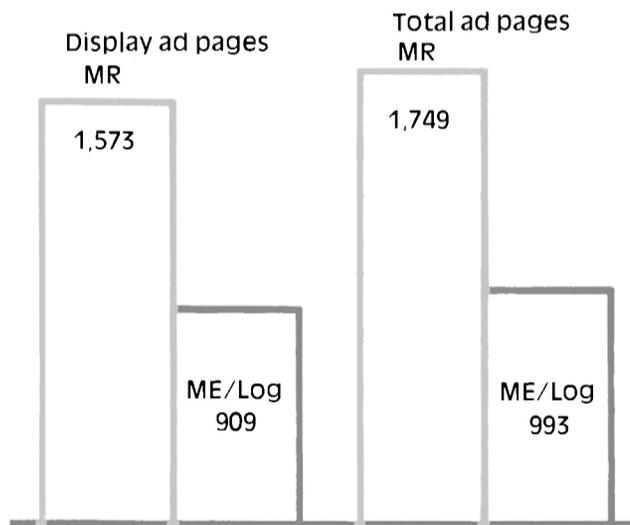
gation & Communications

663
621
590

Oily Water Separators

756
459
360

COMPARE 1983 ADVERTISING



Note — shows only magazine advertising 13 ME/Log issues — 24 MR issues . . . no catalogs, buyers guides, etc. Ad pages reported in 7" x 10" units for comparison.

And in the first 6 months of 1984, MARITIME REPORTER carried more pages of advertising than No. 2, ME/Log.

MR clearly leads by a wide margin in advertiser acceptance.

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Crowley Named President Of Newly Organized States Africa Line

States Africa Line has announced the appointment of veteran steamship industry executive **James T. Crowley** as president of the recently formed ocean cargo carrier that provides liner services between U.S. Atlantic and Gulf

Coast ports and South and East Africa.

According to the New Jersey-based ship line, Mr. Crowley will direct the operations of three highly efficient, multi-purpose cargo vessels that the company is using to link New York, Baltimore, Hampton Roads, Savannah, New Orleans, Houston, and other U.S. ports with ports in South Africa and elsewhere on the East Coast of Africa.

Mr. Crowley previously served over long periods as a key executive with vessel operators in U.S. foreign commerce, including that as senior vice president with Moore McCormack Line. Also, for several, he held a top position with the Maritime Administration, heading the U.S. effort to promote American-flag shipping.

According to the new president, States Africa Lines' current service plans call for monthly sailings

of company ships that are specially designed for moving cargo liner trade and bulk shipments.

M.A.N.-B&W Announces First Order For Its New L 58/64 Diesel Engine

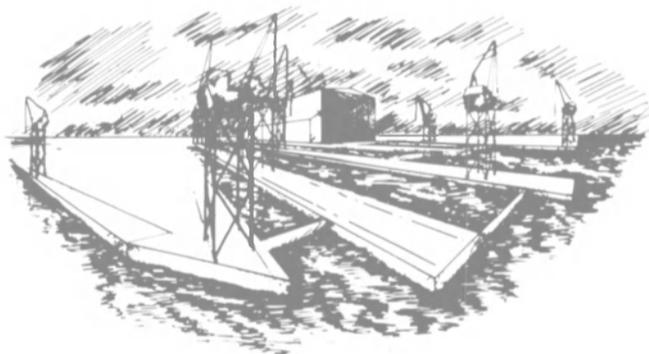
At the beginning of 1984 M.A.N.-B&W Diesel presented its new L 58/64 four-stroke engines covering the power range from 8,000 to 15,000 bhp (6,000-11,000 kw) to the public. The development of this engine made it possible for the first time to extend the advantages of a large medium-speed engine to the important advantage of equally powered two-stroke engines—the extremely low fuel consumption. Moreover, the combination of tried and tested design characteristics and new approaches, which is typical of this reliable and economical engine, is of particular interest for the shipowner.

Now M.A.N.-B&W announces the sale of the first engine of its L 58/64 series, ordered by Rickmers Werft of Bremerhaven. This 6-cylinder engine, with a maximum continuous rating of 9,900 bhp at 428 rpm, is to be installed in a type RW 49 ship that is being built for a German owner. The contract includes an option for a second identical engine.



We understand a shipowner's need
to care for his equipment investment.

We have invested \$50 million in
improved facilities to provide that care.



◀ MAIN YARD

Two graving docks: 900' x 150'
550' x 79'

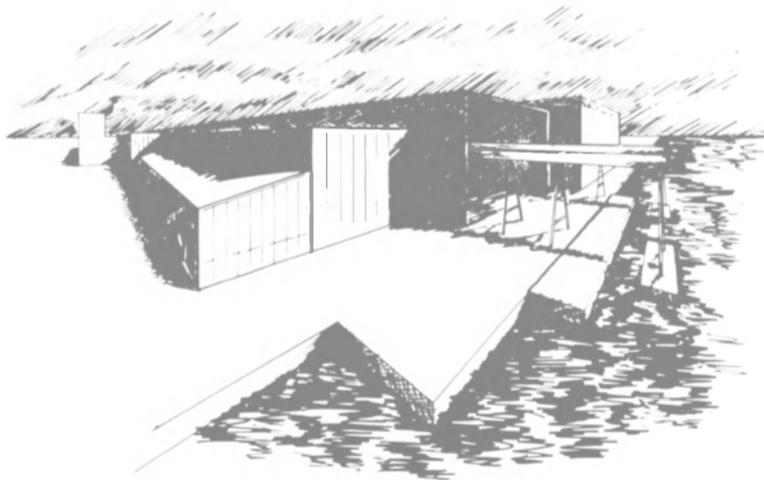
1984 Additions:

- Two graving docks - 750' x 125'
- Two wet berths
- Assembly/erection building with two 250 ton bridge cranes and auxiliary cranes

SOUTHWEST FACILITY ▶

11.0 acres of covered fabricating facility complete with:

- NC plasma machine
- Plate and shape preparation line
- One 700 ton bridge crane
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- One 100 ton bridge crane
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A subsidiary of the American Shipbuilding Company

Simplex Gets \$5.7-Million MarAd Contract To Supply Petroleum Transfer System

Acting on behalf of the U.S. Navy, the Maritime Administration recently awarded a \$5,688,480 contract to Simplex Wire & Cable Company of Portsmouth, N.H., for a system to transfer petroleum distillates, oil, and lubricants from a tanker moored as much as four miles offshore to an onshore distribution point. A government-owned tanker, the USNS Shoshone, will be modified to carry the system. The ship presently is in the National Defense Reserve Fleet at Suisan Bay, Calif.

A demonstration of the system will be scheduled in conjunction with future fleet requirements. The Naval Sea Systems Command will procure a single-point mooring buoy for use in the demonstration. Waters Marine, Inc. of Santa Cruz, Calif., is acting as MarAd's general agent for the modification and operation of the Shoshone.

Under the contract awarded to Simplex, the company will provide the reel and flexible pipe for the system, mounting, operational hardware, and installation and maintenance manuals. In addition, it will train personnel to operate the system.

MarAd's costs will be reimbursed by the Navy.

American Transport Asks Title XI On \$17-Million Barge Conversion Work

American Transport, Inc. of Chicago has applied to the Maritime Administration for Title XI mortgage guarantee to aid in financing the conversion of four Great Lakes freighters into unmanned roll-on/roll-off barges.

The vessels are the Champlain and Cadillac, both built in 1943; the Willis B. Royer, built in 1911; and the William P. Snyder Jr., built in 1912. Their present carrying capacities range from 15,000 to 16,750 dwt. The vessels would be converted at the Merce Industries, Inc. shipyard in Toledo, Ohio, with the first barge scheduled for delivery in April 1985.

The requested guarantee is for \$12,847,000, or 75 percent of the estimated \$17,130,000 cost of the conversion project. The owner of the vessels will be a limited partnership, still to be formed. In its application, American Transport said it might consider new construction instead of the conversion if feasible from a price standpoint.

Canter Named President Of At-Sea Incineration

Howard R. Canter has been appointed president of At-Sea Incineration, Inc. (ASI), according to a recent announcement by B. James Lowe, president and chief executive officer of Tacoma Boatbuilding Company. He succeeds Gerald R. Schiller, who has resigned but will continue to serve as a consultant to the company.

A subsidiary of Tacoma Boat, ASI will provide the service of destroying hazardous waste by incineration aboard specially designed incineration ships at federally approved ocean burn sites. In February this year, the first American-built, high-efficiency incineration ship, Apollo I, was launched by her designer and builder, Tacoma Boatbuilding. The ship will be chartered by Apollo Company LP, a New York limited partnership, and leased to ASI.

Mr. Canter brings to his new position broad-based experience in technical management and related environmental concerns. Most recently, he was vice president and director for Burns & Roe, Inc.

Coast Guard Orders Schottel Jet Thruster — Literature Available

Schottel of America, Inc., of Miami, Fla., recently received an order from the Coast Guard for a remote controlled water-jet bow propulsion and maneuvering system for a shallow-draft barge that is believed to be the first such installation in the U.S. The unit will be installed in an existing 150-foot by 60-foot by 10-foot Aids-to-Navigation barge which will be prop-

led by and controlled from a 140-foot WTGB tugboat.

Powered by a Detroit Diesel 8V-92 developing 300 hp at 1,800 rpm, the Schottel Model SBJ-112 Bow Jet develops 5,700 pounds of static thrust at the discharge nozzle. A propeller rotating in a horizontal plane draws water through an opening in the hull bottom and forces it against a movable shield. A self-contained double-acting hydraulic ram activates the shield,

which directs the thrust by diverting water flow as required. This method of thrust control simplifies installation and reduces costs as it completely eliminates the need for a reverse gear. The jet unit weighs 4,400 pounds and will operate at full efficiency in 24 inches of water.

The Schottel Jet unit is located in a purpose-dedicated compartment on the barge and is controlled remotely from the pilot-house and two wing locations on

the towboat and locally from a single control station on the barge. The control system has been designed to permit the engine to idle while the jet develops zero thrust to eliminate continuous starting and stopping. Both magnitude and direction of thrust are controlled by panel-mounted push buttons to minimize operator fatigue.

For free information on Schottel's bow jet,

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No shipyard in the world has a prouder reputation for productivity and quality workmanship than the Bath Iron Works in Bath, Maine. For 100 years, the words "Bath-built" have been the hallmark of excellence in the shipbuilding industry. When the U.S. Navy needed an advanced new guided missile frigate, BIW was called on to design and build its prototype. Since then, Bath has built 21 of them, each delivered ahead of schedule and under budget.

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"Radios are critical to many aspects of our operation here," said John Ludwig, Manager of Tool Rooms and Maintenance Inventories. "All of our outdoor cranes are directed by radio. GE Phoenix™-SX Mobile Radios help us make sure the job gets done right. And GE hand-held radios keep our key people in touch at all times."

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The Phoenix-SX is in a class by itself. No other mobile radio offers more features at such a low price. Because of the advanced technology in its design, its components, and its manufacturing — the Phoenix-SX costs much less than other comparably equipped radios. In fact, with all it has going for it, the Phoenix-SX is the best mobile radio value on the market today. "We have had no down-time with our Phoenix radios," Mr. Ludwig said. "And in our work, that's crucial."

Of course, you may not have vital defense contract deadlines to meet every day. But if communications are an important part of your business, it's nice to know there's one company that's delivering quality products at affordable prices. General Electric.

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For more information on the Phoenix-SX Mobile Radio, or any other General Electric mobile communications product, phone toll-free: **1-800-GE-12345**. (In Virginia, Alaska and Hawaii, call collect: 804-528-7643.) Or write General Electric, Mobile Communications Division, Lynchburg, Virginia 24502.



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SMM '84

**International
Ship, Machinery, and
Marine Technology
Trade Fair**

**Hamburg, West Germany
September 25-29**

At the 11th International Ship, Machinery, and Marine Technology Trade Fair (SMM '84) to be held at the Hamburg Exhibition Center in West Germany September 25-29, more than 500 exhibitors from 24 countries will be filling some 45,000 square meters (484,000 square feet) of exhibition space in 11 halls with all the latest developments in ships, marine and offshore technology, and ships' equipment. This exhibition in Hamburg has regularly welcomed participants from all the European shipbuilding nations, as well as a host of leading maritime enterprises from overseas. This year, in addition to the individual company stands, national joint displays will be mounted by Czechoslovakia, Denmark, Finland, East Germany, Great Britain, Japan, Netherlands, Poland, and South Korea.

SMM is organized every two years by Hamburg Messe und Congress GmbH, along with the Association of German Marine Engineers (VDSI) and the German Shipbuilding Industry Association. Sponsors include Germanischer Lloyd, the Society of Naval Architects and Marine Engineers, the Shipbuilding and Offshore Suppliers Section of the German Machinery and Plant-Makers' Association (VDMA), and the Marine Technology Trade Association (WIM).

Exhibition highlights at SMM '84 will include propulsion units for oceangoing ships, machinery and equipment from the field of marine technology, construction of offshore drilling units, monitoring

(continued on page 22)



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SMM '84

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and control technology for ship operations, steering and maneuvering systems, navigation and communications equipment, and much more.

The last International Ship, Ma-

chinery, and Marine Technology Exhibition was held in Hamburg in 1982. It was visited by a total of more than 30,000 specialists from 41 countries. About 85 percent of those visitors considered SMM '82 to have been of great significance as a multi-lateral marketplace for the industries concerned. Nine out of 10 exhibitors said that SMM '82 had "come up to" or "exceeded"

their expectations. Furthermore, 1982 exhibitors emphasized the fact that there had been a great increase in the number of overseas visitors compared with the 1980 exhibition.

Construction of special-purpose vessels and vehicles will be another highlight of SMM '84. Building of standard type vessels has for years been largely the preserve

of low-wage shipbuilding nations. German shipbuilders have reacted to this development by coming up with vessels of a highly sophisticated technical standard. Ships of this kind will be among the exhibits.

The exhibition will include views of passenger ships built at the Meyer Shipyard in Papenburg, where at present four such vessels are under construction for the Republic of Indonesia. Recently, a contract was signed to build a 35,000-gt cruise liner for Home Lines, the largest vessel ever ordered from this yard. The Meyer yard has also earned a worldwide reputation in another specialized field—conversion of bulk carriers to cattle ships.

Although much smaller, one new development being shown for the first time at SMM '84 is just as sophisticated from a technical point of view. The Hilgers Shipyard in Rheinbrohl will be presenting floating units on a standard container basis driven by hydrojet propulsion. They can be fitted out in a variety of ways to serve as an ambulance, laboratory, or fire-fighting unit.

Marine technology is now well out of the experimental stage, and the challenges it faces are continually requiring new and better solutions. Deep sea diving equipment is the field in which Drägerwerke in Lubeck specializes. This company will be presenting a range of pressure chambers and diving equipment. Particular interest is likely to be focused on a free-fall lifeboat with a built-in pressure chamber that enables divers who have been working at depth to escape from production platforms without getting the dreaded bends.

Monitoring underwater constructions, pipelines, and cables has become especially important in the offshore field. Bornhoft GmbH of Kiel will be coming to SMM '84 with a particularly wide range of monitoring systems and sampling equipment.

M.A.N.-B&W Diesel GmbH of Augsburg/Nurnberg will be exhibiting: original parts and models of the new L 58/64 engine with output of 1,650 bhp per cylinder, with extremely low fuel consumption; cutaway model of the NR 20 radial-flow turbocharger; a complete Alpha 6L 23/30 propulsion system, including an Alpha-tronic remote control console; a three-phase alternator set with the 8L 28/32 engine; and a cutaway model from the two-stroke engine program.

Krupp Atlas Elektronik of Bremen will be showing a complete range of navigational and other marine aids for all seagoing applications. Exhibited for the first time in public is the newly developed modular navigation and command system—a total bridge integration concept designed for both standard and purpose-built vessels. Also re-

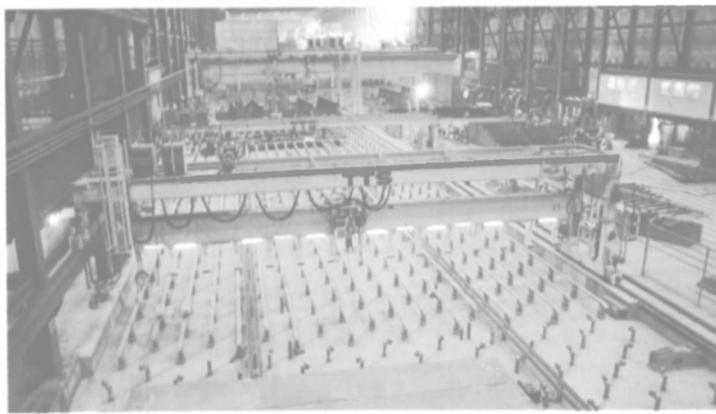
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ceiving its first public showing is the Atlas 8600 ARPA, one of four new, advanced rasterscan radars that are said to be the first to offer continuous true daylight viewing on a 16-inch screen, resulting in a quality of presentation superior to a conventional TV picture.

The Marine Engineering Division of J.M. Voith GmbH of Heidenheim will exhibit models and charts depicting the activities of the division, with particular attention being drawn to the various fields of application for Voith marine propulsion systems. Specialized personnel will be available at the Voith stand to give information and answer questions.

This year the SMM stand of Schottel International, represented by Schottel-Werft, Josef Becker GmbH & Company KG of Spay/Rhine, and Schottel-Hamburg, will be devoted to working and still models demonstrating the application of the wide range of the company's propulsion equipment. The further-developed and improved Schottel Masterpilot steering system, and a scaled-down

plexiglass model of a Cone-Jet type SKJ 175 will be shown. The outdoor exhibit between Halls 6 and 7 will be a Schottel workboat equipped with two Pump-Jet units type SPJ 32.

Volvo Penta Deutschland GmbH will share a stand with Volvo Penta Gothenburg and the Volvo Hydraulic Division. Among the diesel engines on display will be the 408-bhp TAMD121, the 300-bhp TAMD70, and 272-bhp TMD100, and the 250-bhp TAMD60. An inboard-outboard drive will also be shown, as well as the 28-bhp 2003 auxiliary engine.

C. Plath GmbH of Hamburg will exhibit an extended compass range. In addition to the NAVIGAT VII and VIII gyrocompasses introduced four years ago, the company will exhibit its new NAVIGAT IX, a compact and versatile gyrocompass/autopilot combination. The new unit is said to meet many specific requirements put forward by users. In addition, Plath's complete range of sophisticated navigation and automation equipment will be available for inspection.

August G. Koch, Maschinenfabrik of Kiel will exhibit its extensive line of AKO filters that are used worldwide in the shipping industry. AKO single and double filters, as well as semi-automatics and fully automatic self-cleaning filters, are suitable for filtration of fuel oils, lube oils, cooling water, and drinking water aboard ships. This year Koch will introduce its AKO-Filtramat RW860, which is used as an indicator for the control of the centrifuging of fuel oil.

IBAK (Helmut Hunger GmbH & Company KG) of Kiel will be exhibiting a new generation of marine searchlights, type SH300, SH350, and SH400. These are incandescent lamp searchlights that have been greatly improved over their predecessors by the use of high-quality glass reflectors and halogen lamps. Their ranges have been increased by 10-15 percent, and the life of the lamp is several times longer than it was previously. An IBAK long-range xenon searchlight of the proven series X360 will also be shown.

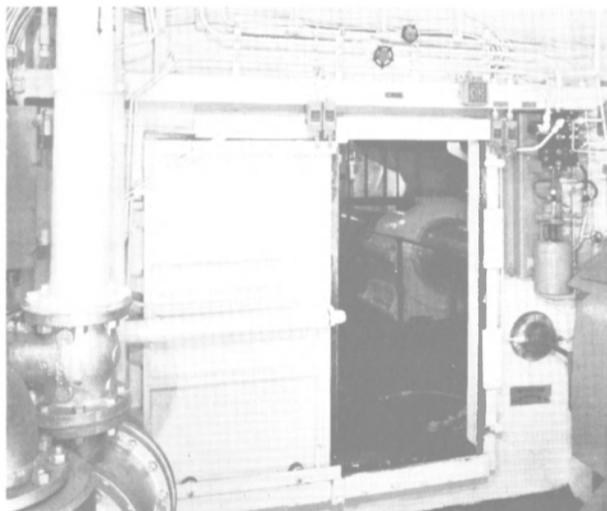
AB Hagglund & Soner of Swe-

den, a member of the ASEA Group, will introduce a new electro-hydraulic, slewing container crane offering considerable advantages over existing models. The new Type L crane, while a development of the successful Type G, embodies a number of radical changes in machinery arrangement and configuration to meet a 2,400-mm-diameter limitation of the crane housing and slewing ring without sacrificing vital Hagglunds features. This new crane, available in lifting capacities from 20 to 60 tons and outreach up to 105 feet, is sure to attract wide attention at the Hamburg show.

The main exhibit on the stand of SWDiesel (Stork-Werkspoor Diesel bv of Amsterdam) will be a 6-cylinder SW280 engine. This engine burns heavy fuel at 1,000 rpm, and is designed to meet all the demands of the present and future markets. Since its introduction two years ago, the SW280 has been well received in international maritime circles and a large number of orders have been re-

(continued on page 24)

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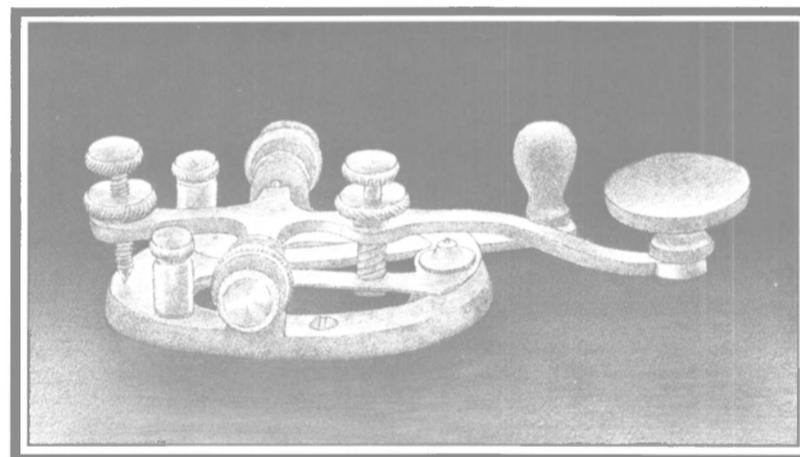
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SMM '84

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ceived for use as main propulsion units, auxiliary power supply on board oceangoing ships, and for land-based applications.

International Congress

The SMM '84 International Congress planned for September 26-

27 to accompany the exhibition will have for its theme "Research, Technology, and Industry as Reflected in the Trade Fair." Two days of lectures and discussions are being organized by the Association of German Marine Engineers, represented by its Hamburg branch. The main topics to be covered in the Congress papers are the developments in ships' engines and heavy fuel oil operations, together with offshore technology.

The Congress has been planned

with two target groups in mind—the operational technicians on the one hand, and manufacturers and research institutes on the other. The intention of the Congress is to provide a fruitful exchange of information and ideas between the field of research and the manufacturing industry. Experts from the target groups mentioned are becoming increasingly aware of the need for more efficient operational systems in order to stay competitive.

Heavy oil operations, a topic that will be dealt with in a number of papers and from a variety of viewpoints at the Congress, are still presenting a range of new problems long after the successful introduction of this kind of operation. There is the challenge of developing a fuel oil that can be used for operating the auxiliary engines as well as the main engines, with only one fuel on board. A further requirement is that equally good operating conditions exist for long-term operations at both full power and low power.

