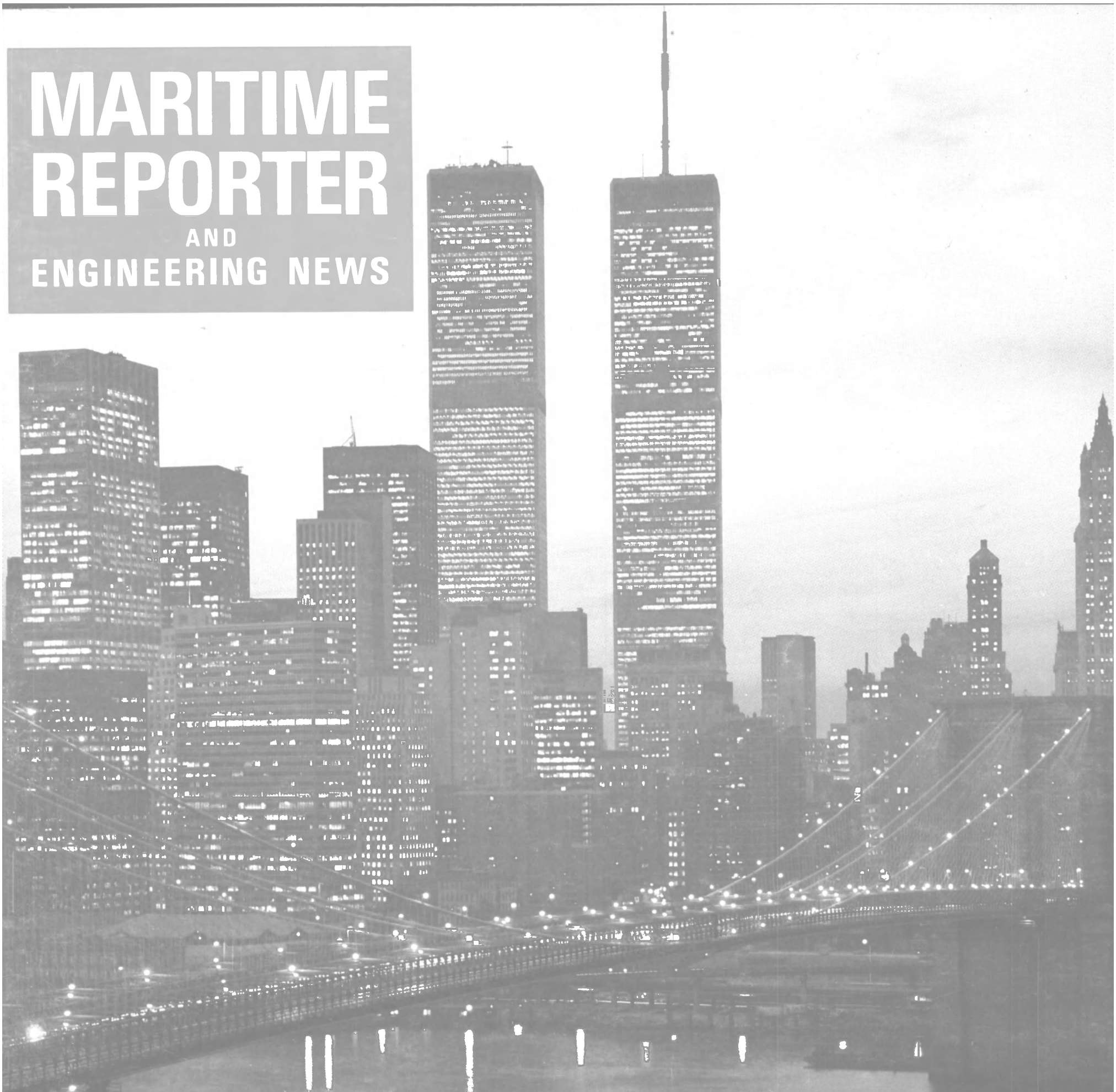
MARITIME REPORTER
AND ENGINEERING NEWS



93RD SNAME ANNUAL

View of New York Harbor

4TH INTERNATIONAL EXPOSITION

NOVEMBER 1985 DOUBLE ISSUE

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NOVEMBER 13-15, 1985 NEW YORK HILTON
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* Fathom Oceanology Limited 6760 Campobello Road Mississauga, Ontario, Canada L5N 2L8 Tel. (416)821-8730 Tlx. 06-218222 Mr. Robert R. Walker, V.P. Marketing	Design, development, manufacture and service of variable depth sonar (VDS), towed line array (TLA), mine counter measures (MCM), handling systems incorporating passive and active, motion compensation, hull-mounted sonar domes, towed bodies, marine winches, hydrodynamic cable fairings, deep water towing hardware.
* Hurricane Rescue Craft Inc. 5940 A #2 Road Richmond, B.C., Canada V7C 4R9 Tel. (604)273-0451 Tlx. 04-357545 Mr. Ernest Hammond, Dir. of Marketing & Sales	A world leader in rigid hull inflatable technology, Hurricane produces a wide range of rescue, life and work boats up to 8 meters in length. Craft are particularly suitable for service with military, coast guard, offshore law enforcement, and other maritime interests.
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* Leroy-Somer Motors Canada Ltd. 337 Deslauriers Street St. Laurent, Quebec, Canada H4N 1W2 Tel. (514) 332-1880 Tlx. 05-826596 Mr. Henri-Pascal Rimbaud, Mgr. Marine Projects	Leroy-Somer is a manufacturer of a complete range of AC and DC electrical motors, alternators, generators, frequency converters, and no break sets for commercial, marine, and naval applications.
* Marine Industries Limited P.O. Box 550 Sorel, Quebec, Canada J3P 5P5 Tel. (514) 743-3351 Tlx. O55-61081 Claude Bourdon, Dir.-Sales & Marketing	Marine Industries Limited offers fifty years' experience in shipbuilding, (military, research, product tankers, cargo, ferries, floating docks) shiprepair, conversion, & major refits. Project management, turnkey projects. CAD/CAM System.
* Saint John Shipbuilding Limited P.O. Box 970 Saint John, New Brunswick, Canada E2L 4E5 Tel. (506)633-4444 Tlx. 014-47243 Mr. G. J. Snyders, V.P. General Manager Mr. D. I. Jones, Dir. of Marketing Mr. A. N. Shankland, U.S. and overseas sales and liaison representative (804-877-0190)	Ice free year round facility offers new construction, ship repairs, overhauls, and refits for commercial and naval vessels up to 100,000 dwt. Other services offered include project management, design life cycle support and quality assurance.
* Scannar Industries Inc. 2200 Walkley Road P.O. Box 9206 Ottawa, Ontario, Canada K1G 3T9 Tel. (613)737-2900 Tlx. 05-811504 Mr. G. W. Kautz, Dir. of Marketing	Military sonars specially designed for shallow water applications and for installation in old or new vessels ranging in size from about 20 to 100 Meters in length

Company	*Product/Service*
* Tyton Seal, Division of Armet Industries Corp 285 Labrosse Ave. Pte. Claire, Montreal, Quebec, Canada H9R 1A3 Tel. (514)695-8910 Tlx. 05-821778 Mr. R. Koch, Vice President	Sterntube seals for water and oil lubricated bearings, bulkhead seals (self-activated and by remote control), rudder-stock seals. Approvals by U. S. Navy, Coast Guard, Lloyd's, etc.
Versatile Corporation, head office: Vancouver, British Columbia, Canada (Marine & Industrial Group)	
* Versatile Davie Inc. (formerly Davie Shipbuilding Ltd.) P.O. Box 130 Levis, Quebec, Canada G6V 6N7 Tel. (418)837-5841 Tlx. 051-2254 Mr. Robert M. Farquhar, V.P. Marketing and Sales.	Canada's largest and oldest shipyard, with an international reputation in the construction, repair and conversion of commercial and naval ships as well as in custom-designed steel fabrication serving the varied needs of heavy industry.
* Versatile Pacific Shipyards Inc. (formerly Burrard Yarrows Corp.) Divisions in Vancouver and Victoria Executive Offices: 109 East Esplanade Avenue North Vancouver, B.C., Canada V7L 1A1 Tel. (604)988-2111 Tlx. 04-352652 Mr. Quintin M. Watt, V.P. Marketing	The largest repairer of foreign deep-sea vessels in Canada and third largest fully-integrated shipyard operation in the country; also the largest shipyard on the West Coast. Manufacturers and repairers of industrial machinery.
* Versatile Systems Engineering Inc. (formerly Versatile Vickers Systems Inc.) #700 1600 Carling Avenue Ottawa, Ontario, Canada K1Z 7M6 Tel. (613)722-2247 Tlx. 05-34924 Mr. Thomas R. Campbell, V.P.of Operations	One of the principal marine design and naval engineering consultancies in Canada, specializing in the broad spectrum of ship systems design, and the provision of technical assistance and management resources.
* Versatile Vickers Inc. 5000 Notre Dame Street East Montreal, Quebec, Canada H1V 2B4 Tel. (514)256-2651 Tlx. 05-828735 Mr. Terry J. Farrell, Senior Vice President of Marketing	One of the leading ship repairers in Eastern Canada; a major ship outfitter and custom manufacturer of large-scale, heavy industrial products and precision-engineered components.
* Wagner Marine (USA) Inc. 14326 102nd Avenue NE P.O. Box 1268 Bothell, WA 98011 Tel. (206) 823-1372 Dan Gideon, President	Wagner Engineering, Ltd., with modern facilities in North Vancouver, B.C., is a leading producer of hydraulic steering systems, electronic control systems, autopilots, rudder angle indicators and related accessories. Its products are sold in over 60 countries.
* Wilson Machine Co. Limited 2299 Lapierre Street LaSalle, Quebec, Canada H8N 1B7 Tel. (514)365-4101 Tlx. 055-66256 Mr. C. Tunney, Sales Manager	Wilson Machine, established in 1913, is a leading Canadian gear manufacturer. Wilson manufactures for civilian and military marine applications, deck machinery, and radar drives.
* Zebra International Corporation 708 Kapilano 100 Building Park Royal, West Vancouver, B.C., Canada V7T 1A2 Tel. (604)926-3258 Tlx. 04-352578 R. J. Alliston, President	Zebra International Corp. is the worldwide marketing arm for Zebron (in USA - Torbron), a high strength polyurethane anti-corrosive coating for ships' hulls, drilling platforms and other marine applications.

**Inquiries from potential agents and representatives in world markets most welcome.*

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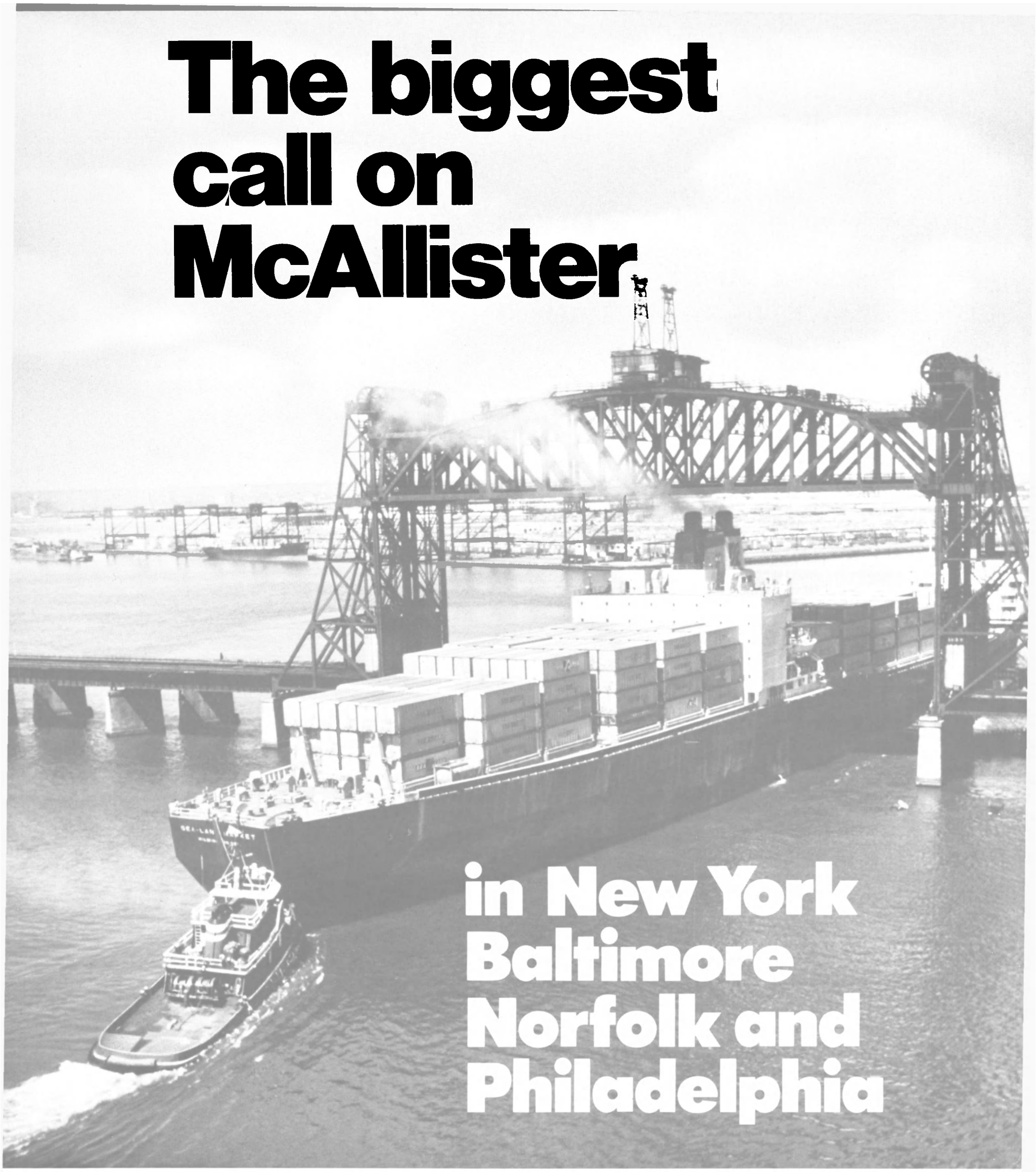