Even though it would appear that it is now technically possible to produce unmanned vessels, the aims of those involved in increasing the degree of automation on board ships are not exclusively directed towards any further reduction in the size of the crew. The SMM '84 Congress will present ample evidence that the priorities in the automation process have to be threefold: relieving the crew of everyday routine controls; arriving at a more accurate and quicker diagnosis and elimination of defects; and, as a result of all this, achieving a state of trouble-free engine operation.

The other main theme of the Congress is offshore technology. This is hardly surprising, as the extreme weather conditions and very heavy seas that often prevail in the northern latitudes give exploration and production platforms and other offshore installations an unusually heavy pounding. This represents a stiff challenge not only to those involved in their construction but also to the authorities concerned with their supervision and inspection, the maintenance firms, and especially the divers who have to carry out the repair work.

One of the papers to be presented at the Congress will be concerned with GUSI, the new GKSS Underwater Simulator System, which has now successfully completed its trials. At simulated depths of up to 300 meters (984 feet), repair work including welding can be carried out. The experience gained under such simulated conditions can go a long way towards insuring that the actual work is then completed without any delays or hitches.

CONFERENCE PROGRAM

Wednesday, September 26

Chairman—Werner Schotteldreyer, Verand Deutscher Reeder, Hamburg.

9:30 am—Welcome by directors of the Association of Marine Engineers of Hamburg, organizer of the Conference.

9:40 am—"Is German Merchant Shipping Still Competitive from a Ship Operational Point of View?" by Kurt Dohmel, Deutsche Shell Tanker Reederei.

10:00 am—"New Developments in the Treatment of Poor Quality Fuels with High Densities," by



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Maritime Reporter/Engineering News

F.J. Loddenkemper, Westfalia Separator.

10:30 am—"Exhaust Turbochargers for Use with Heavy Oil," by **R. Muller**, BBC.

11:00 am—Discussion and coffee break.

11:30 am—"Future-Oriented Automation Concept for Modern Sea Vessels," by **Volker Brand**, Siemens AG.

12:15 pm—Luncheon.

Afternoon Session

Chairman—Prof. **Horst Rulfs**, Technische Universität Hamburg.

1:30 pm—"Economic Ship Propulsion with Four-Stroke Engines," by **H.R. Lembcke** and **Fritz Gogarten**, MaK Maschinenbau GmbH.

2:00 pm—"Crosshead Engines with Small Cylinder Bore for Combustion of Inferior Quality Heavy Oils," by **Ernst Schaad**, Sulzer Brothers.

2:30 pm—"Development Trends for Diesel Engine Bearings Subject to Danger of Corrosion and Wear," by **Ulrich Engel**, BWH Braunschweig (Braunschweiger Huttenwerke GmbH).

3:00 pm—Discussion.

Thursday, September 27

Morning Session

Chairman—**O. Rohl**, Germanischer Lloyd, Hamburg.

9:30 am—"Problems in Monitoring Offshore Installations," by **Bernhard Richter**, Germanischer Lloyd.

9:45 am—"Deep-Water Technology Related to the Troll Field Development," by **Bjorn S. Weibye**, Norske Hydro.

10:15 am—"Diver Assistance Vehicle for Inspection and Maintenance Duties," by **W. Ohm**, AEG Schiffbau.

10:45 am—Discussion and coffee break.

11:15 am—"Semi Server—the Economic Solution for Making Underwater Building Elements Accessible," by **Gerd Elbel**, Blohm + Voss AG.

11:45 am—Discussion.

12 noon—Luncheon.

Afternoon Session

Chairman—**H. Wilckens**, Thyssen Nordseewerke.

1:30 pm—"Preservation of Oceanological Structures in a Wet Environment," by **B. Donker**, GKSS Rorschungszentrum Geesthacht GmbH.

2:00 pm—"Coatings for Corrosion Control on Fixed Offshore Platforms," by **A.C. Fletcher**, International Farbenwerke GmbH.

2:30 pm—"The GKSS Underwater Simulator—a Research and Development Instrument for Underwater Maintenance and Repair Tasks," by Prof. **H.C. Schafstall** and **B. Szelagowski**.

3:00 pm—Film Show: State of Development in Underwater Welding Techniques and First Experiences from Dives of up to 300 Meters (984 Feet).

3:15 pm—Discussion.

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(continued on page 28)

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SMM '84

(continued from page 25)

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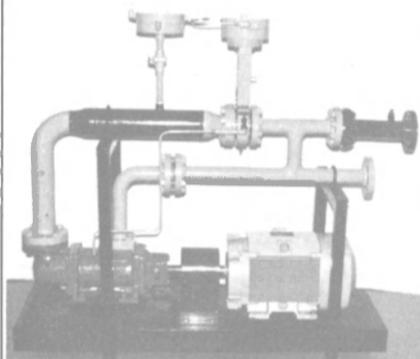
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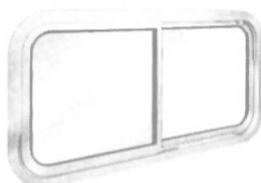
Warranty: One year on material and workmanship.

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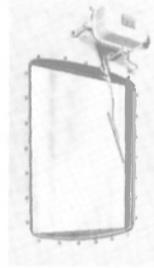
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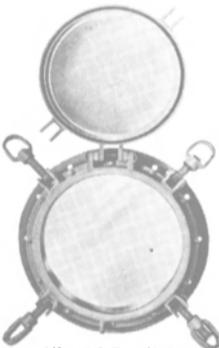
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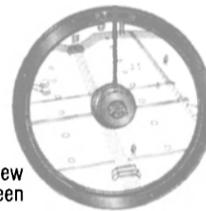
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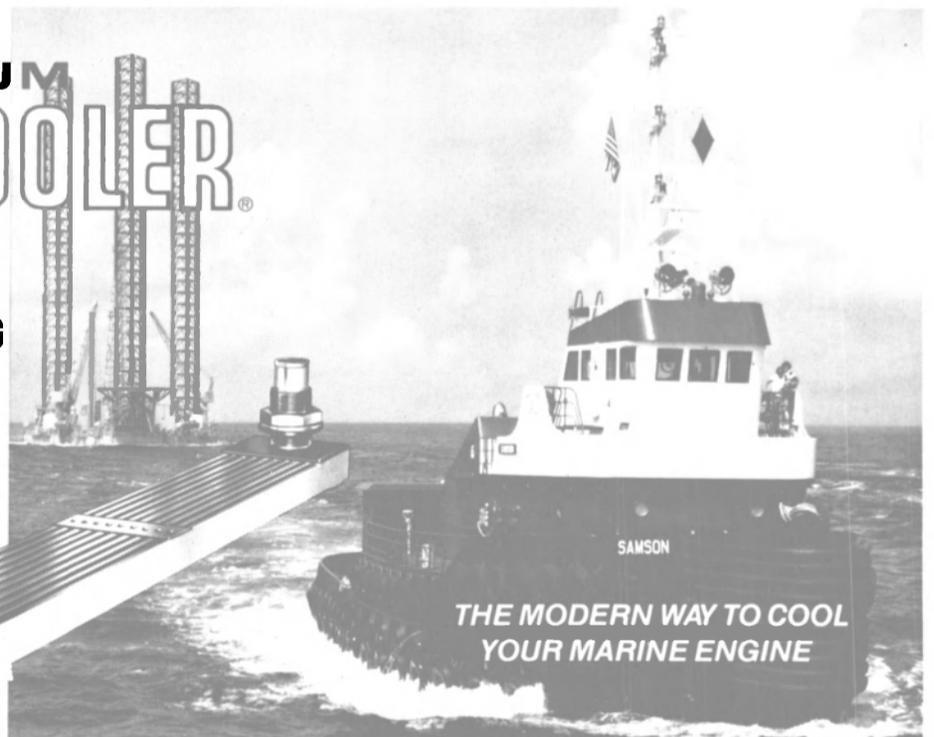
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Stephens-Adamson Wins Ship Unloading System Orders Worth \$12 Million

Orders for self-unloading systems to be installed on six seagoing bulk cargo carriers have been announced by the Stephens-Adamson Canadian Division of Allis-Chalmers Solids Process Equipment Company.

The value of these orders exceeds \$12 million Canadian (\$10 million U.S.). They come from shipbuilders in Norway, Japan and Korea, for customers who will use the ships to transport coal and other bulk commodities.

All of the systems include the Loop Belt elevator developed and built initially by Stephens-Adamson Canada for self-unloading ships operating on the Great Lakes.

Loop Belt elevators incorporate two belts which utilize a "sand-

wich" principle in order to lift the material from under the hold to above deck at very high discharge rates. Ships can be completely unloaded within hours instead of days normally required with conventional unloading equipment.

The largest of the new orders is for four systems to be installed during 1984-85 in ships being built in Norway and Japan for Kristian Jebsens Rederi of Bergen, Norway. Another new order is for a 15,000-dwt pusher barge for discharging coal along the coast of South Korea for Hanjin Transportation. The most recent of these new orders is for a Stephens-Adamson system for a 9,200-dwt self-unloader for the Indonesian shipowner P.T. Pann.

Stephens-Adamson spokesmen said the parade of new orders reflects how shipowners, operators and cargo owners throughout the world are recognizing the economies offered by the gravity type self-unloader. A top benefit is the fast turnaround offered and the very substantial reduction in port facilities investment.

Circle 39 on Reader Service Card

Ice-Strengthened Ship Chartered By Navy's MSC From Central Gulf Lines

The U.S. Navy's Military Sealift Command has chartered an ice-strengthened ship for service in the Arctic and Antarctic beginning in January next year. The ship will be chartered from Central Gulf Lines of New Orleans for four and one-half years.

Under terms of the charter, the

MSC will pay Central Gulf \$16,610 per day for the first year, \$16,574 a day for the second year, \$17,418 a day for the third, \$17,156 a day for the fourth, and \$17,228 a day for the final six months.

The ship, MV Woermann Mira, was built in 1980 in West Germany, and will be reflagged as a U.S. vessel and operated by an American civilian crew. She has

six cranes, each able to lift 25 long tons. At holds three and four, four cranes can be married to provide an 80-ton heavy-lift capability. The ship has elongated hatches that will allow her to carry outsized cargoes such as a space telescope. She is capable of carrying containers and breakbulk cargo. This ship will replace the USNS Southern Cross, which will be laid up.

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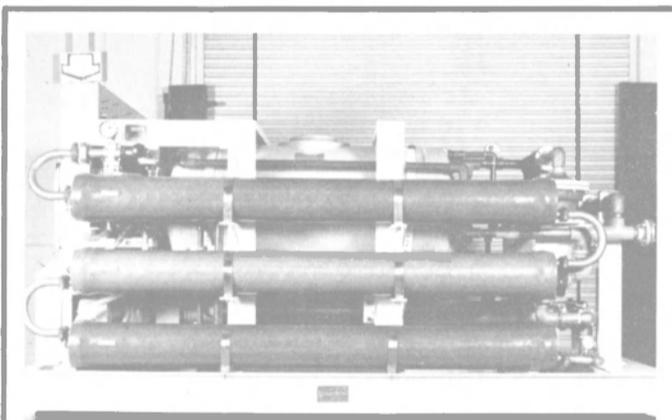
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North American Marine Jet, Inc., of Little Rock, Arkansas, has purchased the entire product line of Jacuzzi Marine Jet, including all manufacturing rights, from the Jacuzzi Bros. Division, also of Little Rock.

North American Marine Jet will supply OEM parts for all Jacuzzi Marine Jets and is now the manufacturer of replacement parts for Jacuzzi Marine Jets as well. Parts are now available for immediate delivery.

The company will also supply new units of the 12YJ, Piranha, 12WJ, 14YJ and 20YJ as well as accessories for the units.

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Circle 165 on Reader Service Card

Unique High-Speed Catamaran Delivered By Nichols Brothers

A hallmark event for Nichols Brothers Boat Builders of Free-land, Wash., was the recent christening of the M/V Klondike, a unique 72-foot high-speed catamaran built for Yukon River Cruises of Alaska. The first of its kind to be built in the U.S., the vessel, which can carry 210 passengers, is powered by two Caterpillar 3412 TA main engines (Niigata 2.5:1 reverse reduction gear) and can reach a cruise speed of 28 knots. The hull and superstructure was specially designed by Nichols Brothers to allow for convenient landings on the banks of the Yukon where the vessel will cruise next year. Until then, after carrying passengers between Long Beach

and Catalina Island during the Los Angeles Olympics, it will move to San Francisco for a season of dinner cruises.

On hand to celebrate its maiden voyage was designer, **Philip Hercus** of International Catamarans, Australia, as well as 150 passengers from the government and private sectors invited to enjoy the ride to Seattle. A rubber buffer positioned between the hull and passenger cabin ensured a smooth, quiet ride. Deluxe appointments include two carpeted decks, upholstered seating, oversized windows for outdoor viewing, gift shop, and full bar and galley.

A second 72-foot catamaran was scheduled for delivery in August.



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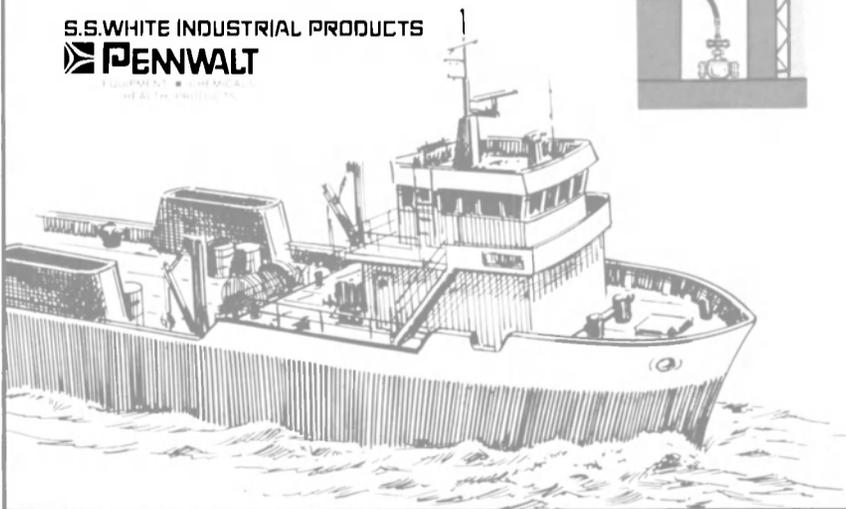
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Photo—Port of Hamburg

WEST GERMAN SHIPBUILDING

The Situation Improves Greatly For German Shipbuilders

As the Federal Republic of Germany's fiscal year drew to a close on September 30 last year, the country's shipbuilding industry was facing some of the most serious problems in its long and distinguished history.

Since then, however, government aid, new orders and other factors have created a much brighter picture. Despite ranking third behind only Japan and Korea during 1983, the orderbook was thin, amounting to 601,930 gross tons, worth some DM 3.4 billion. Of this, only 20 percent was for export.

Indicative of the seriousness of the situation was the fact that 593,765 gross tons had been delivered in the first nine months of the year, an amount almost equal to the total orderbook, while new orders in the same period amounted to only 244,342 gross tons. There were strong demands from within the industry for Government intervention in the form of direct subsidies to the shipyards.

Bremer Vulkan, Hapag Lloyd,

and AG Weser (Bremen), the three major Bremen yards drew up proposals for a merger. This was seen as being the one feasible way of insuring there would be a long-term future for shipbuilding in that area.

The merger plan was frustrated by the Bonn Government's refusal to provide the financial assistance necessary to support the proposal. As a result, the Weser yard in Bremen was closed.

Hapag Lloyd and Bremer Vulkan subsequently came to their own arrangement, which became effective in April this year. Under its terms, newbuilding continues at Bremer Vulkan while Hapag Lloyd will concentrate solely on repair and conversion work. It is planned that the latter yard will in due course change its name to Lloyd Werft.

Government Aid Spurs Activity

As the situation for the West

German shipbuilders showed little improvement, help appeared in the form of aid from the country's four coastal states—Bremen, Hamburg, Lower Saxony, and Schleswig-Holstein. Recognizing the unique and vital position held by shipbuilding in the economic and social infrastructure of the region, the governments of the four states stepped in to offer a direct subsidy of 6 percent to the yards, dropping to 4 percent in 1985.

Grateful though the yards were for this help, new orders were necessary to turn the corner. In January this year it was announced that the West German Government had secured a contract from China Ocean Shipping Company (COSCO) of the People's Republic for the construction of three 1,200-TEU containerships. A short time later, the Chinese order was increased to nine ships, three each to be built at Flensburg Schiffbau, Howaldswerke-Deutsche Werft (Kiel), and AG Weser (Seebeck).

This welcome contract was the

result of generous financing on the part of the Bonn Government; the Chinese have some 15 years in which to pay for the vessels, the financing costs are only 3.5 percent.

As if to confirm this helpful change in attitude, Bonn shortly afterward announced that an extra DM 80 million would be available in repayable tax-free credits to German owners ordering new tonnage in domestic yards. This aid was in addition to the 12.5 percent subsidy scheme that already existed.

A Greatly Improved Situation

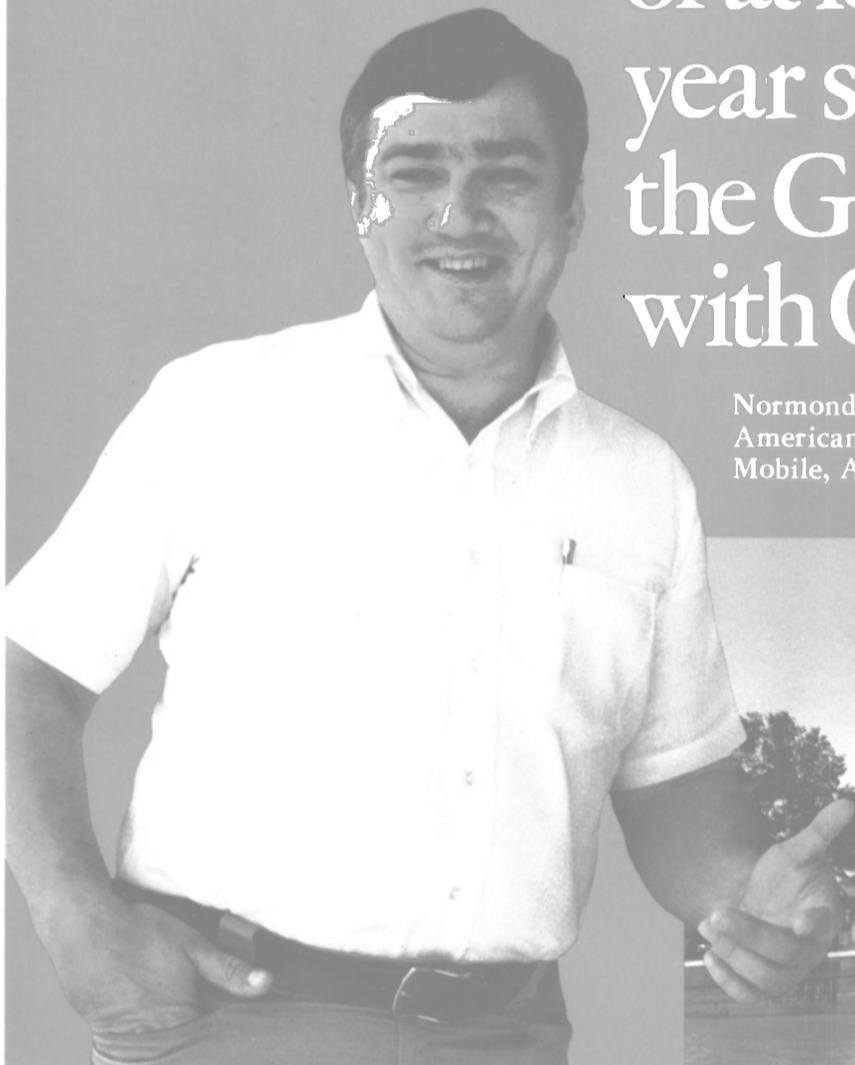
Since then the overall situation has improved greatly for the German shipbuilders. Competition is strong, however, and a glance around some of the major yards reveals that some are inevitably faring better than others.

Bremer Vulkan

The reshaped Bremer Vulkan, for example, has reported a re-
(continued on page 40)

“We project savings in fuel costs of at least \$142,000 a year since repowering the General Washington with Cat 3500s.”

Normond McAllister Jr., President
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The GENERAL WASHINGTON moves 298-ft tank barges on the inland waterway between Mobile and Tuscaloosa and on the Gulf Intracoastal Waterway between New Orleans and Houston.

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“Turning 1800 rpm like we did with the old engines, we were making much better trip times. When our cargo wasn't time sensitive, we ran them at 1700 rpm . . . and still couldn't tell any difference in trip times. So we backed off another

100 rpm. And our time was as good turning 1600 rpm as with the other engines turning 1800 . . . but we burned only 26 gph per engine instead of 40 gph.

“That's a savings of 14 gph per engine. Based on running each engine 5,100 hrs/yr—and fuel costing about a dollar a gallon — I project saving at least \$142,800 a year with the Cat 3508s.”

“Our numbers aren't something somebody thinks up. We know within one-half of one percent what our fuel consumption is every day. The savings are there . . . and we have the logs and documentation to prove it.”

Outstanding fuel economy isn't the only benefit McAllister is reaping

with his Cat 3508s. “We calculate our net lube oil savings each year will be more than \$3,200.”

If you run your engines as much as Normond McAllister does, you'll find like he has, Cat 3508s may actually pay for themselves in less than 1½ years. To get more specifics on the tremendous money saving potential open to you with Cat 3500 Series Engines from 565-1600 hp (421-1194 kW), see your Caterpillar Dealer. Or write Caterpillar Information Services, P.O. Box 3900, Peoria, IL 61614.



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German Shipbuilding

(continued from page 38)

markable turnaround in fortunes since the merger with Hapag Lloyd. Its 1982 losses of DM 33 million were followed by a profit of DM 1.7 million in 1983, and the yard now has a full orderbook valued at some DM 680 million—enough contracts to keep the work force occupied until 1986.

A symptom of the success of the new venture is the DM 80-million capital investment program that is scheduled to take place during the next two years. Some DM 15 of this will be spent on a floating drydock for Hapag Lloyd, which will have a capacity of 100,000 dwt.

For further information on Bremer Vulkan,

Circle 10 on Reader Service Card

Nobiskrug Werft

Another yard with a full orderbook is Nobiskrug Werft in Rendsburg. This facility employs about 1,350 workers, and is currently engaged in building a 13,700-dwt containership and a 4,750-dwt container-RO/RO vessel. In addition, the yard has received recent orders for four container vessels of 7,250 dwt, each for a different German owner.

It is a mark of the success of the

German Government's tax-free credits for German owners that all of Nobiskrug's current orders are for German account.

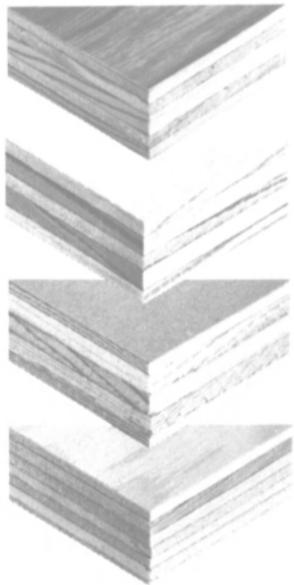
For more information on Nobiskrug Werft,

Circle 11 on Reader Service Card

Harmstorf Group

With its three newbuilding yards, the Harmstorf Group is currently in a healthy position. It reported profits of DM 5.4 million in 1983,

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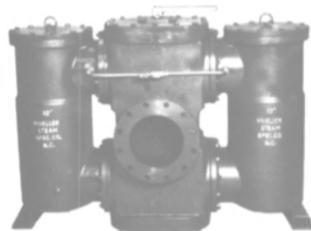
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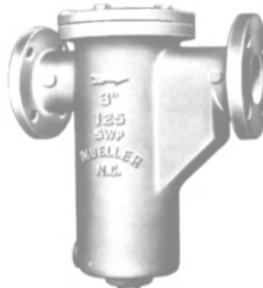
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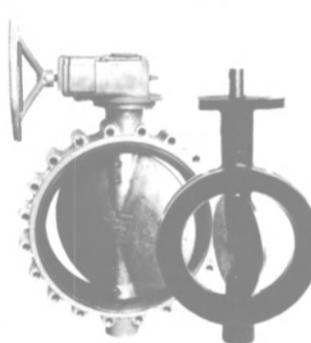
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and has recently completed a DM 57-million modernization program geared toward making its facilities still more competitive in the future.

Largest of the Harmstorf yards is Flensburger Schiffbau in Flensburg, which employs some 1,100 people. As part of the Group's modernization program, it acquired a 886-foot-long, fully covered building berth, fitted with two 120-ton cranes. Current orders, which include three of the nine COSCO containerships, will provide work until near the end of 1985.

Busumer Werft in Buesum and Schlichting Werft in Travemuende, the Group's other yards, both have sufficient work to last until mid-85. Despite being something of a RO/RO specialist, Schlichting Werft recently secured a prestigious order from the German Government for an oceanographic research vessel that will replace the 20-year-old research ship Meteor 1, due to be phased out by 1986. The new vessel will feature an impressive amount of advanced technology, and the order is thought to be worth about DM 100 million.

For further information on Harmstorf Group,

Circle 12 on Reader Service Card

AG Weser

The AG Weser concern, owned by the German industrial giant Krupp, as mentioned previously, closed its Bremen yard. However, the company's other yard at Seebeck is faring very well. It has 10 vessels on the current orderbook, including the three containerships that are its share of the Government's Chinese contract, and two recently gained orders for 13,100-dwt multipurpose vessels, with some container capacity, for the Burma Five Star Corporation.

At the end of this year, the Seebeck yard is due to deliver a second rail ferry to the Railship consortium (H.M. Gehrckens GmbH). This new vessel will operate on the trans-Baltic route, joining Railship 1, a rail ferry built by Rickmers Werft in 1975.

For further information on AG Weser,

Circle 14 on Reader Service Card

Rickmers Werft

Rickmers Werft celebrated its 150th anniversary this year with a move to a new location at Fischereihafen, in Bremerhaven. This company has developed something of a specialty in the construction of fishing vessels, in particular medium-sized stern trawlers and highly sophisticated fish factory ships. However, as demand for these types of vessels has decreased, other work has been found. Currently on order are four vessels—one multipurpose ship with container capacity, and three cellular containerships, for all German owners.

For further information on Rickmers Werft,

Circle 15 on Reader Service Card

Howaldtswerke

The State-owned shipbuilder Howaldtswerke-Deutsche Werft (HDW) has undergone major restructuring in recent years. Despite a loss of DM 210 million during 1983, HDW now appears to be on course to meet the targets identified in its corporate plan.

Last year HDW ceased new-

building work at its Hamburg yard, concentrating activities in this field at its Kiel facility. The company's work force had been cut from a 1982 level of 12,000 to about 10,250 at the end of 1983.

The Kiel yard's future is seen to lie with naval construction, a fact reflected in the current orderbook that consists of six merchant vessels valued at DM 400 million, and naval vessels valued at some DM 2.1 billion.

For further information on Howaldtswerke,

Circle 16 on Reader Service Card

Meyer Werft

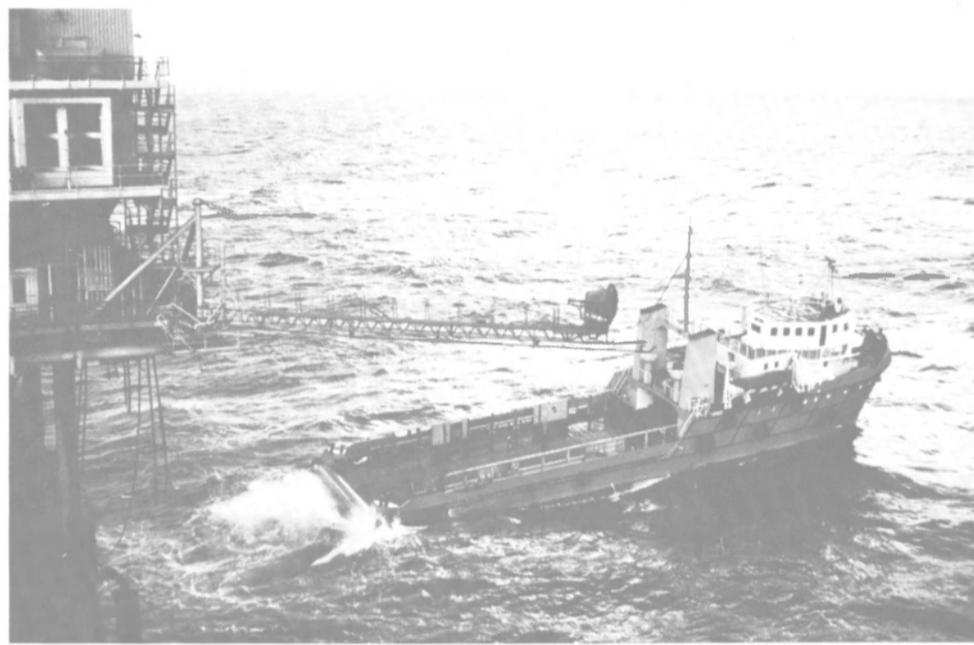
Possibly the best order won so far this year by a German yard has been the contract for a 35,000-grt cruise liner, to be built by Jos. L. Meyer Werft of Papenburg for Home Lines of Panama. This ves-

(continued on page 42)

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German Shipbuilding

(continued from page 41)

sel is scheduled for delivery in April 1986.

The Meyer shipyard has traditionally enjoyed an excellent relationship with the Indonesian Government, for which it has completed a large number of vessels. Towards the end of last year this relationship was continued with the delivery of the Kerinci, first in a series of four inter-island ferries for Indonesia. She entered service along with several other Meyer-built ships, including five that are still in operation 20 years after delivery.

The building of liquefied gas tankers is also a Meyer specialty, and the yard's most recent delivery, the Sultan Mahmud Badaru-

din (once again for the Indonesian Government) was the 35th vessel of this type that the Papenburg yard had delivered.

For further information on Meyer Werft,

Circle 17 on Reader Service Card

Blohm + Voss

The Hamburg shipbuilder Blohm + Voss was another to record a profit for 1983, of some DM 6.6 million. However, the current work force of about 5,000 is 500 fewer than the 1982 level, and further reductions are planned. It is expected that these will be 300 redundancies, as well as 450 personnel electing to leave voluntarily.

For further information on Blohm + Voss,

Circle 18 on Reader Service Card

Flender Werft

The Flender Werft yard at Lubeck recently delivered two highly advanced reefer ships to Flensburg shipowner Ernst Jacob. These ships, named Blumenthal and Bremerhaven, incorporate a number of the design concepts that were developed as part of the West German "Ship of the Future" research program.

These concepts have been geared toward improving operating economy, cargo-handling efficiency, and safety. They include an interesting bridge arrangement in which separate areas are set aside for navigational planning, cargo handling and safety, and manual steering. The vessel's most visually striking feature is the stern-mounted, free-fall lifeboat developed by Nobiskrug Werft.

However, Flender Werft's losses

rose to DM 2 million last year, compared with DM 0.8 million in 1982. The orderbook at the moment consists of a 17,000-dwt container vessel for domestic owner Peter Doehle. However, a second order for a vessel of this type is likely to be placed in the near future.

For further information on Flender Werft,

Circle 19 on Reader Service Card

Other German Yards

Of the other West German shipyards, a number have benefitted from the recent trend among German shipowners of building multipurpose tonnage, with container capacity.

Typical of this type of vessel is the 9,180-dwt geared diesel vessel John M, delivered recently by Paul Lindenau Werft of Kiel to owner Carsten Rehder. With container capacity of 540 TEUs and grain capacity of 12,169 cubic meters, the vessel has been time-chartered to Norway's A/S Kristian Jebsens Rederi, for whom she will serve on the North Atlantic route.

One interesting feature of the John M is the patented Lindenau bulbous bow, which is said to give considerable benefits in terms of efficiency, when compared with other designs. It is typical of the fuel-saving and performance-boosting technological advances for which German shipbuilders have become renowned. Other examples include Professor Grim's vane wheel propeller and the asymmetrical stern, both of which are to be incorporated on the four multipurpose/container vessels that are being built by Bremer Vulkan for Jeyo Janssen.

The vane wheel propeller is free-turning, and coaxial with the vessel's driven propeller; it produces a turboprop effect. The stream from the driven propeller acts on the inner part of the vane wheel's blades, and is then converted into thrust at the tips.

A seven percent improvement in propulsive efficiency is claimed for the vane propeller's application on the first three Janssen ships, while even greater savings are expected for the fourth, which will also feature the asymmetrical stern.

Technical expertise of this nature, coupled with the high standard of work that has always been a feature of West German shipbuilding, will be key elements in the industry's recovery from the current recession.

Competition between the yards is strong and for many shipbuilders, acquiring an order simply means being able to maintain jobs at current levels. For some, however, the first steps have been made on the road back to profitability, and it remains to be seen whether further slimming down will be necessary before the remainder of the yards are able to join them.



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Heinrich Brand, Oldenburg			
1	Multi-purpose	3,260	12/84
1	Dry cargo	6,000	9/84
Bremer Vulkan, Bremen-Vegesack			
2	Multi-purpose	20,000	9 & 12/84
3	Paper carriers	—	—
2	Multi-purpose	9,100	3 & 6/85
2	Multi-purpose	50,000	—
1	Multi-purpose	22,600	2/85
Busumer Werft, Buesum			
2	Dry cargo	2,985	12/84 & 5/85
Cassens, Emden			
3	Multi-purpose	2,300	84-85
Flender Werft, Lubeck-Siems			
1	Containership	17,000	10/84
Flensburger Schiffbau, Lubeck-Siems			
2	Cont./reefer	27,000	9/84 & 6/85
3	Containership	26,300	85
Howaldtswerke-Deutsche Werft, Kiel			
2	Bulk/container	25,150	9/84-85
3	Bulk/container	25,000	84-85
Martin Jansen Schiffswerft, Leer			
1	Chemical tanker	8,000	12/84
1	Dry cargo	3,000	2/85
1	Gas tanker	8,000	6/85
Krogerwerft, Rendsburg			
1	Containership	2,500	9/84
Paul Lindenau Werft, Kiel			
1	Containership	5,650	9/84
Jos. L. Meyer Werft, Papenburg			
2	Pass. ferry	13,700 (gt)	3/85
1	Cruise liner	35,000 (gt)	5/86
Nobiskrug Werft, Rendsburg			
1	Containership	13,850	12/84
1	Container-RO/RO	4,750	8/84
4	Container-RO/RO	7,250	85
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1	Dry cargo	8,000	12/84
2	Containership	12,500	85
Rolandwerft			
2	Multi-purpose	3,150	3/85
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Schlichting Werft, Travemuende			
3	Container-RO/RO	7,200	84
Sietas Schiffswerft, Hamburg			
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2	Containership	12,750	4/85
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Schichau Unterweser, Bremerhaven-Lehe			
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3	Multi-purpose	3,000	85
2	Multi-purpose	13,100	84
1	Rail ferry	—	12/84

GE Engines To Power New Patrol Frigates For Canadian Fleet

Two General Electric LM2500 marine gas turbines will power each of six new City Class Canadian patrol frigates to be built by Saint John Shipbuilding and Dry Dock Co. Ltd. of Saint John, New Brunswick, the prime contractor, and by Versatile Vickers Inc. and Marine Industries, Ltd. of Quebec.

The \$3.8 billion Canadian Patrol Frigate (CPF) project is part of a long-range plan to replace Canada's aging destroyers.

The first six patrol frigates are scheduled for delivery over the next eight years. In addition, there is a possibility that the Canadian Government will eventually procure up to 14 more vessels.

The frigates will incorporate a CODOG(Combined Diesel or Gas Turbine) machinery arrangement,

in which the two LM2500s will be used for main propulsion, and the diesel engine will be employed for cruise requirements.

The 4,200 metric-ton displacement patrol frigates will operate with other Allied ships to keep the North Atlantic sea lanes open and will replace the oldest Canadian naval ships, the St. Laurent Class, which were built in the 1950s.

Boston Shipyard Awarded \$8.5-Million Contract

Boston Shipyard Corporation, East Boston, Mass., is being awarded an \$8,514,425 firm-fixed-price contract for the regular overhaul of USS Connole (FF-1056). The Naval Sea Systems Command, Washington, D.C., is the contracting activity.

Meyer Named Assistant Vice President-River Area Of National Marine Service



Robert W. Meyer

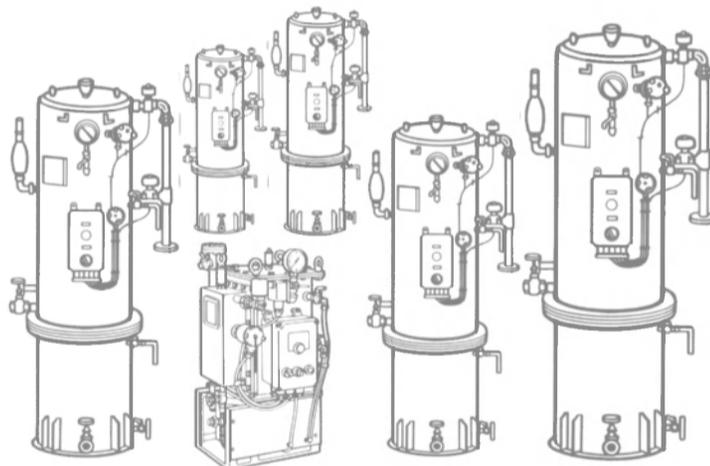
Robert W. Meyer has been promoted to assistant vice president, market operations-river area for the Transportation Division of National Marine Service Incorporated, one of the NICOR basic en-

ergy companies. The announcement was made by NMS president W.A. Creelman.

Mr. Meyer, a graduate of Washington University, received his BS degree in engineering in 1974, his MS in civil engineering in 1976, and his DSc. in transportation engineering in 1978. He joined National Marine in 1978 as a transportation operations analyst, and most recently held the position of coordinator of corporate planning.

In his new position, Mr. Meyer will assist in the management of market operations for the River Area. Additionally, he will be responsible for the management of the Transportation Division's sales program, coordinating the sales efforts of the regional transportation offices. He will remain in the corporate offices in St. Louis, where he reports to R.H. Steinmeyer, vice president.

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New Harbor Navigation System Designed To Increase Operating Revenue And Safety

There is a growing interest throughout the industry lately in a new navigation system, the VIEWNAV™ System which can increase the number of days a vessel is able to operate each year. It also facilitates safe navigation in crowded harbors and waterways, even in conditions of marginal visibility or severe ice. Navigation Sciences of Bethesda, Md., developer of this proprietary, microprocessor-based navigational tool reports, "The VIEWNAV System usually pays for itself in increased operating revenue alone in less than a year."

The VIEWNAV System is enjoying widespread use in a variety of applications. Authorities in Florida are using the System to help State pilots navigate Tampa Bay and to prevent accidents. The U.S. Coast Guard uses it to position and set buoys in both New York and Baltimore harbors. The VIEWNAV System's ability to help prevent collisions and groundings is making navigation safer, easier and more productive for Sonat Tugs of Philadelphia, Staten Island Ferries in New York and countless other vessels around the world. Its rather unique capabilities also give it unusual applications which are now beginning to be explored. For example, Talmadge Brothers, a major oyster fishing company, is using VIEWNAV to locate and manage their underwater inventory; The New York/New Jersey Pilot's Association utilizes a land-based system to monitor New York's harbor anchorages; British Petroleum is installing a system on an oil platform in the North Sea to monitor and control surrounding vessel activity.

VIEWNAV is an interactive computer system which precisely fixes the position of the equipped vessel to an accuracy of 15 feet by correcting variations in Loran. This system includes a comprehensive Electronic Chart with constantly updated NOS information on a large, full-color video screen; ra-

dar images of other ships and waterborne targets surrounding the vessel are superimposed and visible on the same screen and easily seen, even in daylight.

The VIEWNAV System provides a single, integrated display on the ship's bridge of own vessel's position in relation to radar targets and land masses, as well as steering and planning information. Own ship is shown to scale moving on the Electronic Chart, to which waterborne radar images are added. The system can be used in harbors, rivers, and narrow channels in all weather and in all seasons.

Own ship position repeatable accuracy of 15 feet results in a precise display of current position on the Electronic Chart. Radar land images are blocked by the chart, increasing clarity and limiting radar echoes to just waterborne targets.

The VIEWNAV System displays three distinct features: an Electronic Chart that is digitized precisely from a U.S. Government NOS chart; accurately superimposed radar images; and a true motion display with exact positioning of own ship.

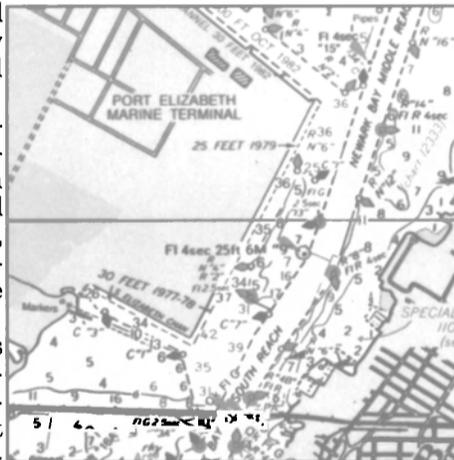
Own ship position and waterborne radar targets are presented against the background of a precise, multi-colored Electronic Chart. Land masses, bridges, breakwaters, and pier faces are clearly identified. Bare shoals are shown in light blue and shoal water is indicated by a darker blue. Channel boundaries are shown as dotted lines on the blue water areas. Buoys are indicated in their natural colors; lights and other aids are also clearly marked.

The VIEWNAV System shows a true motion display on which vessels move while the chart remains stationary. Digitized and stored in the system's computer, the charts are automatically displayed and advanced to successive charts as the trip progresses.

Navigation Sciences has customized Electronic Charts for each

harbor which display the following:

- Depth contour that mark safe operating routes for specific combinations of vessels and tows;
- The actual size of vessel (and tow) drawn to scale on the Electronic Chart;
- Specific routes marked to minimize fuel and time consumption, and to overcome any lack of familiarity in new harbors;



This section of NOS chart 12327 shows the same area as on the VIEWNAV Electronic Chart below. Note how accurately details are reproduced on the Electronic Chart.

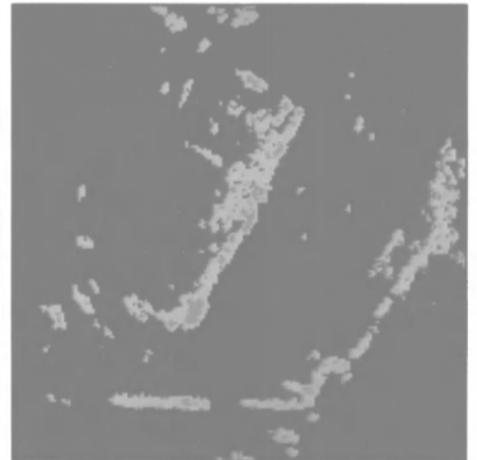
- Additional features, such as Mercator grids, object names, and prominent onshore landmarks can be added.

All of the data relating to the location, presence, status, or characteristics of aids to navigation are continuously maintained by NSI and updated on board the user's vessel as required.

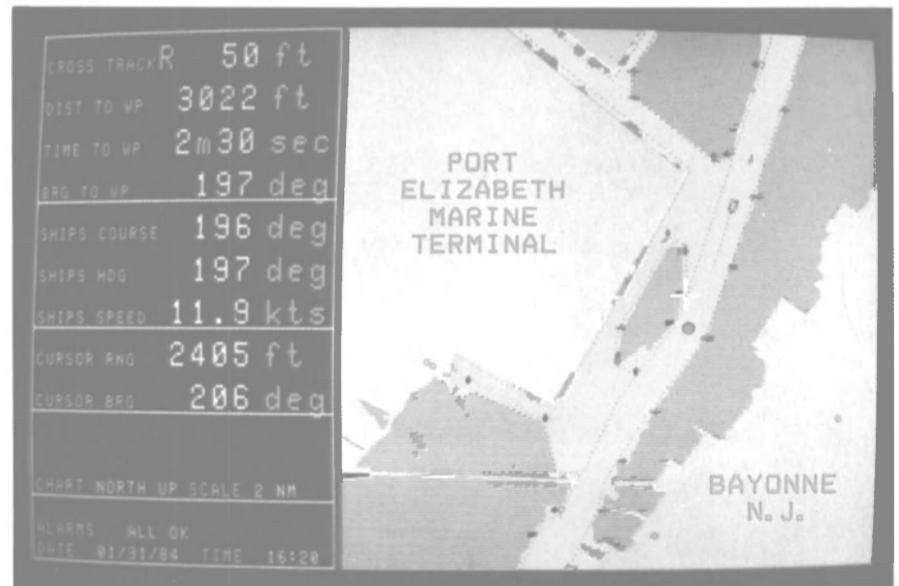
The left hand side of the VIEWNAV display is reserved for alphanumeric navigation data, including, distance, bearing, and time to next waypoint; ship's (gyro) heading; course made good; ship true speed; distance and bearing to a movable cursor which may be positioned over any feature or other vessel on the chart.

For further information and a free color brochure on the VIEWNAV System,

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Radar display alone of the same location. With images from land cluttering the screen and no chart superimposed, the identification of useful information can be difficult.



By combining the electronic charts with radar images, the new system gives operators electronic computer generated charts, precise position fixes and radar targets, all on a single clear display.

Selkirk Metalbestos Promotes Dan Jordan To VP Of Marketing

Selkirk Metalbestos has promoted **Dan Jordan** to the position of vice president of marketing for commercial/industrial operations, according to a recent announcement by company president **Samuel J. McCullough**.

Mr. **Jordan**, who is based in Logan, Ohio, had been Commercial/Industrial Products Director of Marketing since he joined the company in 1983. In his new position, he has responsibilities for Model PS product marketing including boiler stacks and chimneys, engine and turbine exhausts, grease ducts, industrial venting systems and free standing stacks.

According to Mr. **McCullough**, Mr. **Jordan's** promotion reflects the added responsibilities that he has assumed since the company's realignment of sales territories and the shift of a part of the manufacturing capacity from Greensboro, N.C. to Logan, Ohio.

Selkirk Metalbestos currently operates Model PS manufacturing plants in Logan, Ohio, and Nampa, Idaho.

Murdock And Hunt/Leslie Use Computer To Design 'Compliant' TLP Coupling

Murdock Engineering Co., Dallas, Texas, and finite element engineering consultant Hunt/Leslie/Associates have used a computer to design the flexible 'controlled yielding' coupling for the world's first deepwater tension leg oil platform (TLP).

The coupling is the critical connection between the platform hull and anchoring tubular lines that keeps the multimillion-dollar 53,500-ton TLP horizontal in severe North Sea weather.