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ON THE COVER

SNAME Annual Meeting Preview
—Pullout Section—
PAGE 47

Coastal Drydock Wins $10.5-Million Contract For USS Shreveport Overhaul

Coastal Drydock and Repair Corporation, Brooklyn, N.Y., was awarded a $10,587,000 firm-fixed-price contract for the regular overhaul of the USS Shreveport (LPD-12).

The work will be performed in Brooklyn, and is expected to be completed May 27, 1986.

The contract funds for the project would not have expired at the end of the current fiscal year. There were 23 bids solicited and 11 offers received. The Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Va., is the contracting activity (N00024-85-H-8130).

Korea Agrees To Use U.S.-Flag Ships To Carry Military Cargoes

According to a recent announcement by Rep. **Helen Bentley** (R-MD), the South Korean government has agreed to haul military cargo purchased in the U.S. exclusively in U.S.-flag vessels until a deficit of 50,000 tons of cargo owed to American shipping lines is made up.

Various agreements between the U.S. and Korea state that portions of military shipments are to be carried in U.S.-flag vessels, and 100 percent when credit is involved. Rep. **Bentley** wrote to Korean Ambassador **Byong Hion Lew** stating that "there has been little if any effort to comply with that requirement." As a result, a deficit of as much as 75,000 tons of cargo due to U.S. shipping lines has accumulated. The Maritime Administration, however, has suggested settling to volume at 50,000 tons.

In his reply to Mrs. **Bentley**, Ambassador **Lew** stated, "It has been agreed that all cash- and credit-funded material will be shipped on U.S.-flag vessels until such time as the deficit has been eliminated."

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ALL MATERIAL FOR EDITORIAL CONSIDERATION SHOULD BE ADDRESSED TO ROBERT WARE, EDITOR.

BPNAP Marine Lubricants Relocates In New Jersey

BP North America Petroleum, Inc. (BPNAP) Marine Lubricants has announced it has moved its headquarters to new offices in Iselin, N.J.

The staff located at the new facilities includes **Richard J. Bogash**, manager, marine lubricants-USA; **Joseph W. Diaz**, manager, marine lubricants operations and administration-USA; **Brian G.A. Mennell**, manager, marine engineering-USA; and **Al M. Keller**, manager, marine lubricants-Eastern Region.

BPNAP Marine Lubricants also has regional offices in New Orleans, La., servicing the Gulf Coast, and in San Pedro, Calif., servicing the West Coast. Additionally, they have supply facilities at over 50 ports throughout the USA.

BPNAP Marine Lubricants is the American arm of the BP Marine International Lubricants global network operating in over 60 countries worldwide and providing lubrication and technical back-up service to over 4,000 vessels, including some of the world's largest shipping fleets.

The new address is: BP North America Petroleum, Inc., 555 U.S. Route 1-South, Second Floor, Iselin, N.J. 08830, telephone (201) 750-8828 or (800) 524-1567; telex No. 176082.

For further information on their services including brochures on product ranges and supply facilities,

Circle 24 on Reader Service Card

Rockwell Awarded NAVSEA Contract For Sonar Sets

Rockwell International Corporation, Anaheim, Calif., was awarded a $3,975,650 letter contract with a ceiling price of $11,359,000 for four AN/BQQ-9 sonar signal processing (SSP) sets.

The work will be performed in Anaheim, and is expected to be completed September 30, 1987. The Naval Sea Systems Command (NAVSEA), Washington, D.C., is the contracting activity (N00024-85-C-6542).

At the end of the current fiscal year, $3,370,000 of the contract funds would have expired.

Clemlite® System Offers Economy And Safety —Literature Available

According to Clemco Industries, Burlingame, Calif., the Clemlite™ system of abrasive blast hoses, couplings and nozzles can heighten productivity by lightening operators' loads by as much as 62 percent, while offering improved safety and economy.

Combining ultra-light weight with new levels of flexibility, Clemlite Supa™ hose features 1¼-inch inner diameters plus end-of-hose outer diameter controlled to within 1/32 of an inch for tigher, safer, no-leak connections. Other hose features include a pin-pricked outer cover to prevent steam bubbles from forming between the cover and the ¼-inch thick inner tube; carbon treatment to dissipate static electricity; and cement-sealed or rubber-capped ends to eliminate ply separation caused by entry of high-pressure air.

Made of lightweight nylon, the "twist-connect" Clemlite couplings employ a universal locking lug for easy attachment to hoses of different sizes, and incorporate Clemco's exclusive automatic-snap safety wire for added security. New internal spirals guide hoses to a firm seal with the coupling's static conducting gasket and—when blasting begins—grip inward to ensure a no-leak connection.

Clemlite venturi blast nozzles use one piece, sintered liners made of silicon carbide, a technological breakthrough in wear-resistant materials that offers extended life in high-production environments, as well as benefits in reduced weight and cost. Tough urethane jacketing is used as insulation between the liner and the full-length aluminum sleeve, as well as on the outer nozzle surface, to protect against shock during on-the-job handling.

For free literature on the Clemlite System of abrasive hoses, couplings and nozzles,

Circle 80 on Reader Service Card

Fifth Maritime Prepositioning Ship Delivered By Bethlehem-Beaumont

The 1st Lt. Alex Bonnyman, delivered recently by Bethlehem Steel Corporation's Beaumont (Texas) Yard, is the fifth and final vessel to be reconstructed by Bethlehem for the U.S. Navy's Maritime Prepositioning Ship Program. The Bonnyman and her four sister ships, which will be chartered to the U.S. Navy's Military Sealift Command, are owned by a banking consortium and will be operated by Maersk Lines, Limited of New York City.

The converted ship was christened by Mrs. **Frances Bonnyman Evans**, daughter of the World War II Marine Corps hero for whom the vessel is named. Her daughter, **Catherine Evans**, served as maid of honor. For his battlefield heroism on the South Pacific island of Tarawa, Lt. **Bonnyman** was posthumously awarded the Congressional Medal of Honor. Guest speaker at the naming ceremony was U.S. Representative **Ben G. Blaz**, Delegate to Congress from Guam.