The primary design requirement was to reduce the bending moment in the mooring system and protect the lines from fatigue. The thin tubular tethering lines replace the traditional rigid platform support structure. The system is designed to operate in all weather and operating conditions.

In addition to minimizing bending moment, the final design had to support non-symmetric loads and allow angular deflection as the buoyant platform shifts with the current to create tension on one side of the coupling and compression on other, as well as vertical tension due to buoyancy.

Using axisymmetric elements in the ANSYS finite element program, Hunt/Leslie decided redesign of the segmented retainer ring—the metal ring that holds

the upper backflange—would be sufficient to meet North Sea application requirements.

The Murdock flexjoint system consists of alternating laminates of metal and rubber which serve as a pressure seal and load-carrying bearing. External loading is supported by controlled compression of the seal elastomer.

The bearing design can carry an axial tension load of almost 7 million pounds in each bearing at an-

gles to 16.6°, control lateral platform motion and prevent heave or vertical motion. In heaviest seas, the coupling will allow lateral platform movement as much as 79 feet from its neutral position.

Murdock and Hunt/Leslie used the ANSYS finite element engineering analysis computer program to evaluate stresses and displacements in the final design of the major metal flexjoint bearing structure. Hunt/Leslie found that

including friction in gap elements between mating surfaces increased stress levels of a factor of 10 percent over frictionless analysis. Using ANSYS's axisymmetric elements, Hunt/Leslie was able to complete the critical final bearing design several months prior to completion of the three-story-high test structure.

For further information,

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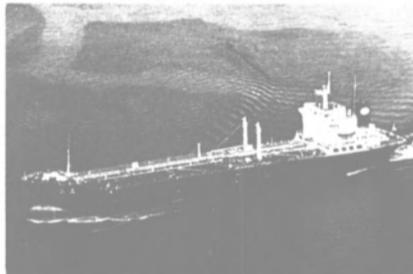
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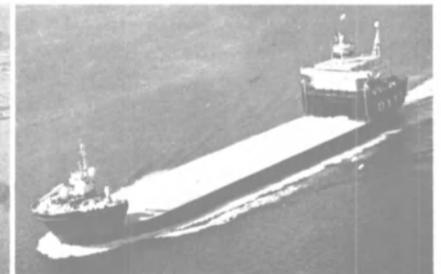
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Samsung Wins \$45-Million Contract To Build Huge Bulker For Australian Firm

Samsung Shipbuilding and Heavy Industries Company of South Korea has signed a final contract to build a large bulk carrier for Broken Hill Proprietary Company of Australia. Under the contract, Samsung will construct a 220,000-dwt coal/ore/bulk carrier

at its Koje shipyard for delivery in March 1986. The value of the contract is \$45 million, which will be paid on a cash basis. This is the second major contract gained by the Korean yard this year.

The mammoth vessel will have an overall length 1,033.5 feet, beam of 180.5 feet, depth of 82 feet, and draft of about 60 feet. Main propulsion will be provided by two Sulzer diesel engines, each with a

maximum continuous rating of 12,400 bhp, driving two controllable-pitch propellers. Service speed will be 14.3 knots.

The State-owned Pohang Iron and Steel Company, Korea's largest steel mill, has agreed to guarantee the Australian owner one million tons of iron ore cargoes annually for three years after delivery of the vessel. The freight rate is said to be \$6.4 per ton.

Sperry Names Keyes VP Marketing-Marine Systems

Dudley H. Keyes has been named vice president of marketing for marine systems by Sperry Corporation.

Mr. Keyes, who had been director of marketing for Sperry's marine systems since 1982, will be responsible for the marketing and servicing of Sperry's military and commercial marine product lines worldwide.

Mr. Keyes joined Sperry in 1949 as a field engineer with what was then the Sperry Gyroscope Co. He held a number of key engineering and marketing positions with the company before becoming director of federal marketing for marine systems in 1971.

He is a graduate of Rensselaer Polytechnic Institute with a bachelor's degree in electrical engineering.

WABCO Fluid Power Adopts Worldwide Sales And Marketing Strategy

American-Standard, Inc. has combined its U.S. and European WABCO Fluid Power operations and has reassigned management responsibilities to strengthen the firm's international fluid power business.

"We're combining the sales, marketing, product planning, engineering and manufacturing for Europe and the U.S. into one operating division," says Art Ticknor, American-Standard vice president and group executive, industrial products. "Dr. Henry Kedzierski, vice president of the group and divisional general manager, heads the restructured WABCO Fluid Power Division."

A new international function, directed by William Howe, vice president-international of the group, is designed to develop worldwide sales and marketing strategies for all WABCO fluid power products. The goal is increased market penetration, especially outside of the U.S., Canada and Western Europe.

WABCO Fluid Power is a major international manufacturer of hydraulic, pneumatic and electro-pneumatic products and systems for the marine, off-highway, mobile, oil field and general industry markets.

American-Standard is a leading producer of braking and control devices for large trucks and buses; railway and mass transit braking and control devices; plumbing, air-conditioning and other building products; bank security systems, and graphic products. The company and its affiliates carry on manufacturing operations in more than 20 countries.

For full information,

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Rose Named Vice President Of Mechanical Equipment's Marine Products Group

Mechanical Equipment Company, Inc. (MECO) of New Orleans has appointed **Charles D. Rose** vice president of its newly formed Marine Products Group. The announcement was made by MECO president **Wil Pergande**.



Charles D. Rose

Mr. Rose formerly held vice president positions with Aqua-Chem and Riley Beard, and brings to MECO a wealth of marine experience in the design and manufacture of desalination plants and heat exchangers.

A 1956 graduate of the U.S. Merchant Marine Academy, Mr. Rose sailed aboard several merchant ships before spending four years in the Navy as an engineering duty officer. Following his Navy duty, he joined Davis Engineering as a marine heat exchanger specialist; that company was purchased by Cleaver Brooks in 1963. Since then he has participated continuously in the advancement of the state of the art of marine desalination and heat transfer.

He is a life member of SNAME, and the author of Chapter 15 in the Society's Marine Engineering textbook, as well as various technical papers. He is also a member of ASNE and MTS, and holds several patents related to evaporation and heat transfer.

MSC Forms New Unit To Oversee Operations Of Fast Sealift Ships

A new organization, the Fast Sealift Ship Readiness Support Squadron, has been established under the Navy's Military Sealift Command, with headquarters at Naval Station Mayport, Fla. The squadron commander is Capt. **Thomas E. Morin**, USN. It will be staffed with two naval officers, three enlisted personnel, and three civilians. They will be responsible for readiness oversight of the first four of the eventual eight Fast Sealift Ships.

Management and operational readiness responsibilities of the squadron will include on-scene direction of ship operations, monitoring of contract operator performance, readiness planning, equipment maintenance inspections, dock and sea trials, shipboard training in port, and hurricane sortie planning and implementation. The staff will also

assist MSC Area Commanders with coordinating loadout and ship operations following activation, coordinate employment in major exercises, and oversee training at sea.

Two of the converted SL-7 containerships will be berthed at the Sealift Terminals in Jacksonville, Fla.; the other two will be berthed at Violet Dock Ports near New Orleans.

Wager Deck Drains Literature Available

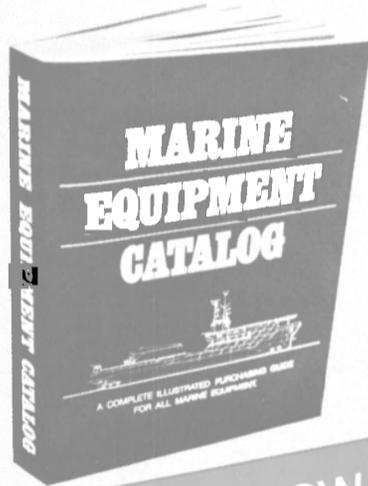
A catalog sheet issued by the Robert H. Wager Co., Inc., details this company's deck drains of galvanized steel with removable bronze strainer plates. These drains are suited to work boats and barges of all sorts, as well as ships and offshore drill rigs. Six deck drain

sizes accommodate 1½ to 6-inch pipe, each size supplied for butt weld, socket weld, or threaded connection. The catalog sheet provides dimensional diagrams and charts, with weights and open area ratios shown for all sizes.

For copies of the Wager Deck Drains catalog sheet,

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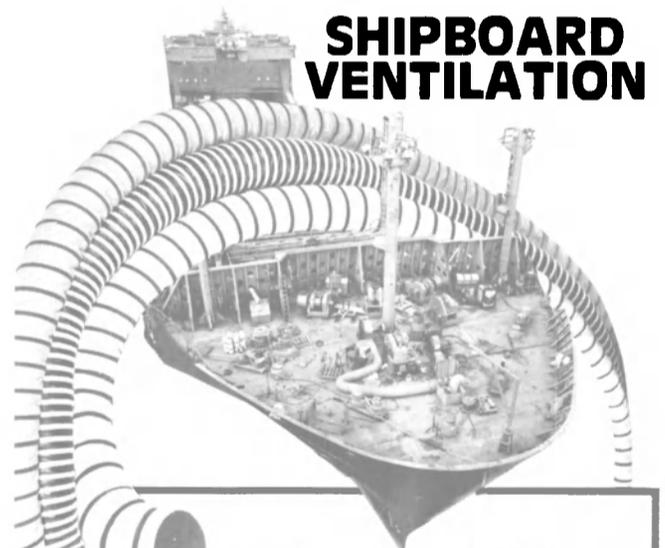
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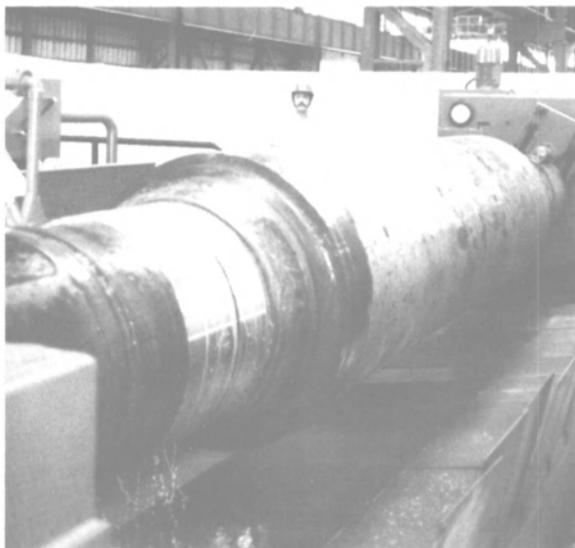
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Heavy Roll Grinder Under Load Test At The NKS Plant In Mexico



The new NKS heavy forging and casting plant in Puerto Lazaro Cardenas, Mexico entered a new phase recently with the testing of various machine tools.

Commercial production continues to be scheduled for the first half of 1985. Trial production of selected types of forgings and castings will commence in early 1985.

In addition to a wide range of heavy castings and forgings for the marine, power, transportation, mining and milling industries, the plant will also specialize in the production of cast and forged steel rolls.

For more information and the company brochure, please address inquiries to Lexington International Trading Co., 551 Fifth Avenue, New York, N.Y. 10176 or NKS Executive Offices at 404 Paseo de la Reforma, 06600 Mexico, D.F.

Sulzer RTA Engines Will Power Two Containerships Building In Germany

Two new classes of handy-sized containerships under construction in the Federal Republic of Germany will be propelled by Sulzer's newest series RTA slow-speed diesel engines. The two orders, both from German owners, indicate the great interest aroused in Germany by the RTA series, which offers outstanding fuel economy without compromising reliability.

The second vessel of Flender Werft's new 1,042-TEU design is to be powered by a Sulzer 6RTA58 engine with a maximum continuous rating of 10,500 bhp at 110 rpm. The 17,000-dwt vessel will have an overall length of 460 feet and a beam of 82 feet.

An RTA engine has also been ordered for the first of the RW49 containership designs from Rickmers Werft in Bremerhaven. With an overall length of 440 feet and beam of 73 feet, this 918-TEU vessel will be powered by a seven-cylinder Sulzer 7RTA48 diesel with an output of 8,970 bhp at 140 rpm, giving a service speed of 18 knots. Shipboard electrical requirements at sea will be met by a main engine-driven generator coupled to the integral PTO gear available on RTA engines. The ship's controllable-pitch propeller will be supplied by Escher Wyss, a member of the Sulzer Group.

Coincidentally, both Rickmers and Sulzer are celebrating their 150th anniversaries this year.

MonArk Delivers Fire Boat To Memphis Fire Department



The Memphis Fire Department had two major requirements when ordering its new fire boat; the craft should be small enough for trailer mounting to give it land mobility but also be large enough to respond to a variety of marine fire problems confronting the department.

The boat has to be available to fight marine fires that occur at the Mud Island Marina on the Mississippi River as well as fires at McKellar Lake.

To achieve this flexibility the boat will be stationed aboard a specially designed trailer. It is easier and faster to reach either location by land rather than the circuitous water route.

The fire department took possession of the new craft recently from MonArk Boat Co. of Monticello, Ark., which manufactured the vessel to the department's specifications.

The boat is powered by twin model 6BT 5.9 Cummins marine diesel engines. A third identical engine will drive the fire pump, they are part of the new Cummins small diesel engine series. All three engines operate at 152 hp at 2,500 rpm. The fuel efficient B-series engines were produced at the Rocky Mountain plant of Consolidated Diesel Corp. in a joint venture with Cummins Engine Co. and J.I. Case Co.

The craft which has attained a speed of 28 miles per hour upstream and 33 mph downstream will be based at the downtown fire department headquarters. It will remain on the trailer at all times except when it is used in responding to fire emergencies on the river or lake.

Penn Ship Provides Emergency Repairs For Two Foreign Ships



Liberian-flag tanker Grand Eagle was one of two ships getting emergency repairs at Penn Ship recently.

Twice in recent weeks Pennsylvania Shipbuilding Company in Chester, Pa., has come to the aid of a foreign-flag vessel stranded in the Delaware River and unable to meet her commitment to load cargo.

In the first instance, the 74,000-dwt Hong Kong-owned, Liberian-flag OBO Mega Bay had sustained extensive damage to her side shell only six days before she was scheduled to load cargo in the Port of Philadelphia. Penn Ship repair crews worked two full shifts for five days to repair and replace the damaged steel structure, allowing the Mega Bay to be on her loading berth on time.

In the second case, the Japanese-owned, Panamanian-flag, 81,000-dwt tanker Grand Eagle had experienced a main engine failure. Penn Ship crews, working closely with personnel from the ship's original builder and the engine manufacturer, disassembled her main engine, removed the damaged 18-ton crankshaft, installed a new one, and re-assembled and tested the engine in only five weeks, returning the ship to service 18 days earlier than had been planned.

Commenting on these two successful jobs, Penn Ship director of ship repair **John Adams** said: "Owners and agents of ships calling in the Delaware and, indeed, all North Atlantic ports, know that here in Chester is a full-service shipyard that can swing into action and undertake quickly and efficiently any sort of repair job. Our reputation is spreading, and more and more ships are turning to Penn Ship for help."

Smith Berger Marine Names Two East Coast Distributors — Literature Available

Smith Berger Marine, Inc., Seattle-based manufacturer and distributor of marine hardware and seafood processing machinery, has appointed two major U.S. East Coast marine equipment distributors, according to company president **James L. Montgomery**.

Maritime Equipment, Inc., with headquarters in Flemington, N.J., will serve the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Pennsylvania, Delaware, Maryland, and Virginia, as well as the District of Columbia.

Southeastern distributor will be M.D. Moody & Sons, with offices in Jacksonville, Tampa, and Fort Lauderdale, serving the states of Florida, Georgia, South Carolina, and North Carolina.

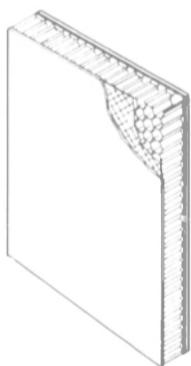
Smith Berger Marine specializes in the design and manufacture of fairleaders and shipboard systems for all types of vessels, anchoring systems for drilling rigs and barges, and towing hardware for towboats. SBM products are available throughout the world.

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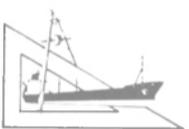
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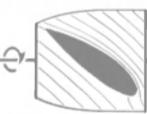
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Sperry Opens New Facility In Panama City Beach, Fla.

Sperry Corporation, Great Neck, N.Y., has formally opened a new facility in Panama City Beach, Fla., to manage combat system integration support work for the U.S. Navy's mine countermeasures ships.

The facility was built to house the work on the three-year, \$6.8-million contract awarded to Sperry in February 1983 by the U.S. Naval Coastal Systems Center.

The newly built 3,000-square-foot building at 724 Thomas Drive will initially employ about 25 engineers, and can easily be expanded to support a larger work force if necessary.

"It is essential for us to establish a facility in the Panama City area to perform this contract efficiently. In addition, the capability provided to the Navy by this office can support future customer needs," said Joseph Levine, manager of ship systems for Sperry.

Sperry has a number of current programs supported by the Naval Coastal Systems Center, including the landing craft air cushion (LCAC) and the large scale vehicle projects. The new facility is also expected to be used to support new programs required by Naval Coastal Systems Center.

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AMPS Appointed As Service Facility For MaK Diesels

A contract was signed recently between Krupp MaK Diesel, Inc. and Automated Marine Propulsion Systems, Inc. of La Porte, Texas, making AMPS an authorized service facility for MaK—the world's largest manufacturer of medium-speed diesel engines capable of operating on heavy fuels.

MaK is based in Kiel, Germany, with distributors and service facilities worldwide. AMPS will expand the MaK service network into the Gulf Area. A MaK service engineer will be permanently stationed at the AMPS workshop in La Porte to work with the company's service engineers in insuring that AMPS customers will receive the finest tech-

nical service available for their marine diesel Engines.

In addition to the MaK contract, AMPS has also been authorized to represent Monark Diesel, a manufacturer of marine diesel injection equipment and electronic/electric parts for a long line of engine builders.

These two companies join a growing list of organizations that AMPS represents in the marine field, including BBC Brown Boveri turbochargers, KHD Deutz water-cooled diesel engines (sales and service); Autronica, Terasake, and Noris Instruments—manufacturers of highly advanced control systems for marine engines.

For a brochure and more information,

Circle 21 on Reader Service Card

main reasons that led to the Norwegian company's decision.

Including these three ships, HHI has signed contracts to build 15 vessels totaling 1,517,400 dwt since January this year.

Big Towing/Supply Vessel Launched At Moss Point Marine



Moss Point Marine, Inc. of Escatawpa, Miss., recently launched a big towing/supply vessel for Intermarine of Houston. The vessel has an overall length of 218 feet, beam of 40 feet, and depth of 14 feet. It was named the Big Orange XXI.

"Intermarine needed a specialized vessel, so we 'stretched' our standard tug/supply boat design to meet its needs," said **John Dane III**, president of Moss Point.

Propulsion will be provided by twin GM Electro-Motive Diesel 12-645CE2 engines with a total output of 3,000 bhp at 900 rpm. These will drive Coolidge stainless steel propellers mounted in Kort nozzles via Falk 2.98:1 reduction gears. The main engines were supplied by George Engine Company. The propulsion package will also include a 600-hp Schottel bow thruster. The steering system is by E.M.I.

Electrical power will be supplied by a 125-kw Delco generator driven by a GM Detroit Diesel 8V71N engine. Electronics include a Furuno radar and Sperry autopilot. The Carrier air conditioning and heating systems were supplied by Marine Refrigeration. Kahlenberg supplied the air horns, Carlisle & Finch the searchlights, and Hubbell the running & navigation lights. Lifesaving gear is by Switlik and Zodiac. Accommodations will be provided for a 20-man crew.

Big Orange XXI has a clear deck area 146 feet long and 31 feet wide (4,526 square feet), and the following capacities: drill water, 228,700 gallons; liquid mud tanks, 1,352 barrels; bulk mud tanks, 11,824 cubic feet; fresh water tanks, 10,100 gallons; and fuel oil, 64,740 gallons. Equipped with a stern roller and double-drum winch, the vessel will be able to handle light towing and anchor-running duties.

Recent deliveries by Moss Point Marine include a 97-foot triple-screw tug and an 82-foot twin-screw line launch vessel for Nicor Marine of New Orleans, and a major repair project for Gulf Fleet Marine of New Orleans.

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Circle 158 on Reader Service Card

Halifax Shipyard Completes Major Damage Repair Contract



Damage sustained by the Ho Ming 3 included 50 feet of shell plating that required renewal by Halifax yard.

Halifax Shipyard in Nova Scotia, Canada, recently completed on schedule a major, six-week damage contract following the collision of two vessels off Cape Breton.

The ships involved were the 11,301-dwt cargo vessel Ho Ming 3, owned by Dowa Line Limited of Tokyo, which was carrying cattle feed en route to Ireland, and the 21,106-dwt bulk carrier Carona Astrale, owned by Sidemar di Navagazione S.p.A. of Italy, which was carrying steel destined for Toronto.

The Ho Ming 3 sustained a hole in her starboard side and was taking on water causing the vessel to list. She sailed to Halifax under her own power but was assisted by a tug. The Carona Astrale suffered only minor damage to her bow and was able to continue to her destination.

Steel repairs carried out to the Ho Ming 3 by Halifax Industries involved three major areas—65 feet of main deck plating, 50 feet of shell damage renewals, and 45 feet of renewals to the bottom tank.

Hyundai Wins Contracts For Two Big OBO Ships And One Bulk Carrier

Hyundai Heavy Industries Co., Ltd. in South Korea recently signed contracts for two large ore bulk oil (OBO) carriers and a bulk carrier for a Hong Kong and Norwegian shipowner, respectively.

Chung Tak Shipping Co., Ltd. in Hong Kong has ordered two 150,000-dwt OBOs, with delivery scheduled for January and March of 1986. The 885-foot ships will be powered by a Hyundai Sulzer 6RTA 76 main diesel engine with a maximum output of 17,480 bhp.

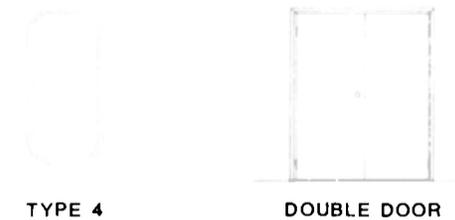
Hyundai will build a 140,000-dwt bulk carrier for K S Mosvold Shipping A/S of Kristiansand, Norway, for delivery in October 1985. The Korean yard won this contract against competition from shipyards worldwide. Hyundai's early delivery schedule was one of the

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Hyundai Gets \$130-Million Order To Build Ten Ships For Piraeus-Based Owner

Hyundai Heavy Industries Co., Ltd. of South Korea has been awarded a contract by Efploia Shipping Company S.A. of Piraeus, Greece for construction of five handy-sized vessels of about 30,000 dwt and five Panamax bulk carriers. The ships are scheduled for delivery at a rate of one every six weeks beginning in March or April 1986.

Surgenor Resigns As President Of Nickum & Spaulding Associates

Nickum & Spaulding Associates, Inc. of Seattle has announced the resignation of **Donald M. Surgenor** as president of the firm. He will return to private consulting and diversification ventures, an area he spearheaded for the Seattle naval architects and marine engineers. He will continue to concentrate his efforts on marketing thrusts to assist the company in improving its work volume in a time of declining available maritime work.

George C. Nickum will assume the duties of president until a replacement is selected. **Stanley C. Stumbo** has been named vice president & general manager, and **Edward C. Hagemann** has been appointed vice president-engineering.

Serck Evaporators Installed In USSR Fish Factory Ships — Literature Available

Serck GmbH of Hamburg, West Germany, recently supplied four seawater evaporators that have been installed aboard the Soviet fish factory vessels Vladivostok and Dalnyvostok. These ships were built about 20 years ago as whalers by Howaldtswerke-Deutsche Werft in Kiel, and have now been converted by Keppel Shipyard in Singapore into what are said to be the world's largest fish factory vessels.

The conversions required a supply of an additional 480 tons per day of process and drinking water per ship. An economical solution was presented by Serck using two type RX design evaporators for each ship, each with three stages. The vapor produced in the first stage serves as heating medium for the second stage, and that produced in the second stage is the heating medium for the third stage. With this method, one kilogram of heating steam produces approximately 2.5 kilograms of fresh water.

A separate purification unit disinfects and hardens the amount of water required daily for drinking in order to make it suitable for human consumption; however, the largest part of the water produced is used as process water. When the units were first put into operation in Singapore, an output of approximately 110 percent was reached at a seawater temperature of 32 C.

For further information and free literature on Serck evaporators,

Circle 25 on Reader Service Card

Aeroquip Offers 225-Page Hose And Fittings Catalog

Complete product information on Aeroquip hose, fitting, coupling and adapter styles that are particularly suited for marine applications is now available in Aeroquip Catalog 305B Marine Hose and Fittings.

Included in the catalog's 225 pages is an Aeroquip hose system selector chart—a quick, easy reference to 22 Aeroquip hose styles

recommended for various ship-board systems, including water, oil and fuels. Also contained in the catalog is a handy chart indicating the compatibility of Aeroquip hoses with 195 fluids.

In addition, assembly instructions, hose accessories, assembly equipment and engineering data are covered in this comprehensive catalog.

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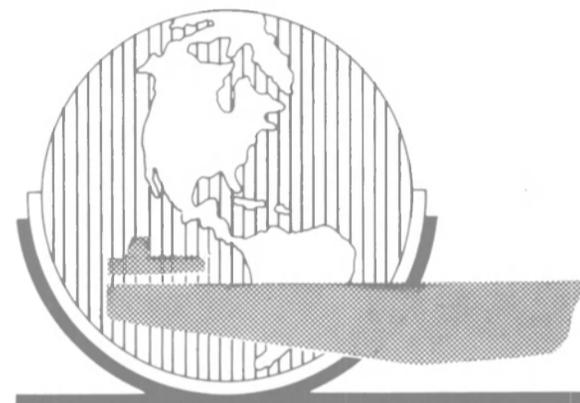
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Drillship 'Danwood Ice' Overhauled at HUD



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USS Seamless Pressure Vessels Detailed In New Catalog

United States Steel Corporation (USS) is making available a new catalog on pressure vessels made by their Christy Park Plant in McKeesport, Pa. USS seamless pressure vessels offer an excellent solution to handling, transportation, and storage of highly pressurized gases, and the Christy Park Plant has been making them since before the turn of the century.

Experience and quality workmanship have earned the company a reputation for being unsurpassed in designing the right bottle for any pressure, temperature or gas to meet specific needs and applications such as aerospace, chemical processing, construction, food production, fire protection, industrial controls, medicine, nuclear power generating systems, oil and gas exploration and production, rescue equipment, transportation, shipbuilding, and undersea exploration.

USS Christy Park Plant pressure vessels fulfill requirements of the American Society of Mechanical Engineers pressure vessel code, Department of Transportation regulations, and numerous government specifications.

For more information on USS seamless pressure vessels,

Circle 20 on Reader Service Card

ASRY Completes \$3-Million Overhaul Of Mobile Offshore Jackup Drilling Rig Dana



ASRY (Arab Shipbuilding and Repair Yard Company) in Bahrain recently completed, at a cost in excess of \$3 million, an extensive overhaul of the mobile offshore rig Dana, owned by Qatar General Petroleum Company. The rig, a jackup Marathon LeTourneau design built in Singapore, is capable of drilling to 20,000 feet in 250 feet of water.

Work on the rig included overhaul of blow-out preventer equipment, jacking unit, and substantial piping renewal, as well as attention to drilling mud pumps, lines, and valves, and the cement unit. Other items included the

deck cranes, thrusters, rotary drilling table and draw works and console, driller console, and hydraulic power unit.

Though this is the largest work specification so far undertaken for the offshore industry, ASRY is no stranger to such work, having previously repaired the drilling rigs Scan Bay and J.W. McLean, as well as the drillship Williamsburg, and numerous drilling, derrick, pipelay, and offshore construction barges for owners that included Brown & Root, McDermott, ETPM, and Saipem.

ASRY anticipates that the Dana will be the forerunner to other major rig overhauls from the large number of offshore drilling rigs located in the Arabian Gulf, which remains an important center for offshore exploration.



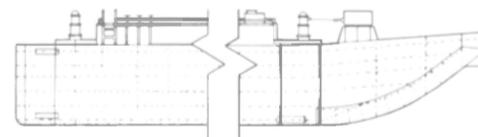
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Todd Awarded \$10-Million In Contracts By Australia For Technology Transfer

Todd Shipyards Corporation has announced it has been awarded two contracts by the Australian government, with initial value of more than \$10 million, for technology transfer and procurement support involving guided missile frigate construction at the Australian Naval Dockyard in Melbourne. The contracting authority was the Assistant Secretary, Major Contracts Branch, Department of Defence Support in Canberra. Both contracts will run for 4 years, with options to extend for an additional 2½ years.

Under one of the contracts Todd's Seattle and Los Angeles Divisions will train Australian workers and administrative personnel in the specialized construction, opera-

tion, and test methods that Todd has developed in the past 25 years for U.S. Navy combatant construction. Training will focus on construction of Oliver Hazard Perry (FFG-7) Class guided missile frigates, of which 30 have been awarded to Todd's Los Angeles and Seattle Divisions, including four built for and delivered to the Royal Australian Navy. Australian personnel will visit both facilities for first-hand exposure to the FFG construction process, and Todd personnel will provide on-site guidance in critical program phases when FFG construction begins later in Australia.

Under the second contract, the Seattle Division will act as the procurement center for all U.S.-sourced material for the Australian-built ships. Under an earlier contract, a Todd team identified those materials and equipment that could be acquired in Australia.

FOR MORE INFORMATION ON EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

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Stal Refrigeration AB, Butangsgatan 16, S 601 87 Norrköping, Sweden
United Technologies Carrier Transcold, P.O. Box 4805, Syracuse, NY 13221
Unitemp Inc., 3590 Kennedy Rd., So. Plainfield, NJ 07080
York Division, Borg-Warner Corp., P.O. Box 1592, York, PA 17405

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Neplunia, Via Giovanni da Verrazzano, 12, 16165 Genova, Italy

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The Platt Bros. & Co., Box 1030, Waterbury, CT 06721

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Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
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Complete Abrasive Blasting Systems, 18250 68th Avenue South, Kent, WA 98031
E.I. DuPont de Nemours & Co., Inc., Starblast Division, Room X39186, Wilmington, DE 19898
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Schmidt Mfg. Inc., P.O. Box 37, Fresno, TX 77545

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Marine Moisture Control Co., 60 Inip Dr., Inwood, N.Y. 11696
MacGregor-Navire International, Box 8991, S-402 74 Göteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203
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Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Gulf International Divers, P.O. Box 1342, Gretna (New Orleans), LA 70052
Pacific Marine Services, TLX: 664540 seavoy, Long Beach, CA 90802
Performance Hull Cleaning Services, Inc., P.O. Box 655, New Orleans, LA 70059-0655

Petrochemical Services, Inc., 3820 Dauphine St., New Orleans, LA 70117
Phosmarine Equipment, 21 Bd. de Paris, 13002, Marseille, France
Seaward Marine Services, Inc., 6269 Leesburg Pike, Falls Church, VA 22044
Stork Services B.V., P.O. Box 2013, 7750 CA Hengelo, Holland
Taylor Diving & Salvage Co. Inc., 701 Engineers Rd., Belle Chasse, LA 70037

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Del Gavia Marine Hydraulics Inc., 207 W. Central Ave., Maywood, NJ 07067

HRS, Inc., 3334 Victor Court, Santa Clara, CA 95050
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Washington Chain & Supply, Inc., P.O. Box 3646, Seattle, WA 98124

INERT GAS—Generators—Systems

Comar Corp., 186 Prescott St., Worcester, MA 01605
Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039
Maritime Protection A/S, N. American Agents, American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Salwico Inc., 5 Marine View Plaza, Hoboken, NJ 07030

INSULATION—Cloth, Fiberglass

Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Superior Energies, Inc., P.O. Drawer 386, Groves, TX 77619
Waco Inc., 5450 Lewis Rd., P.O. Box 836, Sandston, VA 23150-0836

INSURANCE

Adams & Porter, 510 Bering Dr., Houston, TX 77057-1408
Adams & Porter, 1 World Trade Center, Suite 8433, New York, N.Y. 10048
Assurance Foreningen Skuld, P.O. Box 1376 Vika, Stortingagaten 18, N-OSLO 1, Norway
R.A. Fulton & Company Insurance Services, 100 California St., San Francisco, CA 94111
MGA International, 419 Park Avenue South, New York, NY 10016
Midland Insurance Co., 160 Water St., New York, N.Y. 10038
United States P&I Agency, Inc., 80 Maiden Lane, New York, NY 10038

JOINER—Watertight Doors—Paneling

Advanced Structures Corp., 235 W. Industry Ct., Deer Park, NY 11729
Bailey Distributors, Inc., 74 Sullivan St., Brooklyn, NY 11231
Isolamin Panels, c/o Consafe, Inc., P.O. Box 40339, Houston, TX 77040
Masonite Commercial Division, Dover, OH 44622
Megadoor Inc., 441 Lexington Ave., Suite 903, New York, NY 10017
Simpson Timber Company, Third & Franklin, Sheton, WA 98584
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

KEEL COOLERS

R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

ACR Electronics, Inc., P.O. Box 2148, Hollywood, FL 33022
Keuffel & Esser/Kratos, 20 Whippany Rd., Morristown, NJ 07960
Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039
Oceanic Electrical Mfg. Co., 157 Perry St., New York, NY 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Phoenix Products Company, Inc., 4769 North 27th Street, Milwaukee, WI 53209

Port Electric Supply Corp., 248-264 Third St., Elizabeth, NJ 07206-0434
SSAC Inc., P.O. Box 395, Liverpool, NY 13088

LINE BLINDS

Stacey/Fetterolf Corp., P.O. Box 103, Skippack, PA 19474

MACHINE TOOLS

Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING

A-C Brake Co., 308 E. College St., Louisville, KY
AMT Inc., 2400 N.W. 39th Ave., Miami, FL 33142
Amermarine USA Inc., P.O. Box 9205, Baltimore, MD 21222
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94080
Essex Machine Works, Essex, CT 06426
Gollen Marine Co., Inc., 60 Van Brunt St., Brooklyn, NY 11231
Jered Brown Brothers Inc., 1300 Coolidge, P.O. Box 2006, Troy, MI 48007-2006
Rosan, Inc., 2901 West Coast Hwy., Newport Beach, CA 92663
Scotchman Industries, Inc., P.O. Box 850, Philip, SD 57567-0850

METALS

Bayou Steel Corp., P.O. Box 5000, Laplace, LA 70068
Inland Steel Company, 30 West Monroe Street, Chicago, IL 60603
International Grating, Inc., 7625 Parkhurst, Houston, TX 77028

MOORING SYSTEMS

Murdock Machine & Engineering Company of Texas, P.O. Box 2278, Irving, TX 75061
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

NAME PLATES—BRONZE—ALUMINUM

BUYERS DIRECTORY

(continued)

Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
Art Anderson Associates, 148 First St., Bremerton, WA 98310
B.C. Research, 3650 Westbrook Mall, Vancouver, B.C., Canada V6S 2L2
Del Breit Inc., 326 Pinyon Place (Suite 201), New Orleans, LA 70130
Breitane ACB Corp., 344 Camp St., Suite 1000, New Orleans, LA 70130
Carl G. Brimmekamp & Co., Inc., 102 Hamilton Ave., Stamford, CT 06902
C.A.C.I., Inc., 1815 No. Fort Myer Dr., Arlington, VA 22209
C.D.I. Marine Co., 5520 Los Santos Way, Suite 600, Jacksonville, FL 32211
C.T. Marine, 18 Church Street, Georgetown, CT 06829
Phillips Carner & Co., Inc., 203 So. Union St., Alexandria, VA 22314
Century Engineering, Inc., 32 West Rd., Towson, MD 21204
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 1725 Jefferson Davis Highway, Suite 700, Arlington, VA 22202
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Encon Management & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706
Fleetweather Ocean Services, Inc., Rd. # 2, Box 260, Hopewell Junction, NY 12533
Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, N.Y. 11050
GEOD Corporation, 73 Oak Ridge Road, NJ 07438
Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401
Gibbs & Cox, Inc., 119 West 31st Street, New York, NY 10001
John W. Gilbert Associates, Inc., 66 Long Wharf, Boston, MA 02110
The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hamilton Cornell Associates, Box 188, Snug Harbor Station, Duxbury, MA 02331
J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
Hi-Test Laboratories, Inc., P.O. Box 226, Buckingham C.H., VA 23921
Hoffman Maritime Consultants Inc., P.O. Box 186, Glen Head, NY 11545
HydroComp, Inc., 10 Cuts Road, P.O. Box 865, Durham, NH 03824
Inframarine, Inc., P.O. Box 53043, Jacksonville, FL 32201
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
Capt. Ernest James, 2849 Beavercrest Dr., Lorain, OH 44053
Janzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
J.L. Konopasek & Associates, 3523 Scrimshaw Dr., Jacksonville, FL 32217
James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
MacLear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036
Fendall Marbury, 1933 Lincoln Drive, Annapolis, MD 21401
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Power Associates, 4475 Mission Blvd., Suite 235, San Diego, CA 92109
Marine Technical Associates, Inc., 95 River Rd., Hoboken, NJ 07030
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
R. Carter Morrell, 715 S. Cherokee, Bartlesville, OK 74003
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169
New England Engineering & Marine Services, Rt. 2, Box 50, York, ME 03909
Nickum & Spaulding Associates, Inc., 2701 First Ave., Seattle, WA 98121
Northern Marine, P.O. Box 1169, Traverse City, MI 49685
Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 1380 S.W. 57th Avenue, Fort Lauderdale, FL 33317
Precision Systems Engineering, 824B Eastgate Dr., Mt. Laurel, NJ 08054
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105
Schmah and Schmah, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316
SEACOR Systems Engineering Associates Corp., 19 Perina Blvd., Cherry Hill, NJ 08003 (Publications Division at Cherry Hill location)
STV/Sanders & Thomas, Inc., 1745 Jefferson Davis Hwy., Arlington, VA 22202
Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
Seaworthy Engine Systems, 17 Battery Place, New York, NY 10004
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
Simmons Associates, P.O. Box 760, Sarasota, FL 33578
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
J.F. Stroschein Associates, 666 Old Country Rd., Garden City, NY 11530
Richard R. Taubler, Inc., 610 Carriage Ln., Dover, DE 19901
Timsco, 622 Azalea Road, Mobile, AL 36609
Tracor Hydraulics, Inc., 7210 Pindell School Rd., Laurel, MD 20707
Uhlig & Associates, Inc., 8295 SW 188th St., Miami, FL 33157
Vevey Engineering Works Ltd., 41800 Vevey, Switzerland, U.S. Rep: Carl G. Brimmekamp & Co., Inc., 102 Hamilton Ave., Stamford, CT 06902
Thomas B. Wilson, Associates, 1258 North Avalon Blvd., Wilmington, CA 90744
Yacht Design Institute, 9 Main St., Blue Hill, ME 04614
NAVIGATION & COMMUNICATIONS EQUIPMENT
American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526
Anschutz & Co. GmbH, Postfach 6040, D-2300 Kiel 14, West Germany
Atkinson Dynamics, Section 6, 10 West Orange Ave., South San Francisco, CA 94080
CMC Communications Inc., 5479 Jetport Industrial Blvd., Tampa, FL 33614
COMSAT World Systems, 950 L'Enfant Plaza, S.W., Suite 6151 Washington, D.C. 20024
Cybernet International, Inc., 7 Powder Horn Dr., Warren, NJ 07060
A/S Elektrisk Bureau, P.O. Box 98, N-1360 Nesbru, Norway
Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO Marine, 550 Wholesalers Parkway, Harahan, LA 70123
Fleet Marine, 1820 N.E. 146th Street, North Miami, FL 33181
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Harris Communications (RF Communications), 1680 University Avenue, Rochester, NY 14610
Henschel Corp., 9 Hoyt Drive, Newburyport, MA 01950
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
Japan Radio Co., Ltd., Akasaka Twin Tower (Main), 17-22 Akasaka 2-chome, Minato-ku, Tokyo 107, Japan
King Radio Corporation, 400 North Rodgers Rd., Olathe, KS 66062
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Kongsberg Vapenfabrik, Norcontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Allos-Elektronik, 1453 Pinewood St., Rahway, NJ 07065

Lorain Electronics Corp., 2307 Leavitt Rd., Lorain, OH 44052
Magnavox Navigation Systems, 2829 Maricopa Street, Torrance, CA 90503
Magnum Distributors Inc., 1000 S. Dixie Hwy. #3, Pompano Beach, FL 33060
Nav-Com, Inc., 9 Brandywine Drive, Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
Perko Inc. (Lights), P.O. Box 6400D, Miami, FL 33164
Racal-Decca Marine, Inc., 4200 23rd Avenue West, Seattle, WA 98199
Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
Radio-Holland USA, Inc., 6033 South Loop East, Houston, TX 77033
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roessler Rd., Glen Burnie, MD 21061
Rivertronics, P.O. Box 247, Godfrey, IL 62035
Robertson Auto Pilot, 400 Oser Ave., Hauppauge, NY 11738
Selesmar S.p.A., Casella Postale 9, 50020 Montagnana Val Di Peso, Firenze, Italy
Servo Corporation of America, 111 New South Road, Hicksville, NY 11802
Simrad, Inc., 2208 N.W. Market St., Suite 600, Seattle, WA 98107
Sperry Corporation, Great Neck, NY 11020
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Texas Instruments, Inc., P.O. Box 405, 3438, Lewisville, TX 75067
OILS—Marine—Additives
Exxon Company, U.S.A., Room 2323 AH, P.O. Box 2180, Houston Tx 77001
Gulf Oil Company—U.S. (Domestic Office), 909 Fannin Street, Houston, TX 77001
Gulf Oil, New York District Sales Office (Domestic), 433 Hackensack Avenue, Hackensack, NJ 07601
Gulf Oil Trading Co., 535 Madison Ave., New York, NY 10022
Mobil Oil Corp., 150 East 42 Street, New York, NY 10017
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017
OIL/WATER SEPARATORS
Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Biospherics Incorporated, 5001 Forbes Blvd., Lanham, MD 20801
Butterworth Inc. (USA), 3721 Lopus Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647
Dahl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307
Hyde Products, Inc. 810 Sharon Dr., Westlake, OH 44148
Microphor, Inc., P.O. Box 490, Willis, CA 95490
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
National Fluid Separators, Inc., 1239 Hanley Industrial Court, St. Louis, MO 63144
PACE Maine Systems, Div. of St. Louis Ship, 611 E. Marceau St., St. Louis, MO 63111
Phoenix Oil Refiner Co., Inc., 330 Hill Ave., Nashville, TN 37210
PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
Argo Marine, 140 Franklin St., New York, NY 10013
Bareco, 6910 East 14th St., Tulsa, OK 74112
A.W. Chesterton Co., Middlesex Industrial Park, Rt. 93, Stoneham, MA 02180
Chugoku Marine Paints (U.S.A.) Inc., 1290 Ave. of Americas, New York, NY 10104
CLEMCO, P.O. Box 7680, San Francisco, CA 94120
"CONSOL" manufactured by Contact Paint & Chemical Co. Inc., 200 S. Franklinton Rd., Baltimore, MD 21223
Dampney Company, Inc., 85 Paris St., Everett, MA 02149
Devoe Marine Coatings Co., P.O. Box 7600, Louisville, KY 40207
Drew Ameroid Marine, One Drew Chemical Plaza, Boonton, NJ 07005
E.I. Dupont De Nemours & Co., Inc., Nemours Bldg. Rm. N-2504-2, Wilmington, DE 19898
Esgard, Box 2698, Lafayette, LA 70502
Eureka Chemical Company, 234 Lawrence Avenue, So. San Francisco, CA 94080
Glidden Coatings & Resins, Architectural & Maintenance, 925 Euclid Ave., Cleveland, OH 44115
Grow Group, Inc., 200 Park Ave., New York, NY 10017
Hempel Marine Paints, Inc., Foal of Currie Ave., Wallington, NJ 07057, 2425 Fountainview, Suite 340, Houston, TX 77057, P.O. Box 10265, New Orleans, LA 70181
International Paint Company, Inc., 2270 Morris Avenue, Union, NJ 07083
Jaegle Paint Co., Inc., 1912 Darby Rd., Haverstown, PA 19083
Jolon Marine Coatings Inc., 840 Key Hwy., Baltimore, MD 21230
Magnus Maritec International Inc., 150 Roosevelt Pl., P.O. Box 150, Palisades Park, NY 07650
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Pile-Gard* Manufactured by Osmose-Marine Div., P.O. Drawer 0, Griffin, GA 30224
Products Research & Chemical Corp., 5454 San Fernando Rd., Glendale, CA 91203
Seaguard, 4030 Seaguard Ave., Portsmouth, VA 23705
Selby, Battersby & Company, 5220 Whiteby Avenue, Philadelphia, PA 19143
Sermatech International, 4401 Sermetel Dr., Moss Point, MS 39563
PETROLEUM SUPPLIES
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
PIER REPAIRS
Aquatic Marine Systems, Inc., P.O. Box 326, Williamsville, NY 14221
PIPE-HOSE—Cargo Transfer, Clamps, Couplings, Coatings
Amermarine International, P.O. Box 9205 Dundalk, MD 21222
Cajon Company, 9760 Shepard Rd., Macedonia, OH 44056
Camlock Flange Sales Corp., 60 Inip Dr., Inwood, NY 11696
Crawford Fitting Company, 29500 Solon Rd., Solon, OH 44139
Hydro-Craft, Inc., 1821 Rochester Industrial Dr., Rochester, MI 48063
Knights Piping Inc., 5309 Industrial Rd., Pascagoula, MS 39567
Metropolitan Plumbing Supply Corp., 5000 Second St., Long Island City, NY 11101
Penco Div./Hudson Engineering Co., One World Trade Center, Suite 3000, New York, NY 10048
Selkirk Metalbestos, Box 19000, Greensboro, NC 27419
Stauff Corporation, 21-31 Industrial Park, Waldwick, NJ 07463
Tioga Pipe Supply Co. Inc., 2450 Wheatstheaf LA., P.O. Box 5997, Philadelphia, PA 19137
PLASTICS—Marine Applications
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
American Lahmann Corp., 1415 Chestnut Ave., Hillside, NJ 07205
Aquamaster, 4125 9th Ave., Seattle, WA 98107
Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bergen Diesel Inc., 2110 1-10 Service Rd., Kenner, LA 70062
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Bombardier, 1051 Dickson, Montreal, Quebec, Canada H1N 2H7
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Capitol Gears, 349 N. Hamline Ave., St. Paul, Mn. 55104
Caterpillar Engine Division, 100 N.E. Adams, Peoria, IL 61629
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
Colt Industries Inc. (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511
Columbian Bronze Corporation, 216 No. Main Street, Freeport, NY 11520
Combustion Engineering, Inc., Windsor, Connecticut 06095
Daihatsu Diesel (USA) Inc., 180 Adams Ave., Hauppauge, NY 11788
Deutz Corp., 7585 Ponce de Leon Circle, Atlanta, GA 30340
Diesel Marine International, Ltd., c/o NORSHIPCO, P.O. Box 2100, Norfolk, VA 23501
Elliott Company, 1809 Sheridan Ave., Springfield, OH 45505
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
General Motors, Electro-Motive Division, LaGrange, IL 60525