The Bonnyman and her sister ships will provide the capability for quick reaction by Marine Corps troops at trouble spots anywhere in the world. To meet these mission requirements, Bethlehem separated the vessel amidship and added a 157-foot-long midbody, extending her length to 755 feet. The depth was changed with the addition of two new deck levels, increasing the keel-to-main deck depth from 54 to 70 feet. Accomplishing this also required the alteration of three decks—first, main, and upper.

These modifications provided more cargo holds, space for a third set of twin 36-ton capacity cranes, and a new 80-man deckhouse for "surge" crews during periodic loading and unloading operations. The normal crew complement will be about 65, comprised of civilian and Military Sealift Command personnel.

Reconstruction statistics include a 46,484-ton full-load displacement and a 32-foot 10½-inch full-load draft. The ship's original diesel engine propulsion plant will provide a speed of 17.2 knots operating at 80 percent of maximum rated horsepower; range is 10,800 nautical miles.

On-board capacities include 120,000 square feet for vehicles, provisions for 313 ammunition and refrigerated cargo containers, 1.3 million gallons of drummed and bulk petroleum products, 84,933 gallons of potable water, and 615,083 gallons of fuel oil. Other major additions include a new stern ramp, fuel tanks, repair shops, and a helicopter landing platform aft.

The Bonnyman is the second Maersk ship to be reconstructed at the Beaumont yard, and the last in the five-ship contract to be delivered. The other three Maersk vessels were converted at Bethlehem's Sparrows Point shipyard near Baltimore.

In all, the five-ship reconstruction contract represented a value of more than $600 million to Bethlehem, allowing the continuation of a long tradition of shipbuilding at the company's domestic construction facilities during the current commercial marine construction slump.

Versatile Vickers Awarded Refit Contracts Worth $15 Million From Canadian Navy

Versatile Vickers Inc. of Montreal, one of Canada's most experienced naval ship repair yards, was recently awarded two refit contracts worth approximately Can.$20.5 million (approximately $15 million).

The most valuable of the contracts, worth Can.$13 million ($9.5 million), is to carry out the nine-month refit of the HMCS Preserver, a Canadian naval tanker/supply ship. The job entails the general overhaul of the vessel, docking, painting and the overhaul of the main auxiliary machinery and miscellaneous equipment.

The second contract, worth Can.$7.5 million ($5.5 million), is to carry out similar refit work to the HMCS Saguenay, a Canadian Navy destroyer. The vessel is already at the Montreal yard and the contract will last approximately six months.

Versatile Vickers is part of the Versatile Corporation which is now one of the largest shipyard operators in Canada. Besides Versatile Vickers, its other shipyard interests include Versatile Pacific Shipyards Inc. with yards at Vancouver and Victoria, and the Versatile Davie yard at Quebec.

For further information and free literature on the Versatile Corporation,

Circle 69 on Reader Service Card

The HMCS Preserver in for a nine-month refit at Versatile Vickers yard.

Todd-Seattle Awarded $6-Million Navy Contract For Work On Support Ship

John T. Gilbride Jr., vice president and general manager of Todd Pacific Shipyards Corporation's Seattle Division, has announced the award of a $6-million Navy phased maintenance contract for routine maintenance work without drydocking on the fast combat support ship USS Camden (AOE-2). This contract is the first of five for phased maintenance work on the Camden and sister ship USS Sacramento (AOE-1) expected to be awarded during the next five years. Bidding on the first contract was restricted to Puget Sound shipyards; the Camden is based at Bremerton, Wash.

Todd-Seattle industrial and public relations manager **Steve Stanford** said this maintenance contract will provide 400 jobs during the four-month period the ship is in the yard, with 25 to 30 support personnel continuing between overhaul contracts.

The Seattle yard's current backlog includes a $236-million Coast Guard contract for modernization of eight Hamilton Class cutters, and a $15-million Navy contract for the regular overhaul of the destroyer USS Harry W. Hill (DD-986).

Todd-Seattle is one of two finalists in competition for follow-on construction of the Navy's air cushion landing craft (LCAC).

Hi-Test Appoints LeBlanc NS&V Project Manager

Hi-Test Laboratories, Inc. of Buckingham, Va., one of the country's leading authorities on U.S. Navy warship noise, shock and vibration (NS&V), recently announced the employment of **Larry J. LeBlanc** as project manager for the NS&V consulting group.

Mr. **LeBlanc** is a graduate of Tulane University and is a member of the National Physics Honor Society. He has over 12 years' experience organizing and managing NS&V programs for major shipyards constructing U.S. Navy ships. He comes to Hi-Test directly from Avondale Shipyards, Inc., where he was assistant project engineer in the Mechanical Design Section for LSD-44 NS&V.

Mr. **LeBlanc's** first assignment at Hi-Test is to provide assistance to Bell Aerospace Textron on the NS&V program for the unique mine sweeper/hunter surface-effect ship. He will also play a major role in providing similar services to other shipbuilders in the U.S.

Oceaneering Uses Signals From GPS Satellites To Position Drilling Rig

Using satellite signals only, Oceaneering International, Inc. of Houston has accurately positioned the Doo-Sung, a semi-submersible drilling rig on contract to Exxon in Alaska's Navarin Basin. This is said to be the first time a rig has been positioned without the use of land-based or acoustic positioning systems.

In June this year Oceaneering's chief surveyor, **Eric Swinney**, positioned the rig using the Magnavox T-Set, one of the first commercial units to track satellite signals emitted from the U.S. Global Positioning System (GPS). Signals from the six operational GPS satellites now in orbit, along with signals from the TRANSIT satellite system, were used to provide the data needed for accurate positioning.

The satellite tracking unit, about the size of a personal computer, is operated directly from the rig, eliminating the need for costly shore stations and acoustic arrays. The unit enables Oceaneering's surveyors to monitor satellite signals and the rig's position, speed, and course anywhere in the world. The entire satellite constellation has not yet been fully deployed, but when complete, the GPS will provide 24-hour coverage in all weather, with four satellites present in any given celestial hemisphere at all times.

For further information on Oceaneering International's services,

Circle 75 on Reader Service Card

Circle 132 on Reader Service Card ➔

Newman's Offers New Brochure On Complete Line Of Ball Valves

Newman's Inc., headquartered in Tulsa, has available a new four-page brochure detailing NEWCO ball valves specifically designed for high-reliability operation in the oil, petrochemical, and related industries. It has been formatted with line drawings for ease in selection and order placement.

This informative brochure features both the NEWCO floating ball and trunnion-mounted ball valves. Floating ball valves are available in sizes 2 through 12 inches, ANSI pressure classes 150 and 300, full port and regular port. Full port and reduced port trunnion-mounted ball valves are available in sizes 14 through 24 inches, ANSI pressure classes 150 and 300, and full port in sizes 2 through 4 inches, ANSI pressure class 600. All NEWCO ball valves are available in a wide range of body and trim materials, and all comply with API 6D and ANSI B16.34.

NEWCO ball valves are manufactured in a facility equipped to perform life cycle testing and fire testing to various standards, in addition to the usual manufacturing and test equipment. Stringent quality assurance standards are met with production control set to Newman's specifications. Newman's engineering staff is available at all times for consultations on customers' special requirements.

For further information and a free copy of the new brochure,

Circle 45 on Reader Service Card

MEL Awarded $42.9-Million Contract From Ministry Of Defence

MEL, a division of Philips Electronic and Associated Industries Ltd., has been awarded a Ministry of Defence naval contract in excess of £30 million (approximately $42.9 million). The fixed-price contract is for the supply of new electronic support measures (ESM) for an update program covering 'Oberon' Class diesel electric submarines and nuclear-powered SSN Class submarines and support facilities.

Eight major companies competed for the submarine EW contract. Being awarded the Royal Navy contract places MEL in a strong position to bid for further MoD contracts and to pursue export work.

For further information about MEL and their products,

Circle 40 on Reader Service Card

Royal Navy Purchases Raytheon Bathy System —Literature Available

The British Royal Navy has purchased a deepwater bathy system from Raytheon Ocean Systems Company, East Providence, R.I., and installed it aboard the HMS Challenger, a new seabed operations vessel.

The Challenger is one of the world's most technologically advanced hydrographic vessels. It features the very latest in equipment and systems and is designed to search, inspect, and recover objects on the seabed at great depths.

The Raytheon system is modular and comprised of standard company instruments integrated into a highly compatible unit. The bathy system includes a 12-kHz transducer, correlation echo sounder processor, model LSR-1811 line scan recorder, switch panel, sonar transceiver, precision depth digitizer, and onboard computers.

The profiling system has the power and processing capabilities for deepwater surveys, yet can perform equally well in shallower coastal waters. Rugged and flexible, it meets specific survey needs while maintaining performance and application versatility.

Advanced electronics throughout the Challenger have resulted in a number of distinctive characteristics, including a sophisticated dynamic positioning system, unusual propulsion and maneuvering, and high-power generation capabilities. At sea since 1984, the ship has already demonstrated unique abilities.

For further literature containing full information,

Circle 32 on Reader Service Card

Marketec Expands Service/Equipment Lines —Literature Available

Jack Ellsworth

Marketec, Inc., Chatham, N.J., was recently appointed as sales and service representatives for Turbo-Technik Repairyard for express repair service in Wilhelmshaven and Hamburg, West Germany and worldwide voyage repairs; for Wynn Marine bridge window wipers; and for KL high-pressure hydraulic expansion cylinders, pipe clamps, penetrations and flange couplings, according to company president **Jack Ellsworth**.

At present, Marketec, Inc. sell and service Polarjet tank cleaning equipment, Quantek separating and filtering equipment, and Biospherics oil-in-water detectors.

For free literature and information on any products and services represented by Marketec, Inc.,

Circle 44 on Reader Service Card

Literature Available On GEMS New All-CPVC Liquid Level Switch

A new GEMS all-CPVC liquid level switch, LS-74780, is now available from Transamerica Delaval. The switch withstands temperatures up to 185°F for chemical processing or other applications using corrosive liquids, and operates high, low or intermediate alarms, as well as being suited for automatic safety interlocks, pump motor control etc.

When combined with GEMS relays, these switches can operate remote pumps or other equipment. They feature simple operation—a magnet-equipped float, moving directly with liquid level, actuates a hermetically sealed switch within the unit's stem.

For further information and free literature on GEMS Sensors Division, Plainville, Conn., and their products,

Circle 42 on Reader Service Card

Africa Ocean Lines Getting First New Containerships From East German Shipyard

Africa Ocean Lines (AOL), the fast-growing, non-conference liner company, marked its first anniversary recently by revealing that it is soon to become a shipowner in its own right. The company has signed a contract worth approximately $20 million for the delivery of two 17,600-dwt multipurpose ships from a yard in East Germany.

The new vessels, to be named Binta Yar'Adua and Atinuke Abiola, each have a container capacity of 930 TEUs and are being built at the East German yard of VEB Schiffswerft Neptun Rostock. The first ship was launched at the end of July, and is scheduled for delivery at the end of this month. The second was launched at the end of October and will go into service at the end of March, 1986. When both ships are in operation, AOL will offer a regular full container service to shippers of one sailing North Europe-West Africa every 21 days.

Both vessels will fly the Nigerian flag, following the Nigerian Government's recent announcement that it had made AOL a national-flag carrier. The two ships are of a new design capable of loading and unloading containers in ports that have no shoreside cranes or where cranage is inadequate. They will be equipped with three 40-ton cranes, which when combined will be able to lift up to 75 tons.

Waller Heads New Firm Based In San Diego To Provide Contract Management

Robert Waller

Jack Bertram

A new San Diego-based company is launching a new approach for the repair and modernization of military and commercial vessels. The firm, Engineering Visions, Inc. (Envisions), is focusing on providing integrated contract management for planning, engineering, and production for the overhaul of ships and subsystems—a concept common in land-based construction but so far not employed widely in the marine engineering field.

"Contract management for any given project is presently spread among several Naval activities with limited overall responsibility," says **Robert A. Waller**, Envisions president. "We feel our total contract management approach will achieve better integration and on-time delivery at lower cost for all phases of maintenance, repair, alteration, and modernization."

Envisions was formed when employees of two divisions of Planning Research Corporation—23-year-old PRC Marine Services and eight-year-old PRC Guralnick, Inc. (a joint venture with Morris Guralnick, Inc.)—purchased the operations and merged them this past summer.

"As a single company we can operate more efficiently than we could as two separate organizations," says **Jack Bertram**, director of business development.

Other Envisions senior managers include: **Charles E. Warner**, director of ship design; **Charles R. Barney**, director of planning and logistics; **John F. Hamma**, director of engineering; and **Mark P. Tanner**, manager of finance and administration.

Fuel Tech Adds F.A. Hughes As Subsidiary, Amalgamating Combustion Technologies

The amalgamation of combustion technologies from both the United States and Europe were brought to the maritime world when U.K.-based F.A. Hughes Marine Limited was made a part of the American-based Fuel Tech, Inc. group.

Fuel Tech of Stamford, Conn., is a unique organization dedicated to meeting the challenges presented by industry's need to become more energy efficient. With extensive capabilities in combustion chemistry, combustion equipment, field service, and a continuing commitment to new product development, Fuel Tech and its subsidiaries are an important source for solutions to today's energy problems.

Besides F.A. Hughes of Epsom, England, the Fuel Tech organization is comprised of Todd Combustion, Inc. (TCI); International Power Chemicals, Inc. (IPC); and Todd Marine, Inc.