George Engine Company, Inc., Lafayette, LA
Gollen Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
Harbormaster, 36 Hancock St., Quincy, MA 02171
Isotta Fraschini S.p.A., c/o Italian Aerospace Industries (U.S.A.), Inc., 1235 Jefferson Davis Hwy., Suite 500, Arlington, VA 22202
KHD Canada Inc., 180 Rue de Normandie, Boucherville, Quebec J4B 5S7 Canada
KaMeWa, P.O. Box 1010, S-68101, Kristinehamn, Sweden
KaMeWa, 1800 West Loop So., Suite 1620, Houston, TX 77027
Krupp Mak Diesels, Inc., 4329-33 Di Paolo Center, Glenview, IL 60025
Lips Propellers, 3617 Koppens Way, Chesapeake, VA 23323
Lufkin Industries, Inc., P.O. Box 749, Lufkin, TX 75901
M.A.N.-B&W Diesel, 2, Ostervej, DK-4960 Høleby, Denmark
MTU of North America, One E. Pulnam Ave., Greenwich, CT 06830; 10450 Corporate Dr., Sugarland, TX 77478; 2945 Railroad Ave., Morgan City, LA 70203; 180 Nickerson St., Seattle, WA 98109; 1730 Lynn St., Arlington, VA 22209
MWM-Murphy Diesel, 12 Greenway Plaza, Suite 1100, Houston, TX 77046
Mopeco Products, Inc., 20 Vesey St., New York, NY 10007
Maritime Industries Ltd., 6307 Laurel St. Burnaby, B.C., Canada V5B3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
National Marine Service Louisiana, Inc., 222 Bayou Rd., Belle Chasse, LA 70037
Omnithruster Inc., 9515 Sorensen Ave., Santa Fe Springs, CA 90670
Penske GM Power, Inc., 600 Parsippany Road, Parsippany, NJ 07054
Inland Water Propulsion Systems, Inc., 580 Walnut St., Cincinnati, OH 45201
Propulsion Systems, Inc., 21213 76 Ave. So., Kent, WA 98032
SACM (Societe Alsacienne De Constructions Mechaniques De Mulhouse) 1, Rue De La Fonderie, Boite Postale 1210, 68054 Mulhouse Cedex, France
Schottel of America, Inc., 8375 N.W. 56 St., Miami, FL 33166
Karl Senner, Inc., P.O. Box 10055, New Orleans, LA 70181
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Stewart & Stevenson Services, Inc., P.O. Box 1637, Houston, TX 77251-1637
Sulzer Brothers, Dept. Diesel Engines, CH-8401 Winterthur, Switzerland
Tech Development Inc., 6800 Poe Ave., P.O. Box 14557, Dayton, Oh 45414
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica DeLaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P.O. Box 207, West State Street Road, Solina, KS 67401
Turbine Specialties/Gulf Coast, Inc., 1900 Industrial Blvd., Harvey, LA 70058
Ulstein Trading Ltd. A/S, N-6-65, Ulsteinvik, Norway
Voith Schneider America, 159 Great Neck Rd., Ste 200, Great Neck, NY 11021
Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647
WABCO Fluid Power, an American-Standard Company, 1953 Mercer Rd., Lexington, KY 40505
Wartsila Power Inc., 5132 Taravella Rd., P.O. Box 868, Marrero, LA 70072
Waukesha Engine Division, Waukesha, WI 53187
Welco Industries, Inc., 9027 Shell Rd., Cincinnati, OH 45236
ZF of North America, Inc., 3225 Commercial Avenue, Northbrook, IL 60062
ZF of North America, Inc. (Motive Power Corporation, P.O. Box 365, Mineola, NY 11501)
PUMPS—Repairs—Drives
Argo Marine, 140 Franklin St., New York, NY 10013
Jim's Pump Repair, 48-55 36th St., Long Island City, NY 11101
Megator Corporation, 562 Alpha Drive, Pittsburgh, PA 15238
Penco Div./Hudson Engineering Co., One World Trade Center, Suite 3000, New York, NY 10048
Sims Pump Valve Co., Inc., 1314 Park Ave., Hoboken, NJ 07030
Transamerica DeLaval, Pyramid Pump Div., P.O. Box 447, Monroe, NC 28110
Vita Motivator Company, 200 West 20th St., New York, NY 10011
Warren Pumps Division, Bridges Avenue, Warren, MA 01083
Wilden Pump & Engineering Co., 22060 Van Buren St., P.O. Box 845, Colton, CA 92324
REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Part Refrigeration Div., 157 Perry St., New York, NY 10014
ROLLING SYSTEMS
Hilman, Inc., 2604 Atlantic Ave., Wall (Belmar), NJ 07719
ROPE—Manila—Nylon—Hawsers—Fibers
American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07008
DuPont Co., KEVLAR Aramid Fiber, Room G-15465, Wilmington, DE 19898
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
Tubbs Cordage Company, P.O. Box 709, Orange, CA 92666
Wall Industries, Inc., P.O. Box 560, Elkin, NC 28621
RUDDER ANGLE INDICATORS—STEERING
Hy-Drive America Corp., 3629 Vernon Blvd., Long Island City, NY 11106
Marine Drive Systems, 519 Raritan Center, Edison, NJ 08817
Robertson, 135 Fort Lee Rd., Leonia, NJ 07605
SAFETY EQUIPMENT
Wormald Fire Systems, One Stanton St., Marinette, WI 54143
SANITATION DEVICES—Pollution Control
Argo Marine, 140 Franklin St., New York, NY 10013
Davit Sales Inc., P.O. Box 232, Jefferson Valley, NY 10535
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
FAST Sewage Systems, Div. of St. Louis Ship, 611 East Marceau St., St. Louis, MO 63111
Golor Metal A/S, P.O. Box 70, 4901 Tvedestrand, Norway
Marine Moisture Control Co., Inc., 60 Inip Dr., Inwood, L.I., N.Y. 11696
National Sanitation Foundation, P.O. Box 1468, Ann Arbor, MI 48105
SCAFFOLDING EQUIPMENT—Work Platforms
McCausey Lumber Co., 7751 Lyndon, Detroit, MI 48238
Patent Scaffolding Co., One Bridge Plaza, Fort Lee, NJ 07024
Trus-Joist Corp., P.O. Box 60 Boise, ID 83704
SCUTTLES/MANHOLES
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203
SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT
Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Crane Packing Company, 435 Regina Dr., Clarksburg, MD 20734
EG&G Sealol, Engineered Products Div., Marine Products Group, Warwick, RI 02888
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Penco Div./Hudson Engineering Co., One World Trade Center, Suite 3000, New York, NY 10048
SHIPBUILDING—Salvage
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Fred Devine Diving & Salvage, Inc., 6211 N. Ensign, Swan Island, Portland, OR 97217
Zidall Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201
SHIPBUILDING EQUIPMENT
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, FL 33156
Total Transportation System Inc., 813 Forrest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 248, N 5201, Os, Norway
SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018
Tiliné, P.O. Box 729, Albany OR 97321
United States Steel Corp., Christy Pork Plant, 2214 Walnut St., McKeesport, PA 15132
Welded Beam Company, P.O. Box 280, Perry OH 44081
SHIPBUILDING—Repairs, Maintenance, Drydocking
Advanced Technology, Dept. PZ-01, 7926 Jones Branch Dr., McLean, VA 22102
Alabama Maritime Corp., P.O. Box 3026, Mobile, AL 36652
Amsterdam Drydock Company, Post Box 3006, 1003 AA, Amsterdam, Holland
Arsenale Triestino-San Marco Shipyard, Trieste, Italy, U.S. Rep: Marine Technologies & Brokerage, 33 Rector St., New York, NY 10006
Asmar Shipyards Co., Astilleros y Maestranzas de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparaiso, Chile, S.A.

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 24 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) 689-3266.

AIR COMPRESSORS

Flexaust Company, 11 Chestnut St., Amesbury, MA 01913
Squire Cogswell Company, 3411 Commercial Ave., Northbrook, IL 60062

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Cospolich Refrigerator Co., Inc., 949 Industry Rd., Kenner, LA 70062
Flakt AB, Box 8862, S-40272, Gothenburg, Sweden
Marlo Coil/Nuclear Cooling, Inc., P.O. Box 171, High Ridge, MO 64049
Mechanical Resources, Inc., 210 West Side Ave., Jersey City, NJ 07305
Nance Industries, P.O. Box 1547, Beaumont, TX 77704-1547
Stal Refrigeration AB, Banningsgatan 16, S 601 87 Norrköping, Sweden
United Technologies Carrier Transicold, P.O. Box 4805, Syracuse, NY 13221
Unitemp Inc., 3590 Kennedy Rd., So. Plainfield, NJ 07080
York Division, Borg-Warner Corp., P.O. Box 1592, York, PA 17405

ANCHORS AND CHAIN

G.J. Wortelboer Jr. B.V., Eemhavenstraat 4, P.O. Box 5003, 3008 AA Rotterdam, Netherlands
Hyosung America Inc., 2302 E. Del Amo, Compton, CA 90220
Neptunia, Via Giovanni da Verrazzano, 12, 16165 Genova, Italy

ANODES—Cathodic Protection

American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Engelhard Industries Division, 2655 U.S. Route 22, Union, NJ 07083
Federal Harco, P.O. Box 40310, Houston, TX 77240
Kaiser Chemical, Div., of Kaiser Aluminum & Chemical Corp., 300 Lakeside Dr., Rm. 1128 KB, Oakland, CA 94643
The Platt Bros. & Co., Box 1030, Waterbury, CT 06721

BASKET STRAINERS

North Star Marine & Industrial Products, Inc., 84 Wall Street, Farmingdale, NY 11735

Riley-Beard, P.O. Box 31115, Shreveport, LA 71130

BEARINGS—Rubber, Metallic, Non-Metallic

Grant Manufacturing & Alloying, Inc., 600 Schoolhouse Rd., Souderton, PA 18964
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Norton Chempast, 309-150 Dey Rd., Wayne, NJ 07470
Thomson-Gordon Limited, 3225 Mainway, Burlington, Ontario, Canada L7M 1A6
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

BLASTING—Cleaning—Equipment

Apache Equipment, Inc., 10690 Shadow Wood Dr., Suite 112, Houston, TX 77043
Aqua-Dyne Inc., 2208 Karbach St., Houston, TX 77092
Atlantic Sandblasting & Coatings, Inc., 2700 Guy Verger Blvd., Tampa, FL 33605
Aurand, 1270 Ellis St., Cincinnati, OH 45223
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
CLEMCO, P.O. Box 7680, San Francisco, CA 94120
Complete Abrasive Blasting Systems, 18250 68th Avenue South, Kent, WA 98031
E.I. DuPont De Nemours & Co., Inc., Starblast Division, Room X39186, Wilmington, DE 19898
Rockwell International, Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208
Schmidt Mfg. Inc., P.O. Box 37, Fresno, TX 77545

BOILERS

B&D Marine and Industrial Boilers, Inc., P.O. Box 5702, North Charleston, SC 29406
Combustion Engineering, Inc., Windsor, Connecticut 06095
Forney Engineering Co., P.O. Box 189, Addison, TX 75001
Foster Wheeler Boiler Corp., 110 S. Orange Ave., Livingston, NJ 07039
Howe-Baker Engineers, Inc. (Econoflex Burners), Combustion Systems Div., P.O. Box 956, Tyler, TX 75710
Way-Wolff Associates Inc., 45-10 Vernon Blvd., Long Island City, NY 11101

BOILER CLEANING

Asea Stal, 525 Executive Blvd., Elmsford, NY 10523-1296

BROKERS

S. Danoff U.S.A. Ltd., 2050 Coral Way, Miami, FL 33145
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004

BRONZES—COMMEMORATIVE

Duramax Metals, Inc., 2401 Wesley Street, Portsmouth, VA 23707

BUNKERING SERVICE

Belcher Company, Inc., 8700 West Flagler, P.O. Box 525500, Miami, FL 33152
Gulf Oil Trading Co., 535 Madison Ave., New York, NY 10022
National Marine Service Inc. (Transport Div.), 1750 Brentwood Blvd., St. Louis, MO 63144

CARGO HANDLING EQUIPMENT

Alpha Technical Services, Inc., P.O. Box 446, Hamilton, OH 45012
MacGregor-Navire International, Box 8991, S-402 74 Göteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016

CHOCKING SYSTEMS

Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936

CLAMPS

Band-It Company, P.O. Box 16307, Denver, CO 80216

CLOSURES—Marine

Cornell-Carr Co. Inc., 63 Main St., Monroe, CT 06468
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

COMPUTERIZED INFORMATION SYSTEMS

Marine Management Systems, Inc., 102 Hamilton Ave., Stamford, CT 06902
Maritime Data Network, Ltd., 102 Hamilton Ave., Stamford, CT 06902

CONDENSERS

Riley-Beard, P.O. Box 31115, Shreveport, LA 71130

CONTROL SYSTEMS—Monitoring

American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Argo Marine, 140 Franklin St., New York, NY 10013
ASEA, Inc. 4 New King St., White Plains, NY 10604
Autronico Marine USA, 280 Industrial Pkwy., Northvale, NJ 07647
Avicon Corp., 7750 East Redfield Rd., Scottsdale, AZ 85260
Barringer Research, 304 Carlingview Dr., Rexdale, Ontario, Canada M9W5G2
Biospherics Inc., 4928 Wyaconda Rd., Rockville, MD 20852
Bowmar/ALI, Inc., 531 Main St., Acton, MA 01720
Cooper Energy Services, Mount Vernon, OH 43050
Eldco Corp., P.O. Box 100, Lynnwood, WA 98036
Louis C. Eitzen Co., P.O. Box 1210, Glenwood Springs, CO 81602
Ergon, Inc., P.O. Drawer 1639, Jackson, MS 39205
Failsafe Motor/Generator Protector, Marine Safe Electronics Ltd., 101 Jar-din Dr., Unit 24/25, Concord, Ontario, Canada L4K 1B6
Fluidyne, a Div. of Electradata Inc., P.O. Box 11366, Santa Rosa, CA 95406
Grumman Aerospace, 111 Stewart Ave., Bethpage, NY 11714
ITT Mackay, 441 U.S. Highway #1, Elizabeth, NJ 07202
Indikon Corp., 26 New St., Cambridge, MA 02138
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738

Leslie Co., 401 Jefferson Rd., Parsippany, NJ 07054
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
Maritime Protection A/S, Box 100, N-4620 Vagsbygd, Norway
Megsystems, Inc., 1075 N.W. 58th Street, Boca Raton, FL 33431
National Control Systems, Inc., 827 Hanley Industrial Court, St. Louis, MO 63144
Nav-Vue, Inc., P.O. Box 1175, Huntsville, TX 77340
Norske Telektron A/S, Drammensveien 126, Oslo 2, Norway
Offshore Technology Corp., 578 Enterprise St., Escondido, CA 92025
Pandel Instruments Inc., 2100 N. Hwy. 360, Grand Prairie, TX 75050
Propulsion Systems, Inc., 21213 76 Ave., Kent, WA 98032
Seaworthy Systems Inc., 36 Main Street, Essex CT 06426
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406
Transomerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
Valmet Automation A.S., P.O. Box 130, N-3430, Spikkestad, Norway
Wesmar Marine Systems Div., 801 Dexter Ave. N., Box CI9074, Seattle, WA 98109

COUPLINGS

Camlock Flange Sales Corp., 60 Inip Dr., Inwood, NY 11696
SKF Steel, 20 Tower Lane, P.O. Box 745, Avon, CT 06001

CRANES—HOISTS—DERRICKS—WHIRLEYS

American Hoist & Derrick Company (AMHoist), St. Paul, MN 55107
Appleton Marine, P.O. Box 2339, Appleton, WI 54913
ASEA Stal-Laval Inc., 525 Executive Blvd., Elmsford, NY 10523
Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Chester Hoist Division, Monogram Industries, P.O. Box 229, Lisbon, OH 44432
Grove Manufacturing Co., P.O. Box 21, Shady Grove, PA 17256
HIAB Cranes & Loaders Inc., R.D. 22 Interchange Place, York, PA 17404
Hertz Equipment Rental Corp., 7 Entin Rd., Bldg # 2, Parsippany, NJ 07054
Machinexport, 35 Mosfilovskaya Ul., 117330 Moscow, U.S.S.R.
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
National Crane Corp., 11200 North 148 St., Waverly, NE 68462
National Supply Company, 1455 West Loop South, Houston, TX 77027
J.D. Neuhaus, Hebezeuge, D5810, Witten Heven, West Germany
Superior-Lidgerwood-Mundy Corp., 1101 John Ave., Superior, WI 54880

DECK MACHINERY—Cargo Handling Equipment

Argo Marine, 140 Franklin St., New York, NY 10013
Marine Technical Associates, 195 Patterson Avenue, Little Falls, NJ 07424
Morkey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Murdock Engineering Company, P.O. Box 2278, Irving, TX 75061
Schoellhorn Albrecht, Div. of St. Louis Ship, 3460 So. Broadway, St. Louis, MO 63118

DECKING—GRATING

International Grating, Inc., 7625 Parkhurst, Houston, TX 77028
Selby, Battersby & Company, 5220 Whiby Ave., Philadelphia, PA 19143
J.E. Steigerwald Co., Inc., 5515 Belair Rd., Baltimore, MD 21206

DIESEL ACCESSORIES—CYLINDER LINERS

B & W Marine Service, 50 Broadway, New York, NY 10004
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, Massachusetts 02360
Gollen Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
Haynes Corporation, P.O. Box 179, Jackson, MI 49204
Illman Jones, 1111 Green Island Rd., American Canyon, CA 94589
Van der Horst Corp. of America, 314 Penn Ave., Olean, NY 14760
DIESEL ENGINE—Spare Parts & Repair
Gollen Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
Granges Repair Service GMBH, U.S. Rep. Field, Wigham and Co., Inc. 200 Middleneck Road South, P.O. Box 2123, Great Neck, N.Y. 11021
Powerway, 46G Worthington Drive, St. Louis, MO 63141

ELECTRICAL EQUIPMENT

Argo Marine, 140 Franklin St., New York, NY 10013
Jergens Inc., 19520 Nottingham Rd., Cleveland, OH 44110
Marine Electric RPD, Inc., 666 Pacific St., Brooklyn, NY 11217
Valad Electric Heating Corporation, 162 Wildley St., Tarrytown, NY 10591
Ward Leonard Electric Co., 31 South St., Mt. Vernon, NY 10550
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

EMULSIFICATION SYSTEMS

Cleanadon A/S, N. American Agents, American United Marine Corp., 5 Broadway, Route 1, Saugus, MA 01906
Fire-Brite, Hoffert Manufacturing Co., Inc., 3749 Progress Rd., Norfolk, VA 23502
S/S RESEARCH & DEVELOPMENT INC., 1050 State St., Perth Amboy, N.J. 08862

EQUIPMENT—Marine

American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94080
Argo Marine, 140 Franklin St., New York, NY 10013
ASEA Stal-Laval Inc., 525 Executive Blvd., Elmsford, NY 10523
Band-It Division, Houdaille Industries, Inc., P.O. Box 16307, Denver, CO 80216
Thomas Coudon Associates, 6655 Amberton Dr., Baltimore, MD 21227
Fitz-Wright Suits Ltd., 17919 Roan Pl., Surrey, B.C., Canada V3S 5K1
Genstar Stone Products Company, Executive Plaza IV, Hunt Valley, MD 21031
Harvey's Commercial Marine Div., 2505 S. 252nd St., Kent, WA 98032
b.v. Holmatro Industrial Equipment, P.O. Box 33, 4940 aa Raamsdonsveer, Holland
Imperial Manufacturing Co., P.O. Box 4119, Bremerton, WA 98312
Juniper Industries Inc., 72-15 Metropolitan Ave., Middle Village, NY 11379
Kearfoot Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302
John P. Nissen, Jr. Company, Glenside, PA 19038
Stal-Laval Turbin AB, S-612 20 Finspong, Sweden

EVAPORATORS

Alfa-Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Aqua-Chem Inc., P.O. Box 421, Milwaukee, WI 53201
MECO (Mechanical Equipment Company, Inc.), 861 Carondelet St., New Orleans, LA 70130
Riley-Beard, P.O. Box 31115, Shreveport, LA 71130

FANS—VENTILATORS—BLOWERS

American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Argo Marine, 140 Franklin St., New York, NY 10013
Goylord Industries, Inc., P.O. Box 558, Wilsonville, OR 97070
Hartzell Fan, Division of Castle Hills Corp., 901 S. Downing St., P.O. Box 919, Piqua, OH 45356
Joy Manufacturing Company, 338 So. Broadway, New Philadelphia, OH 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201
FASTENERS
Sales Systems Limited, P.O. Box 7006, 700 Florida Ave., Portsmouth, VA 23707
FENDERING SYSTEMS—Dock & Vessel
Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
InterTrade Industries, 15301 Transistor Lane, Huntington Beach, CA 92649
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Samson Ocean Systems, Inc., 99 High St., Boston, MA 02110
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, Va. 22044

FILTERS

Dohl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307
Mueller Steam Specialty, P.O. Box 1569, Lumberton, NC 28359
Wm. W. Nugent & Co., P.O. Box 948, Skokie, IL 60076

FINANCING—Leasing

A.G. Becker Paribus Inc., 2 First National Plaza, Chicago, IL 60670
Gulf Western Leasing Corp., 1500 City West Blvd., Suite 300, Houston, TX 77047

Yegen Marine, P.O. Box 25504, Ft. Lauderdale, FL 33320

FIRE PROTECTION, DETECTION, & ALARM SYSTEMS

EEV, Inc., 7 Westchester Plaza, Elmsford, NY 10523
Gulf Publishing Company Video (Firefighting Videotape), P.O. Box 2608, Houston, TX 77001
Walter Kidde, Walter Kidde Dr., Wake Forest, NC 27586
Warmald Fire Systems, One Stanton St., Marinette, WI 54143

FUEL OIL/ADDITIVES—Analysis & Combustion Testing

Ferrous Corporation, 910-108th N.E., P.O. Box 1764, Bellevue, WA 98009
Fuji Trading (America) Ltd., 17 Battery Place, New York, NY 10004
McTigue Industries Inc., 1615 9th Ave., Bohemia, NY 11716
U.S. Borax, 3075 Wilshire Blvd., Los Angeles, CA 90010

FURNITURE

Bailey Carpenter & Insulation Co., 74 Sullivan Street, Brooklyn, N.Y. 11231
Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

GALLEY EQUIPMENT

Argo Marine, 140 Franklin St., New York, NY 10013
Insinger Machine Co., 6245 State Rd., Philadelphia, PA 19135

GANGWAYS

Rampmaster Inc., 9825 Osceola Blvd., Vero Beach, FL 32960

HATCH & DECK COVERS—Chain Pipe

Camlock Flange Sales Corp., 60 Inip Dr., Inwood, NY 11696
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Marine Moisture Control Co., 60 Inip Dr., Inwood, N.Y. 11696
MacGregor-Navire International, Box 8991, S-402 74 Göteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203
J.E. Steigerwald Co., Inc., 5515 Belair Rd., Baltimore, MD 21206

HEAT EXCHANGERS

Alfa-Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
American Standard Inc., Heat Transfer Div., Buffalo, NY 14240
Riley-Beard, P.O. Box 31115, Shreveport, LA 71130

HOLD LINERS

Himont U.S.A., Inc., 1313 N. Market St. Wilmington, DE 19894

HULL CLEANING

Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England

Gulf International Divers, P.O. Box 1342, Gretna (New Orleans), LA 70052
Pacific Maine Services, TLX: 664540 seavser, Long Beach, CA 90802
Performance Hull Cleaning Services, Inc., P.O. Box 655, New Orleans, LA 70059-0655

Petrochemical Services, Inc., 3820 Dauphine St., New Orleans, LA 70117
Phosmarine Equipment, 21 Bd. de Paris, 13002, Marseille, France
Seaward Marine Services, Inc., 6269 Leesburg Pike, Falls Church, VA 22044
Stork Services B.V., P.O. Box 2013, 7750 CA Hengelo, Holland
Taylor Diving & Salvage Co. Inc., 701 Engineers Rd., Belle Chasse, LA 70037

HYDRAULICS

Aerogrip Corp., 1130 Maynard Road, Jackson, MI 49202
Del Govio Marine Hydraulics Inc., 207 W. Central Ave., Maywood, NJ 07607
HRS, Inc., 3334 Victor Court, Santa Clara, CA 95050
Hydraulics, 6338 Lindmar Drive, Goleta, CA 93017
Washington Chain & Supply, Inc., P.O. Box 3646, Seattle, WA 98124
INERT GAS—Generators—Systems
Costar Corp., 186 Prescott St., Worcester, MA 01605
Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039
Maritime Protection A/S, N. American Agents, American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Salwico Inc., 5 Marine View Plaza, Hoboken, NJ 07030

INSULATION—Cloth, Fiberglass

Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Superior Energies, Inc., P.O. Drawer 386, Groves, TX 77619
Waco Inc., 5450 Lewis Rd., P.O. Box 836, Sandston, VA 23150-0836

INSURANCE

Adams & Porter, 510 Bering Dr., Houston, TX 77057-1408
Adams & Porter, 1 World Trade Center, Suite 8433, New York, N.Y. 10048
Assurance Foreningen Skuld, P.O. Box 1376 Vika, Stortingagaten 18, N-OSLO 1, Norway
R.A. Fulton & Company Insurance Services, 100 California St., San Francisco, CA 94111
MGA International, 419 Park Avenue South, New York, NY 10016
Midland Insurance Co., 160 Water St., New York, N.Y. 10038
United States P&I Agency, Inc., 80 Maiden Lane, New York, NY 10038

JOINER—Watertight Doors—Paneling

Advanced Structures Corp., 235 W. Industry Ct., Deer Park, NY 11729
Bailey Distributors, Inc., 74 Sullivan St., Brooklyn, NY 11231
Isolamin Panels, c/o Consafe, Inc., P.O. Box 40339, Houston, TX 77040
Masonite Commercial Division, Dover, OH 44622
Megadour Inc., 441 Lexington Ave., Suite 903, New York, NY 10017
Simpson Timber Company, Third & Franklin, Shelton, WA 98584
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

KEEL COOLERS

R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

ACR Electronics, Inc., P.O. Box 2148, Hollywood, FL 33022
Keuffel & Esser/Kratos, 20 Whippary Rd., Morristown, NJ 07960
Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039
Oceanic Electrical Mfg. Co., 157 Perry St., New York, NY 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Phoenix Products Company, Inc., 4769 North 27th Street, Milwaukee, WI 53209
Port Electric Supply Corp., 248-264 Third St., Elizabeth, NJ 07206-0434
SSAC Inc., P.O. Box 395, Liverpool, NY 13088

LINE BLINDS

Stacey/Fetterolf Corp., P.O. Box 103, Skipnock, PA 19474

MACHINE TOOLS

Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING

A.C. Brake Co., 308 E. College St., Louisville, KY
AMT Inc., 2400 N.W. 39th Ave., Miami, FL 33142
Amermarine USA Inc., P.O. Box 9205, Baltimore, MD 21222
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94080
Essex Machine Works, Essex, CT 06426
Gollen Marine Co., Inc., 60 Van Brunt St., Brooklyn, NY 11231
Jered Brown Brothers Inc., 1300 Coolidge, P.O. Box 2006, Troy, MI 48007-2006
Rosan, Inc., 2901 West Coast Hwy., Newport Beach, CA 92663
Scotchman Industries, Inc., P.O. Box 850, Philip, SD 57567-0850

METALS

Bayou Steel Corp., P.O. Box 5000, Laplace, LA 70068
Inland Steel Company, 30 West Monroe Street, Chicago, IL 60603
International Grating, Inc., 7625 Parkhurst, Houston, TX 77028

MOORING SYSTEMS

Murdock Machine & Engineering Company of Texas, P.O. Box 2278, Irving, TX 75061

Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

NAME PLATES—BRONZE—ALUMINUM

Duramax Metals, Inc., 2401 Wesley Street, Portsmouth, VA 23707

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Adams & Chute, Huntington Road, Newtown, CT 06470
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
Aero Nav Laboratories, Inc., 14-29 112 St., College Point, NY 1

BUYERS DIRECTORY

(continued)

Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
Art Anderson Associates, 148 First St., Bremerton, WA 98310
B.C. Research, 3650 Westbrook Mall, Vancouver, B.C., Canada V6S 2L2
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
Breitaane ACB Corp., 344 Camp St., Suite 1000, New Orleans, LA 70130
Carl G. Brimmekamp & Co., Inc., 102 Hamilton Ave., Stamford, CT 06902
C.A.C.I., Inc., 1815 No. Fort Myer Dr., Arlington, VA 22209
C.D.I. Marine Co., 5520 Los Santos Way, Suite 600, Jacksonville, FL 32211
C.T. Marine, 18 Church Street, Georgetown, CT 06829
Phillips Carter & Co., Inc., 203 So. Union St., Alexandria, VA 22314
Century Engineering, Inc., 32 West Rd., Towson, MD 21204
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 1725 Jefferson Davis Highway, Suite 700, Arlington, VA 22202
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Encon Management & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706
Fleetweather Ocean Services, Inc., Rd. # 2, Box 260, Hopewell Junction, NY 12533
Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, N.Y. 11050
GEOD Corporation, 73 Oak Ridge Road, NJ 07438
Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401
Gibbs & Cox, Inc., 119 West 31st Street, New York, NY 10001
John W. Gilbert Associates, Inc., 66 Long Wharf, Boston, MA 02110
The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hamilton Cornell Associates, Box 188, Snug Harbor Station, Duxbury, MA 02331
J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
Hi-Test Laboratories, Inc., P.O. Box 226, Buckingham C.H., VA 23921
Hoffman Maritime Consultants Inc., P.O. Box 186, Glen Head, NY 11545
HydroComp, Inc., 10 Cutts Road, P.O. Box 865, Durham, NH 03824
Intramarine, Inc., P.O. Box 53043, Jacksonville, FL 32201
R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073
Capt. Ernest James, 2849 Beavercrest Dr., Lorain, OH 44053
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
J.L. Konopasek & Associates, 3523 Scrimshaw Dr., Jacksonville, FL 32217
James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
MacLear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036
Fendall Marbury, 1933 Lincoln Drive, Annapolis, MD 21401
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Power Associates, 4475 Mission Blvd., Suite 235, San Diego, CA 92109
Marine Technical Associates, Inc., 95 River Rd., Hoboken, NJ 07030
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
R. Carter Morrell, 715 S. Cherokee, Bartlesville, OK 74003
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169
New England Engineering & Marine Services, Rt. 2, Box 50, York, ME 03909
Nickum & Spaulding Associates, Inc., 2701 First Ave., Seattle, WA 98121
Northern Marine, P.O. Box 1169, Traverse City, MI 49685
Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 1380 S.W. 57th Avenue, Fort Lauderdale, FL 33317
Precision Systems Engineering, 8248 Eastgate Dr., Mt. Laurel, NJ 08054
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316
SEACOR Systems Engineering Associates Corp., 19 Perino Blvd., Cherry Hill, NJ 08003 (Publications Division at Cherry Hill location)
STV/Sanders & Thomas, Inc., 1745 Jefferson Davis Hwy., Arlington, VA 22202
Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
Seaworthy Engine Systems, 17 Battery Place, New York, NY 10004
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
Simmons Associates, P.O. Box 760, Sarasota, FL 33578
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
J.F. Stroschein Associates, 666 Old Country Rd., Garden City, NY 11530
Richard R. Taubler, Inc., 610 Carriage La., Dover, DE 19901
Timco, 622 Azalea Road, Mobile, AL 36609
Tracor Hydroautics, Inc., 7210 Pindell School Rd., Laurel, MD 20707
Uhlig & Associates, Inc., 8295 SW 188th St., Miami, FL 33157
Vevey Engineering Works Ltd., CH-1800 Vevey, Switzerland, U.S. Rep.: Carl G. Brimmekamp & Co., Inc., 102 Hamilton Ave., Stamford, CT 06902
Thomas B. Wilson, Associates, 1258 North Avalon Blvd., Wilmington, CA 90744
Yacht Design Institute, 9 Main St., Blue Hill, ME 04614

NAVIGATION & COMMUNICATIONS EQUIPMENT
American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526
Anschütz & Co. GmbH, Postfach 6040, D-2300 Kiel 14, West Germany
Atkinson Dynamics, Section 6, 10 West Orange Ave., South San Francisco, CA 94080
CMC Communications Inc., 5479 Jetport Industrial Blvd., Tampa, FL 33614
COMSAT World Systems, 950 L'Enfant Plaza, S.W., Suite 6151 Washington, D.C. 20024
Cybernet International, Inc., 7 Powder Horn Dr., Warren, NJ 07060
A/S Elektrisk Bureau, P.O. Box 98, N-1360 Nesbru, Norway
Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO Marine, 550 Wholesalers Parkway, Harahan, LA 70123
Fleet Marine, 1820 N.E. 146th Street, North Miami, FL 33181
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Harris Communications (RF Communications), 1680 University Avenue, Rochester, NY 14610
Henschel Corp., 9 Hoyl Drive, Newburyport, MA 01950
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
Japan Radio Co., Ltd., Akasaka Twin Tower (Main), 17-22 Akasaka 2-chome, Minato-ku, Tokyo 107, Japan
King Radio Corporation, 400 North Rodgers Rd., Olathe, KS 66062
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Kongsberg Vapenfabrikk, Norcontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Atlas-Elektronik, 1453 Pinewood St., Rahway, NJ 07065

Lorain Electronics Corp., 2307 Leavitt Rd., Lorain, OH 44052
Magnavox Navigation Systems, 2829 Mariposa Street, Torrance, CA 90503
Magnum Distributors Inc., 1000 S. Dixie Hwy. #3, Pompano Beach, FL 33060
Nov-Com, Inc., 9 Brandywine Drive, Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
Perko Inc. (Lights), P.O. Box 6400D, Miami, FL 33164
Racal-Decca Marine, Inc., 4200 23rd Avenue West, Seattle, WA 98199
Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
Radio-Holland USA, Inc., 6033 South Loop East, Houston, TX 77033
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Rivertronics, P.O. Box 247, Godfrey, IL 62035
Robertson Auto Pilot, 400 Oser Ave., Hauppauge, NY 11738
Selesmar S.p.A., Casella Postale 9, 50020 Montagnana Val Di Pesa, Firenze, Italy
Servo Corporation of America, 111 New South Road, Hicksville, NY 11802
Simrad, Inc., 2208 N.W. Market St., Suite 600, Seattle, WA 98107
Sperry Corporation, Great Neck, NY 11020
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Texas Instruments, Inc., P.O. Box 405, 3438, Lewisville, TX 75067

OILS—Marine—Additives
Exxon Company, U.S.A., Room 2323 AH, P.O. Box 2180, Houston Tx 77001
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil, New York District Sales Office (Domestic), 433 Hackensack Avenue, Hackensack, NJ 07601
Gulf Oil Trading Co., 535 Madison Ave., New York, NY 10022
Mobil Oil Corp., 150 East 42 Street, New York, NY 10017
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017

OIL/WATER SEPARATORS
Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Biospherics Incorporated, 5001 Forbes Blvd., Lanham, MD 20801
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
Centrica, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647
Dahl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307
Hyde Products, Inc. 810 Sharon Dr., Westlake, OH 44148
Microphor, Inc., P.O. Box 490, Willis, CA 95490
Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696
National Fluid Separators, Inc., 1239 Hanley Industrial Court, St. Louis, MO 63144
PACE Maine Systems, Div. of St. Louis Ship, 611 E. Marceau St., St. Louis MO 63111
Phoenix Oil Refiner Co., Inc., 330 Hill Ave., Nashville, TN 37210

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
Argo Marine, 140 Franklin St., New York, NY 10013
Bareco, 6910 East 14th St., Tulsa, OK 74112
A.W. Chesterlon Co., Middlesex Industrial Park, Rt. 93, Stoneham, MA 02180
Chugoku Marine Paints (U.S.A.) Inc., 1290 Ave. of Americas, New York, NY 10104
CLEMCO, P.O. Box 7680, San Francisco, CA 94120
"CONSOL" manufactured by Contact Paint & Chemical Co. Inc., 200 S. Franklinton Rd., Baltimore, MD 21223
Dampney Company, Inc., 85 Paris St., Everett, MA 02149
Devoe Marine Coatings Co., P.O. Box 7600, Louisville, KY 40207
Drew Ameroid Marine, One Drew Chemical Plaza, Boonton, NJ 07005
E.I. Dupont De Nemours & Co., Inc., Nemours Bldg. Rm. N-2504-2 Wilmington, DE 19898
Esgard, Box 2698, Lafayette, LA 70502
Eureka Chemical Company, 234 Lawrence Avenue, So. San Francisco, CA 94080
Glidden Coatings & Resins, Architectural & Maintenance, 925 Euclid Ave., Cleveland, OH 44115
Grow Group, Inc., 200 Park Ave., New York, NY 10017
Hempel Marine Paints, Inc., Foot of Currie Ave., Wallington, NJ 07057,
2425 Fountainview, Suite 340, Houston, TX 77057, P.O. Box 10265, New Orleans, LA 70181
International Paint Company, Inc., 2270 Morris Avenue, Union, NJ 07083
Jaegle Paint Co., Inc., 1912 Darby Rd., Havertown, PA 19083
Jotun Marine Coatings Inc., 840 Key Hwy., Baltimore, MD 21230
Magnus Maritec International Inc., 150 Roosevelt Pl., P.O. Box 150, Palisades Park, NJ 07650
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Pile-Gard* Manufactured by Osmose-Marine Div., P.O. Drawer 0, Griffin, GA 30224
Products Research & Chemical Corp., 5454 San Fernando Rd., Glendale CA 91203
Seaguard, 4030 Seaguard Ave., Portsmouth, VA 23705
Selby, Battersby & Company, 5220 Whiby Avenue, Philadelphia, PA 19143
Sermatech International, 4401 Sermetel Dr., Moss Point, MS 39563

PETROLEUM SUPPLIES
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PIER REPAIRS
Aquatic Marine Systems, Inc., P.O. Box 326, Williamsville, NY 14221

PIPE-HOSE—Cargo Transfer, Clamps, Couplings, Coatings
Amermarine International, P.O. Box 9205 Dundalk, MD 21222
Cajon Company, 9760 Shepard Rd., Macedonia, OH 44056
Camlock Flange Sales Corp., 60 Inip Dr., Inwood, NY 11696
Crawford Fitting Company, 29500 Solon Rd., Solon, OH 44139
Hydro-Craft, Inc., 1821 Rochester Industrial Dr., Rochester, MI 48063
Knights Piping Inc., 5309 Industrial Rd., Pascoagoula, MS 39567
Metropolitan Plumbing Supply Corp., 5000 Second St., Long Island City, NY 11101
Penco Div./Hudson Engineering Co., One World Trade Center, Suite 3000, New York, NY 10048
Selkirk Metalbestos, Box 19000, Greensboro, NC 27419
Stauff Corporation, 21-31 Industrial Park, Waldwick, NJ 07463
Tioga Pipe Supply Co. Inc., 2450 Wheatshaf LA., P.O. Box 5997, Philadelphia, PA 19137

PLASTICS—Marine Applications
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
American Lohmann Corp., 1415 Chestnut Ave., Hillside, NJ 07205
Aquamaster, 4125 9th Ave., Seattle, WA 98107
Arco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bergen Diesel Inc., 2110 1-10 Service Rd., Kenner, LA 70062
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Bombardier, 1051 Dickson, Montreal, Quebec, Canada H1N 2H7
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Capitol Gears, 349 N. Hamline Ave., St. Paul, Mn. 55104
Caterpillar Engine Division, 100 N.E. Adams, Peoria, IL 61629
Cincinnati Gear Co., 5657 Wooster Pike, Cincinnati, OH 45227
Coll Industries Inc. (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511
Columbian Bronze Corporation, 216 No. Main Street, Freeport, NY 11520
Combustion Engineering, Inc., Windsor, Connecticut 06095
Daihatsu Diesel (USA) Inc., 180 Adams Ave., Hauppauge, NY 11788
Deutz Corp., 7585 Ponce de Leon Circle, Atlanta, GA 30340
Diesel Marine International, Ltd., c/o NORSHIPCO, P.O. Box 2100, Norfolk, VA 23501
Elliott Company, 1809 Sheridan Ave., Springfield, OH 45505
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
General Motors, Electro-Motive Division, LaGrange, IL 60525

George Engine Company, Inc., Lafayette, LA
Gollen Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
Harbormaster, 36 Hancock St., Quincy, MA 02171
Isotta Fraschini S.p.A., c/o Italian Aerospace Industries (U.S.A.), Inc., 1235 Jefferson Davis Hwy., Suite 500, Arlington, VA 22202
KHD Canada Inc., 180 Rue de Normandie, Boucherville, Quebec J4B 5S7 Canada
KaMeWa, P.O. Box 1010, S-68101, Kristinehamn, Sweden
KaMeWa, 1800 West Loop So., Suite 1620, Houston, TX 77027
Krupp Mak Diesels, Inc., 4329-33 Di Paolo Center, Glenview, IL 60025
Lips Propellers, 3617 Koppens Way, Chesapeake, VA 23323
Lufkin Industries, Inc., P.O. Box 749, Lufkin, TX 75901
M.A.N.-B&W Diesel, 2, Ostervej, DK-4960 Høleby, Denmark
MTU of North America, One E. Putnam Ave., Greenwich, CT 06830; 10450 Corporate Dr., Sugarland, TX 77478; 2945 Railroad Ave., Morgan City, LA 70203; 180 Nickerson St., Seattle, WA 98109; 1730 Lynn St., Arlington, VA 22209
MWM-Murphy Diesel, 12 Greenway Plaza, Suite 1100, Houston, TX 77046
Mapeco Products, Inc., 20 Vesey St., New York, NY 10007
Maritime Industries Ltd., 6307 Laurel St. Burnaby, B.C., Canada V5B3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
National Marine Service Louisiana, Inc., 222 Bayou Rd., Belle Chasse, LA 70037
Omnihurster Inc., 9515 Sorensen Ave., Santa Fe Springs, CA 90670
Penske GM Power, Inc., 600 Parsippany Road, Parsippany, NJ 07054
Inland Water Propulsion Systems, Inc., 580 Walnut St., Cincinnati, OH 45201
Propulsion Systems, Inc., 21213 76 Ave. So., Kent, WA 98032
SACM (Societe Alsacienne De Constructions Mechaniques De Mulhouse) 1, Rue De La Fonderie, Boite Postale 1210, 68054 Mulhouse Cedex, France
Schottel of America, Inc., 8375 N.W. 56 St., Miami, FL 33166
Karl Senner, Inc., P.O. Box 10055, New Orleans, LA 70181
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Stewart & Stevenson Services, Inc., P.O. Box 1637, Houston, TX 77251-1637
Sulzer Brothers, Dept. Diesel Engines, CH-8401 Winterthur, Switzerland
Tech Development Inc., 6800 Poe Ave., P.O. Box 14557, Dayton, Oh 45414
Transamerica Delaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P.O. Box 207, West State Street Road, Salina, KS 67401
Turbine Specialties/Gulf Coast, Inc., 1900 Industrial Blvd., Harvey, LA 70058
Ulstein Trading Ltd. A/S, N-6-65, Ulsteinvik, Norway
Vaiht Schneider America, 159 Great Neck Rd., Ste 200, Great Neck, NY 11021
Valvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647
WABCO Fluid Power, an American-Standard Company, 1953 Mercer Rd., Lexington, KY 40505
Wartsila Power Inc., 5132 Taravella Rd., P.O. Box 868, Marrero, LA 70072
Waukesha Engine Division, Waukesha, WI 53187
Welco Industries, Inc., 9027 Shell Rd., Cincinnati, OH 45236
ZF of North America, Inc., 3225 Commercial Avenue, Northbrook, IL 60062
ZF of North America, Inc. (Motive Power Corporation, P.O. Box 365, Mineola, NY 11501)

PUMPS—Repairs—Drives
Argo Marine, 140 Franklin St., New York, NY 10013
Jim's Pump Repair, 48-55 36th St., Long Island City, NY 11101
Megator Corporation, 562 Alpha Drive, Pittsburgh, PA 15238
Penco Div./Hudson Engineering Co., One World Trade Center, Suite 3000, New York, NY 10048
Sims Pump Valve Co., Inc., 1314 Park Ave., Hoboken, NJ 07030
Transamerica Delaval, Pyramid Pump Div., P.O. Box 447, Monroe, NC 28110
Vita Motivator Company, 200 West 20th St., New York, NY 10011
Warren Pumps Division, Bridges Avenue, Warren, MA 01083
Wilden Pump & Engineering Co., 22060 Van Buren St., P.O. Box 845, Colton, CA 92324

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Port Refrigeration Div., 157 Perry St., New York, NY 10014

ROLLING SYSTEMS
Hilman, Inc., 2604 Atlantic Ave., Wall (Belmar), NJ 07719

ROPE—Manila—Nylon—Hawsers—Fibers
American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07008
DuPont Co., KEVLAR Aramid Fiber, Room G-15465, Wilmington, DE 19898
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
Tubbs Cordage Company, P.O. Box 709, Orange, CA 92666
Wall Industries, Inc., P.O. Box 560, Elkin, NC 28621

RUDDER ANGLE INDICATORS—STEERING
Hy-Drive America Corp., 3629 Vernon Blvd., Long Island City, NY 11106
Marine Drive Systems, 519 Raritan Center, Edison, NJ 08817
Robertson, 135 Fort Lee Rd., Leonia, NJ 07605

SAFETY EQUIPMENT
Wormald Fire Systems, One Stanton St., Marinette, WI 54143

SANITATION DEVICES—Pollution Control
Argo Marine, 140 Franklin St., New York, NY 10013
David Sales Inc., P.O. Box 232, Jefferson Valley, NY 10535
Envirovac Inc., 1260 Turret Dr., Rockford, IL 61111
FAST Sewage Systems, Div. of St. Louis Ship, 611 East Marceau St., St. Louis, MO 63111
Galar Metal A/S, P.O. Box 70, 4901 Tvedestrand, Norway
Marine Moisture Control Co., Inc., 60 Inip Dr., Inwood, L.I., N.Y. 11696
National Sanitation Foundation, P.O. Box 1468, Ann Arbor, MI 48105

SCAFFOLDING EQUIPMENT—Work Platforms
McCausey Lumber Co., 7751 Lyndon, Detroit, MI 48238
Patent Scaffolding Co., One Bridge Plaza, Fort Lee, NJ 07024
Trus-Joist Corp., P.O. Box 60 Boise, ID 83704

SCUTTLERS/MANHOLES
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT
Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Crane Packing Company, 435 Regina Dr., Clarksburg, MD 20734
EG&G Sealol, Engineered Products Div., Marine Products Group, Warwick, RI 02888
Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470
Penco Div./Hudson Engineering Co., One World Trade Center, Suite 3000, New York, NY 10048

SHIPBREAKING—Salvage
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Fred Devine Diving & Salvage, Inc., 6211 N. Ensign, Swan Island, Portland, OR 97217
Zidell Explorations, Inc., 3121 S.W. Moody St., Portlanc, Ore. 97201

SHIPBUILDING EQUIPMENT
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, FL 33156
Total Transportation System Inc., 813 Forrest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 248, N 5201, Os, Norway

SHIPBUILDING STEEL
Arco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018
Tilne, P.O. Box 729, Albany OR 97321
United States Steel Corp., Christy Park Plant, 2214 Walnut St., McKeesport, PA 15132
Welded Beam Company, P.O. Box 280, Perry OH 44081

SHIPBUILDING—Repairs, Maintenance, Drydocking
Advanced Technology, Dept. PZ-01, 7926 Jones Branch Dr., McLean, VA 22102
Alabama Maritime Corp., P.O. Box 3026, Mobile, AL 36652
Amsterdam Drydock Company, Post Box 3006, 1003 AA, Amsterdam, Holland
Arsenale Triestino-San Marco Shipyards, Trieste, Italy, U.S. Rep.: Marine Technologies & Brokerage, 33 Rector St., New York, NY 10006
Asmar Shipyards Co., Astilleros y Maestranzs de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparaiso, Chile, S.A.