Todd Marine Inc. is chartered to represent Fuel Tech, Inc. in the international marine industry. Through its marketing division, Todd Marine Systems, it makes selected products and services of Fuel Tech, Todd Combustion, IPC, and F.A. Hughes available to the shipping world. Consequently, in Hughes and Todd Marine two successful technologies are brought together, namely mechanical emulsification of fuel and water with water soluble fuel additives. Thus, fuel saving opportunities are enhanced and corrosion and other problems tackled effectively at one and the same time.

For boilers, the well-known burners of Todd Combustion will be enhanced by the Hughes oil/water emulsifier and International Power Chemicals chemical emulsifier, catalysts, ash modifiers and anticorrosion constituents.

For diesel engines, the Hughes new proportional control units enable oil/water emulsification to be maximized by I.P.C. additives. Emulsification will be optimized by utilizing both mechanical and chemical techniques.

In this way, both parts of the group find new opportunities for growth in the expanding fields of energy conservation and the related technologies. Overcoming combustion problems, reducing emissions and increasing the usable content of hydrocarbon fuels are central to the overall corporate mission.

For further information and free literature on the Fuel Tech group,

Circle 50 on Reader Service Card

Foss Initiates New Container Feeder Service

Foss Launch & Tug Co. recently inaugurated a new service, moving containers between Seattle/Tacoma and New Westminster, B.C., which is the result of a company program to identify and develop new markets. **Chuck Main**, manager of sales development and **Tim Brewer**, vice president of sales, coordinated the commencement of the new container feeder operation.

The major users of the new service are Sea-Land Services, Incorporated and American President Lines.

Foss completed several voyages of the new feeder service, for APL and Sea-Land, docking and directly unloading the containers at their individual terminals in Seattle and Tacoma.

In addition to cost savings enjoyed by the shipping lines, there is the added benefit of being able to offer a direct-call type of service to Canadian shippers without having the time and expense of diverting a vessel into New Westminster or Vancouver, plus the simplification of receiving and distributing cargoes in and out of the terminal via barge, rather than individual trucks and also, reduced paperwork.

For more information about the new Foss service,

Circle 52 on Reader Service Card

Aerial view of Moon Engineering's Pinner's Point facility. The yard will officially open in the spring.

Moon Engineering Expands— Moves To Portsmouth, Va.

Moon Engineering Company, Inc. of Norfolk, Va., after 65 years of service to Navy and commercial ships, is moving across the Elizabeth River from her old Front Street berth along the Norfolk waterfront to Pinner's Point in Portsmouth, Va., about two nautical miles downriver from the U.S. Navy yard.

According to company president **William E. Thomas Sr.,** the move entails a major expansion of MECO's ship repair capabilities. With plans for doubling the workforce to 320 or more employees, the new MECO facility at Pinner's Point represents a significant economic boost for the City of Portsmouth.

W.E. Thomas

The $7-million initial phase of construction on the new 63-acre site (24 acres of dry land) is, according to the company, well-timed for the Navy ship repair industry. Navy Secretary **John F. Lehman** is promising a "commitment to competition" that will allow private ship repair yards delivering the "best work for the lowest cost" to "bid for work ... (they) would never have gotten in the past" as part of the "new way we're doing business" at the Navy Department.

The expansion and move also coincide with the beginning of the Navy's new phased maintenance program where yards such as Moon Engineering may be awarded up to five-year contracts to repair and schedule maintenance on several ships in a given class. The program is said to guarantee the Navy better value for its repair dollar and continuity of maintenance programs. At the same time, phased maintenance allows yards like MECO to more accurately estimate and more thoroughly perform repairs and better monitor maintenance needs, while being able to maintain larger, more stable workforces. With an expected workforce of between 320 to 350, Moon will be the largest private shipyard in Portsmouth.

Reportedly, about 80 percent of the company's work is for the Navy, either performed at Moon's piers or "downriver" wherever the ship is berthed. MECO has made repairs on a wide range of Navy ship classes, from aircraft carriers (CV), to tugboats (YTB).

The bulk of this work is in ship repairs and conversions including boiler and machinery repair, piping, diesel, hydraulic, habitability, structural and electrical work.

Moon Engineering crews are backed up by an extensive array of specialty repair sections including a machine shop, an electrical shop, a steel fabrication shop, a sheet metal shop, a rigger's shop, and an internal combustion and hydraulics shop.

In a second phase of its business, Moon Engineering provides maintenance and repair services for local industries. This work normally consists of boiler repairs, piping installations, and repairs utilizing the machine and welding shops.

For further information and free literature on Moon Engineering's services and facilities,

Circle 16 on Reader Service Card

Meeks Named International Marketing Manager For Honeywell Marine Systems

Honeywell has named **L. Charles Meeks** international marketing manager for mine countermeasure systems at its Marine Systems Division in Seattle, Wash. Mr. **Meeks** will be responsible for marketing the division's mine neutralization system and focusing related technologies in international markets.

Circle 330 on Reader Service Card →

Free Brochure On Single-Stage Turbines Offered By Terry

Terry Steam Turbines, Windsor, Conn., is offering a four-page brochure, "GLT single-stage turbines." Featuring photo and line-drawing illustrations, as well as a detailed breakdown of specifications, dimensions and materials, the publication covers the benefits of the first truly new small turbine to be developed by the industry since 1965, according to Terry.

Available in ratings to 200 hp, the GLT single-stage machines, with unique overhung solid wheel, are designed to meet the requirements of API 611.

For a copy of the Terry Steam Turbine brochure, "GLT single-stage turbines,"

Circle 22 on Reader Service Card

The Aegis guided-missile cruiser Mobile Bay (CG-53) docked adjacent to the Bunker Hill (CG-52), the first U.S. Navy combat ship to be equipped with a vertical launching missile delivery system.

Ingalls Shipbuilding Christens Another Aegis Missile Cruiser

The first U.S. Navy surface warship to be named in commemoration of the Civil War Battle of Mobile Bay in Alabama was christened at the Ingalls Shipbuilding division of Litton Industries in Pascagoula, Miss., recently.

The ship, officially named Mobile Bay (CG-53), is the sixth of 12 Aegis guided-missile cruisers contracted to Ingalls by the Navy. Principal speaker for the ceremony, held at the company's West Bank yard, was Alabama Senator **Jeremiah A. Denton Jr.,** a native of Mobile. Mrs. **Denton** served as the ship's sponsor and broke the traditional bottle of champagne across the cruiser's bow.

The Mobile Bay is the second U.S. warship to be equipped with the MK 41 Vertical Launching System (VLS), a multiwarfare missile-launching system capable of firing a mix of missiles against airborne, surface, and underwater targets. It is modular in design, with modules symetrically grouped to form launcher magazines, located both fore and aft on the ship's deck.

Each module contains all the necessary components for launching functions when interfaced with the Mobile Bay's Aegis weapons system. Each of the magazines will fire a mix of antiair, antiship, and antisubmarine missiles, greatly extending the ship's missile flexibility.

Other participants in the ceremony included Vice Adm. **Joseph Metcalf III,** Deputy Chief of Naval Operations, Surface Warfare; Commo. **John F. Shaw,** USN, Aegis Shipbuilding Program Manager; **Jerry St. Pe,** vice president of Litton and president of Ingalls Shipbuilding division; and Capt. **George W. Dowell III,** USN, Supervisor of Shipbuilding, Pascagoula. The Most Reverend **Oscar H. Lipscomb,** Archbishop of Mobile, delivered the invocation.

Aegis ships comprise the most important shipbuilding program in the U.S. today. The Mobile Bay and other ships of the Aegis class will provide the primary protection for the navy's battle forces well into the next century. The Aegis ships are designed to counter all present and projected threats to the Navy's forces.

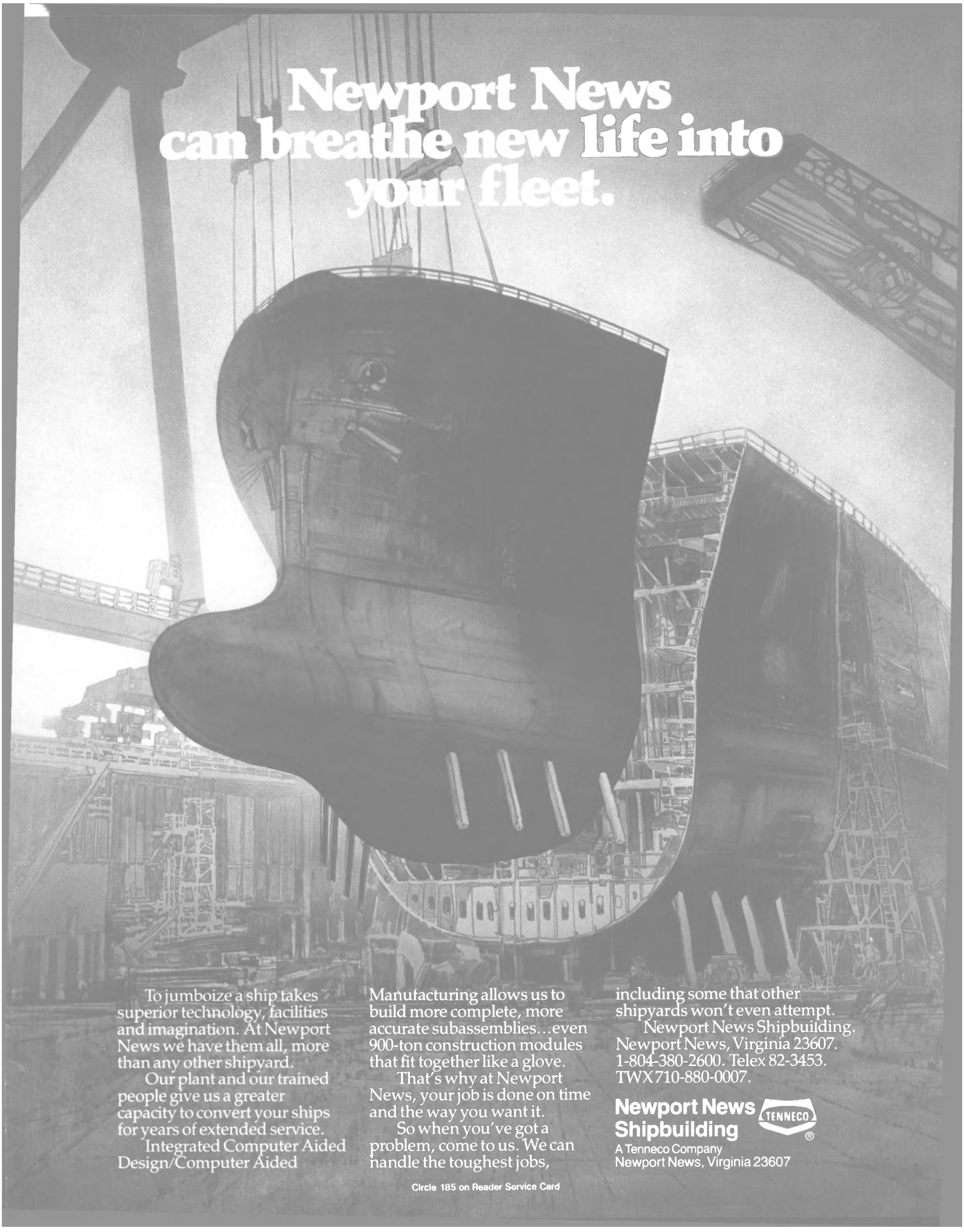
The ship's Aegis weapons system, the heart of her fighting capability, is a significant advance in fleet air defense. Four fixed-array radar antennae, mounted on the four sides of the ship's superstructure, replace conventional rotating radars, enabling the ship's crew to "see" in all directions simultaneously.

The Aegis weapons control system can simultaneously direct and fire more missiles at more targets, with greater accuracy, than any other system.

Aegis cruisers are large ships—567 feet long with a beam of 55 feet. Four 20,000-shp gas turbine engines power the 9,400-ton ships to speeds in excess of 30 knots.

Ingalls Shipbuilding, lead shipbuilder for five of the latest classes of Navy surface combatants, has delivered 43 major warships into the Navy's fleets since 1975, a majority of the surface combatants delivered during the period. As lead yard for the Aegis Program, Ingalls has been contracted to build 12 of the 16 Aegis cruisers authorized since 1978. The lead ship, USS Ticonderoga (CG-47), was deliverd to the Navy ahead of schedule in January 1983, and has begun a second deployment with the Navy's Sixth Fleet. The second ship of the class, the USS Yorktown (CG-48), was commissioned in July 1984 and has begun her first Atlantic Fleet deployment.

The Navy's third Aegis cruiser, the USS Vincennes (CG-49), was commissioned into the Pacific Fleet in July this vear, and a fourth ship, the Valley Forge (CG-50), will join the Pacific Fleet in January 1986. Ingall's fifth cruiser, the Bunker Hill (CG-52), is in the outfitting phase.