Asilleros Balboa, S.A., c/o Jackson Marine Corp., 17 Battery Place, New York, NY 10004

Allantic Dry Dock, P.O. Box 276, Ft. George Island, Jacksonville, FL 32226

Allantic Marine Inc., P.O. Box 138, Ft. George Island, Jacksonville, FL 32226

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150

Bath Iron Works Corp., 700 Washington St., Bath, ME 04530

Bay Shipbuilding & Repair Co., Inc., P.O. Box 42, Mobile, AL 36601

Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018

Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081

Burmeister & Wain Skibsvaerft A/S, P.O. Box 2122, Refshaleen-1015 Copenhagen K-Denmark

Burrard Yarrows Corporation, P.O. Box 86099, North Vancouver, B.C., Canada

Caneco Shipyard, Rua Carlos Seidl, 714, Caju, 20.931, Rio de Janeiro, RJ, Brazil

Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy

Carrington Slipways Pty. Ltd., Old Punt Rd., Tomago NSW Australia 2322

Conrad Industries, P.O. Box 790, Morgan City, La. 70380

Curacao Drydock Company Inc., 26 Broadway, Suite 741, New York, NY 10004

Daewoo International (America) Corp., 437 Madison Ave., New York, NY 10022

Daewoo Shipbuilding & Heavy Machinery Ltd., Ayangri, Changung-PO, Kahe-Kun, Kyungnam, Korea

Davie Shipbuilding Ltd., P.O. Box 130, Levis, Quebec, Canada G6V6N7

Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London, Republic of South Africa

Dravo Marine Equipment Company, Neville Island, Pittsburgh, PA 15225

Dubai Drydocks, P.O. Box 8988, Dubai, United Arab Emirates—U.S.A. Agents: Keppel Marine Agencies Inc., 26 Broadway, New York, NY 10004, 6240 Richmond Ave., Houston, TX 77057

Eastern Marine, Inc., P.O. Box 1009, Panama City, FL 32401

Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, LA 70182

FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208

Far East Livingston Shipbuilding Ltd., 31 Shipyard Rd., Jurong Town, Singapore 2262

Genstar Marine, 10 Pemberton Ave., No. Vancouver, B.C., Canada V7P 2R1

Gladding-Hearn Shipbuilding Corp., 1 Riverside Ave., Somerset, MA 02725

Golden Marine Co., Inc., 60 Van Brunt St., Brooklyn, NY 11231

HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219

Halter Marine, Inc., P.O. Box 29266, New Orleans, LA 70189

Hitachi Zosen Corp., 1-1-1 Hitotsubashi, Chiyoda-ku, Tokyo 100, Japan

Hoboken Shipyards, Inc., 1301 Hudson St., Hoboken, NJ 07030

Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hona Kong

Hyundai Mipo Dockyard Ltd., 456 Cheonha-Dong, Ulsan, Korea

I.N.M.A. S.p.A., 19100 La Spezia, v. le S. Bartolomeo 362, Italy

Jakobson Shipyard Inc., P.O. Box 329, Oyster Bay, NY 11771

Jeffboat, Inc., Jeffersonville, Ind. 47130

Keppel Shipyard Limited, 325 Telok Blangah Road, P.O. Box 2169, Singapore 0409

Koch Ellis Barge & Ship Service, P.O. Box 9130, Westwego, LA 70094

Kone Corp., P.O. Box 6, SF-05801, Hyvinkaa, Finland

Leevac Corporation, P.O. Box 2607, Morgan City, LA 70381

Paul Lindenau GmbH & Co., Schiffswerft u. Maschinenfabrik, D-2300 Kiel-Friedrichsort, West Germany

Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134

M.A.N. GHM Sterkrade, P.O.B. 110240, D-4200 Oberhausen 11, West Germany

McDermott, Incorporated, 1010 Common Street, New Orleans, LA 77227

Main Iron Works, Inc. P.O. Box 1918, Houma, LA 70361

Marinette Maine Corporation, Marinette, WI 54143

Jos. L. Meyer GmbH & Co., P.O. Box 2990 Papenburg 1, West Germany

Mitsubishi Heavy Industries, Ltd., 5-1, Marunochi 2-chome, Chiyoda-ku, Tokyo, 100 Japan

Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655

Moran Shipping Agencies, 602 Sawyer, Suite 200, Houston, TX 77007

Moss Point Marine Inc., P.O. Box 1310, Escatawpa, MS 39552

Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202

National Marine Service (Shipyard Division), P.O. Box 38, Hartford, IL 62048

National Steel & Shipbuilding Corp., San Diego, Calif. 92112

Nautilus Surveys Inc., 10822 Sageleaf Lane, Houston, TX 77089

Neorion Shipyards Syros Ltd., Syros, Greece—U.S.A. Agents: Keppel Marine Agencies Inc., 26 Broadway, New York, NY 10004, 6240 Richmond Ave., Houston TX 77057

Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607

North Florida Shipyards, P.O. Box 3863, Jacksonville, FL 32206

O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395, Genoa, Italy 16100

Overseas Shipyards, Inc., 21 West St., New York, NY 10006

Pennsylvania Shipbuilding, P.O. Box 442, Chester, PA 19016

Port Allen Marine Service, P.O. Box 108, Port Allen, LA 70767

Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22

Promet Marine Services Corp., 242 Allens Ave., Providence, RI 02905

Puerto Rico Drydock & Marine Terminals, Inc., P.O. Box 2209, San Juan, Puerto Rico 00903

Rauma-Repola, 26100 Rauma 10, Finland

Samsung Shipbuilding & Heavy Industries Co., Ltd., Samsung Main Bldg. 250, 2Ka, Taeyong-ro, Chung-ku, Seoul, Korea

St. Louis Ship, 611 East Marceau St., St. Louis, MO 63111

Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402

Schiess Defries, Postfach 111146, Schiess-Str. 61, D-4000 Dusseldorf 11, West Germany

Service Machine Group, Inc., P.O. Box 2664, Morgan City, LA 70381

Southbay Boat Inc., P.O. Box 13308, San Diego, CA 92113

Southern Oregon Marine Engineering and Construction, P.O. Box 1220, Coos Bay, OR 97420

Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113

Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380

Tampa Shipyards Inc., P.O. Box 1277, Tampa, Fl. 33601

Thomas Marine, 37 Bransford St., Patchogue, NY 11772

Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004

Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316

Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087

Vanguard Services, P.O. Drawer A, New Johnsonville, TN 37134

Verolme Estaleiros Reunidos Do Brasil S.A., Rua Buenos Aires, 68, Rio de Janeiro—RJ—Brazil

Vickers Cockatoo Dockyard Pty. Ltd., P.O. Box 162 Milsons Point, N.S.W. 2061, Australia

Walker Boat, P.O. Box 729, Paducah, KY 42002-0729

Zidell Explorations, Inc., 3121 S.W. Moody Street, Portland, OR 97201

SHIPPING—PACKING

Pilotage Consultants, Inc., P.O. Box 2046, New Hyde Park, NY 11040

SILENCERS

Riley-Beard, P.O. Box 31115, Shreveport, LA 71130

SMOKE INDICATORS

Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928

STUFFING BOXES

Johnson Rubber Co., Duromox Marine Div., 16025 Johnson St., Middlefield, OH 44062

Smith-Meeker Engineering Co., 157 Chambers Street, New York, NY 10007

SURVEYORS AND CONSULTANTS

Boaz Allen & Hamilton Inc., Crystal Square 2, Suite 1100, 1725 Jefferson Davis Highway, Arlington, VA

Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903

Frank Jeffrey & Assoc., 5201 Westbank Exp., Suite 206, Marrero, LA 70073

M.A. Stream Associates, Inc., 400 Second Ave. W., Seattle, WA 98119

SURVIVAL EQUIPMENT

Dunlap Boat Mfg., 2940 West Pico Blvd., Los Angeles, CA 90006

TANK CLEANING

Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989

Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England

Gamlen Marine Division, 375 Allwood Rd, Clifton, N.J. 07013

Gamajet Equipment Div., Sybron Chemicals Inc., 121 S. Maple Ave., So. San Francisco, CA 94080

Penco Div./Hudson Engineering Co., One World Trade Center, Suite 3000, New York, NY 10048

Petrochemical Services, Inc., 3820 Dauphine St., New Orleans, LA 70117

TANK LEVELING INDICATORS

American United Marine Corp., 5 Broadway, Route 1, Sagas, MA 01906

Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738

Marine Moisture Control Co., 60 Inip Dr., Inwood, NY 11696

Metal Goods Manufacturing Company, 309 W. Hensley Blvd., Bartlesville, OK 74003

Melritape, Inc., P.O. Box 2366, Littleton, MA 01460

Salwico Inc., 5 Marine View Plaza, Hoboken, NJ 07030

Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062

TORSIONAL VIBRATION SPECIALISTS

T.W. Spaetgens, 156 W. 8th Ave., Vancouver, Canada, V5Y 1N2

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.

Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002

Bulkfleet Marine Corporation, 1800 West Loop So., Houston TX 77027

Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202

Jan Erik Dyvi A/S, P.O. Box 454, Sentrum, Norway

Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771

James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004

International Transport Contractors Holland B.V., 5 Kenaupark, P.O. Box 21, Haarlem, Holland

McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004

McDonough Marine Service, P.O. Box 26206, New Orleans, La.

Midland Affiliated Co., 580 Walnut St., Cincinnati, OH 45201

Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048

National Marine Service, Transport Div., 1750 Brentwood Blvd., St. Louis, MO 63144

Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002

Turecama Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Stalen Island, N.Y. 10305

VALVES AND FITTINGS

Camlock Flange Sales Corp., 60 Inip Dr., Inwood, NY 11696

Clow Corporation, 1375 Magnolia Ave., Corona, CA 91720

Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101

Elliott Manufacturing Co., Inc. (Remote Valve Operating Equipment), P.O. Box 773, Binghamton, NY 13902

Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207

Jamesbury Corp., 640 Lincoln Street, Worcester, MA 01605

Marine Moisture Control Co., 60 Inip Dr., Inwood, N.Y. 11696

Metropolitan Plumbing Supply Corp., 50-09 Second Street, Long Island City, NY 11101

Newmans Inc., 7500 E. Reading Pl., Tulsa, OK 74101

Pittsburgh Brass Manufacturing, Sandy Hill Rd., R.D. 6 Box 387-A, Irwin, PA 15642

Stacey/Fetterolf Corp., P.O. Box 103, Skippack, PA 19474

Stockham Valves & Fittings, Box 10326, Birmingham, AL 35202

Tate Temco, Inc., 1941 Lansdowne Road, Baltimore, MD 21227

Union Flonetics, P.O. Box 459, Clinton, PA 15026

Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928

Waukesha Bearings Corp., 405 Commerce St., P.O. Box 798, Waukesha, WI 53186

Westran Corporation, Valve Components Group, 4025 Remembrance Rd., N.W., Grand Rapids, MI 49504

S.S. White Industrial Products, 151 Old New Brunswick Rd., Piscataway, NJ 08854

Whitey Co., 318 Bishop Rd., Highland Heights, OH 44143

William E. Williams Valve Corporation, 38-52 Review Avenue, Long Island City, NY 11101

Wine, Inc., 34655 Mills Road, North Ridgeville, OH 44039

Zidell Explorations, Inc. (Valve Division), 3121 S.W. Moody Avenue, Portland, OR 97201

VENTILATION DUCTING

Flexaust Company, 11 Chestnut St., Amesbury, MA 01913

VESSEL OWNER/OPERATOR

Wallenius Lines, P.O. Box 17086, S-10432 Stockholm, Sweden

VIBRATION ANALYSIS

DLI Engineering Corp., 253 Winslow Way West, Bainbridge Island, WA 98110

VIDEO TRAINING FILMS

Gulf Publishing Company Video, P.O. Box 2608, Houston, TX 77001

ICHCA Canada, P.O. Box 2366, Station D, Ottawa, Ontario, Canada K1P5W9

WATER PURIFIERS

Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024

Aqua-Chem, Inc. P.O. Box 421, Milwaukee, WI 53201

Bull & Roberts, Inc., 785 Central Ave., Murray Hill, NJ 07974

Drew Chemical Corporation, One Drew Chemical Plaza, Boonton, NJ 07005

Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559

Marine Moisture Control, 60 Inip Dr., Inwood, NY 11696

MECO (Mechanical Equipment Company, Inc.), 861 Carondelet St., New Orleans, LA 70130

Riley-Beard, P.O. Box 31115, Shreveport, LA 71130

Village Marine Tec., 2000 W. 135th St., Gardena, CA 90249

WEATHER CHART RECORDERS

Alden Electronics, 1145 Washington St., Westborough, MA 10581

WELDING

CRC Automatic Welding, P.O. Box 3227, Houston, TX 77253-3227

KSM Fastening Systems Inc., 301 New Albany Rd., Moorestown, NJ 08057

Metallizing Co. of America, Inc., 321 So. Hamilton, Sullivan, IL 61951

Miller Electric Mfg. Co., P.O. Box 1079, Appleton, WI 54912

Oerlikon Welding Industries, Inc., P.O. Box 40964, Houston, TX 77240

WINCHES AND FAIRLEADS

Braden Winch Co., 800 East Dallas, Broken Arrow, OK 74012

CNNMACO, Inc., 820 Kansas Ave., P.O. Box 5097, Kansas City, KS 66119

Fritz Culver, Inc., P.O. Box 569, Covington, LA 70434

Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134

McElroy Machine & Mfg. Co., Inc., P.O. Box 4454, W. Biloxi, MS 39531

Reel-O-Matic Systems, Inc., 418 Hellam Street, Wrightsville, PA 17368

Schoellhorn Albrecht, Div. of St. Louis Ship, 3460 So. Broadway, St. Louis, MO 63118

Smith Berger Marine Inc., 516 So. Chicago St., Seattle, WA 98108

Stanspec Corp., 13600 Deise Ave., Cleveland OH 44110

Superior-Lidgerwood-Mundy Corp., 1101 John Avenue, Superior, WI 54880

WINDOWS

Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550

WIRE AND CABLE

Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076

Atlantic Cordage Corp., 60 Grant Ave., Carteret, NJ 07008

Delco Wire & Cable, Inc., 257 Rittenhouse Circle, Keystone Industrial Park, Bristol, PA 19007

Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055

Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

WIRE/CABLE LUBRICANT

Allantis Services, Inc., 1057 Kings Ave., Jacksonville, FL 32207

WIRE ROPE—Slings

AISCO, 60 Grant Ave., Carteret, NJ 07008

Atlantic Cordage Corp., 60 Grant Ave., Carteret, NJ 07008

Bethlehem Steel Corp., Martin Tower, Bethlehem, PA 18018

A.L. Don Company, Foot of Dock Street, Matawan, NJ 07747

I & I Sling Company, 2626 Market Street, Dept. D, Aston, PA 19014

ZINC

The Platt Bros. & Co., Box 1030, Waterbury, CT 06721

Smith & McCracken, 153 Franklin St., New York, N.Y. 10013



POLISH VISITOR—Pictured undergoing repairs at ASMAR, Chile's leading ship repairer and shipbuilder, is the 2,395-gt Polish fishing vessel F.S. Tazar. Owned by Odra Deep Sea Fishing Company of Poland, the vessel recently underwent repairs and hull cleaning at ASMAR's Talcahuano yard. The hull was sandblasted to SA-2½, and her cathodic protection, sea valves, and sea chests were inspected. In addition, twisted parts of her P&S cargo room center sector were renewed and reinforced with half-rounds.

First Oceangoing Sail-Assisted Bulker Delivered By NKK



Sail-assisted ocean freighter Aqua City, a 30,900-dwt bulk carrier built by NKK of Japan, has completed her maiden voyage from Yokohama to Vancouver, Canada.

Nippon Kokan (NKK) in Japan has recently delivered the world's first oceangoing, sail-assisted vessel, the 30,900-dwt bulk carrier Aqua City to her owner, Aqua City Maritime Inc. NKK has pioneered in the design of sail-assisted ships in conjunction with the Japan Maritime Machinery Development Association and built the first such vessel, Shin Aitoku Maru, in 1980. Since that time, six smaller coastal and short-range vessels have been put into service in Japan.

The first such vessel to fly a non-Japanese flag, the Panamanian-registered Aqua City is serving the Japan-Canada-U.S. West Coast route, and has recently completed her maiden voyage from Yokohama to Vancouver. The vessel has an overall length of 590.2 feet, beam of 83.3 feet, depth of 47.6 feet, and draft of 34 feet. Her main engine has an output of 8,300 bhp at 99 rpm; service speed is 14 knots. Total area of the two sails mounted atop her bow section is 352 square meters.

The two sets of parabolic-shaped, rectangular sails, on steel frames, are 16 meters high by 11 meters wide. Computer-controlled, they respond automatically to shifts in wind direction, and are said to provide up to 30 percent fuel savings under the best conditions.



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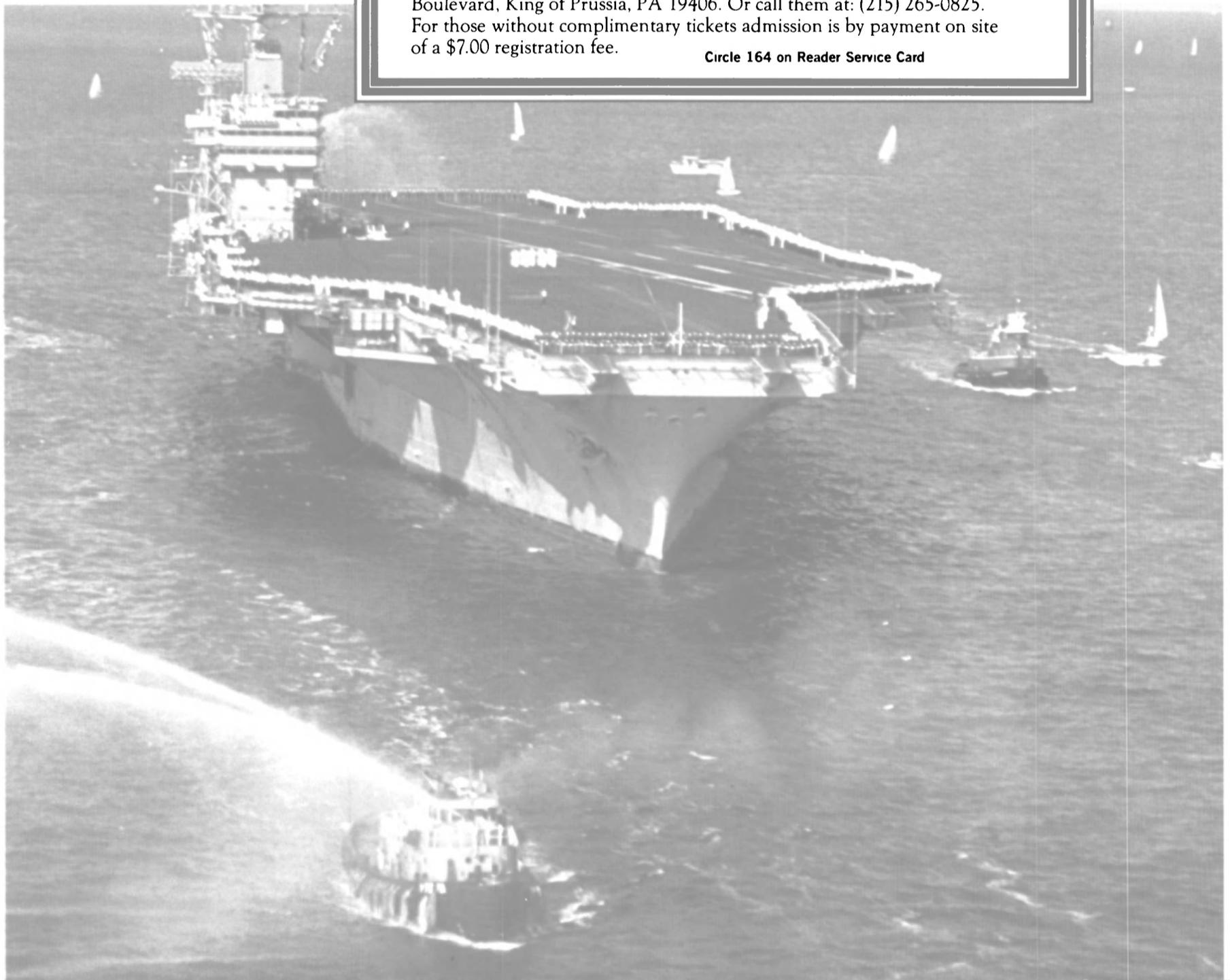
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November 7-2 pm to 6 pm, November 8-10 am to 6 pm, November 9-10 am to 4 pm

Perhaps you were one of the 3,145 attendees who were present at the second International Maritime Exposition. If so, we invite you aboard again. If you were not, welcome aboard, too. The Society of Naval Architects and Marine Engineers (SNAME) will soon be taking on attendees for the third International Maritime Exposition. This vital annual event is scheduled for November 7-9, during the Society's Annual Meeting, a consistently excellent two-day technical program.

The previous show attracted 143 exhibitors who displayed and demonstrated a myriad of marine products ranging from anchors to sophisticated computerized design, control, and manufacturing systems. The 1984 event promises to be even larger and more diversified. That applies to the audience too. As before, the Exposition is open to SNAME members and non-members alike. And is free to anyone 18 years of age or over upon presentation of a complimentary ticket. Complimentary tickets may be obtained by writing to: Reber-Friel Co., Exposition Managers, 216 Goddard Boulevard, King of Prussia, PA 19406. Or call them at: (215) 265-0825. For those without complimentary tickets admission is by payment on site of a \$7.00 registration fee.

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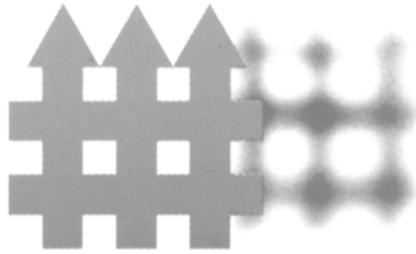
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