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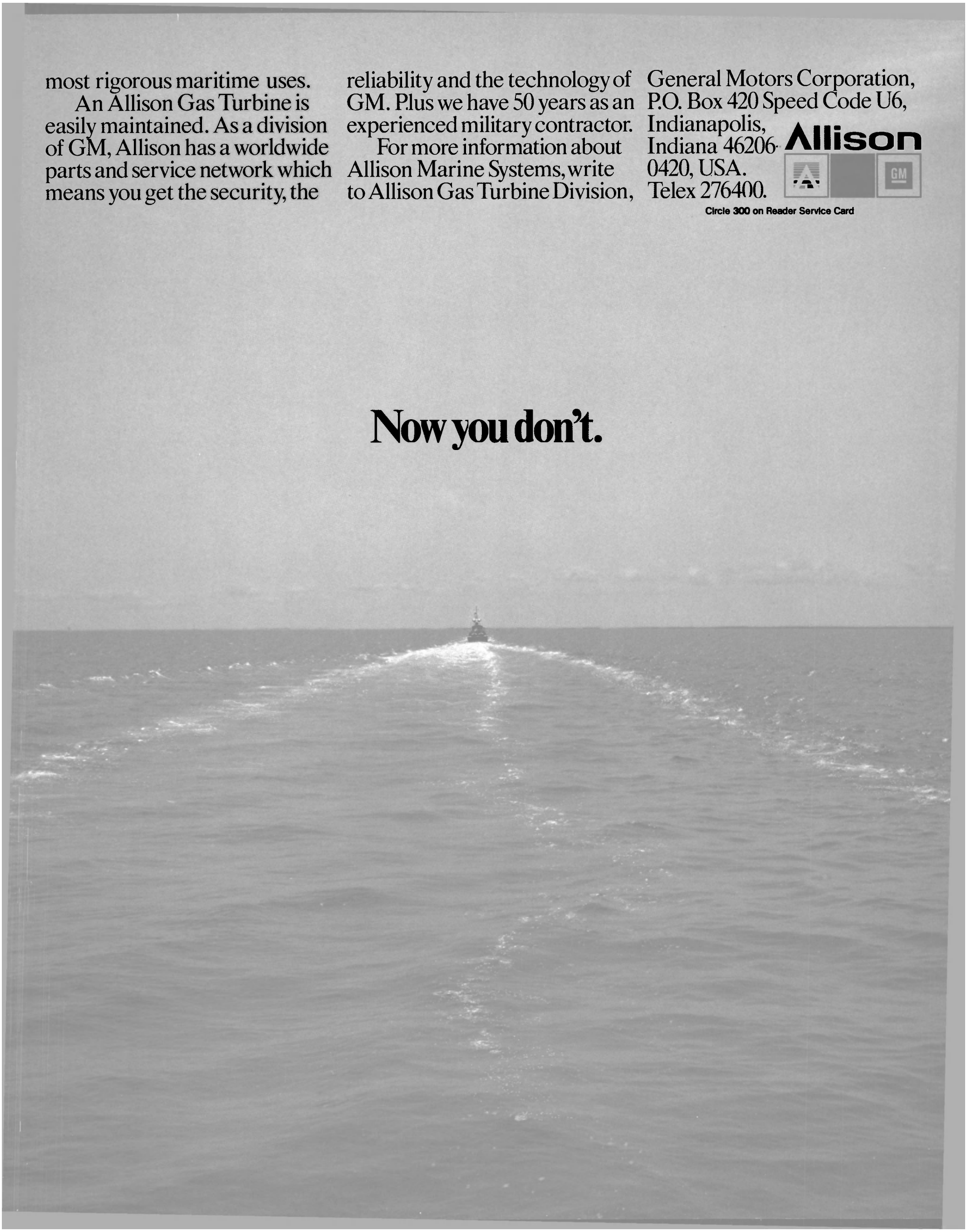


Kelly Appointed VP, Norton, Lilly & Co.

John H. Griffith, president of Norton, Lilly & Co., recently announced the appointment of **Owen D. Kelly** as vice president. Mr. **Kelly** will be responsible for the company's East and Gulf Coast services for Lloyd Brasileiro.

Penn Ship Delivers USNS Denebola To The Navy Three Weeks Early

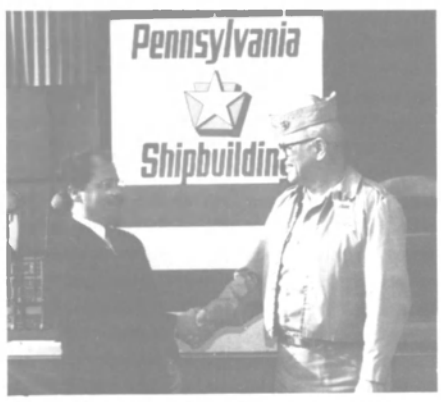
Ron Stevens, president of Pennsylvania Shipbuilding Company, recently announced that the USNS Denebola was officially delivered to the U.S. Navy on October 10, 21 days ahead of schedule.

At an informal meeting with employees to announce the early delivery, Mr. **Stevens** told the workers that they delivered a "fine ship to a pleased customer."

Accepting the ship on behalf of the U.S. Navy, Capt. **Martin Staiger**, Supervisor of Shipbuilding, Conversion, and Repair, Portsmouth, stated in his remarks to the employees that he had "seen what you have done down on the deckplates and I am impressed." He also stated that during her sea trials, the Denebola operated, handled, and looked "militarily smart." He went on to say that he looked forward to receiving more quality built ships from Penn Ship in the future. He saluted the workers and management and closed by saying that he was "indeed a pleased customer."

The delivery of the Denebola marks the completion of a two-ship contract awarded to Penn Ship in 1982.

The 946-foot Fast Supply Ship will be operated by the Military Sealift Command and based in Bayonne, N.J.



Capt. **Martin Staiger**, Supervisor of Shipbuilding, Conversion, and Repair, Portsmouth (right), accepts the USNS Denebola on behalf of the U.S. Navy from **Ron Stevens**, president of Pennsylvania Shipbuilding Company.

Pennsylvania Shipbuilding Company of Chester, Pa., is one of the USA's largest and most versatile shipyards, engaged in the construction, conversion, overhaul, and repair of all types and sizes of naval and commercial vessels. The company is a wholly owned subsidiary of Capital Marine Corporation.

J.E. Steigerwald Acquires Capitol Finishes, Inc.— 8-Page Brochure Available

The J.E. Steigerwald Co., Inc., headquartered in Baltimore, Md., recently announced the acquisition of Capitol Finishes, Inc.

For more than 55 years the name of J.E. Steigerwald has been synonymous with marine deck covering work as well as a wide range of other skills. Work presently in process includes the interior and exterior deck covering on the nuclear-powered aircraft carrier USS Roosevelt.

The purchase of Capitol Finishes, Inc., with current work orders totaling more than $3 million, is expected to strengthen the services of J.E. Steigerwald in the Northeast. These services include deck covering, insulation, and small joiner installations.

For further information and a free copy of J.E. Steigerwald's eight-page color brochure,

Circle 26 on Reader Service Card

Hartley Marine To Operate Walker General Cargo Terminal In Paducah, Ky.

Hartley Marine Corp. will lease and operate the Riverport General Cargo Facility, according to a recent agreement between Hartley and the Paducah-McCracken County Port Authority. The facility is located at approximately Mile 1.3 on the Tennessee River at the junction of the Ohio and Tennessee Rivers.

The terminal will operate under the name of Walker General Cargo Terminal, stated **Ken Wheeler,** president of Hartley Marine. Walker is a part of Hartley, which is a division of Midland Affiliated Company, one of the largest inland waterways transportation companies in the U.S. In addition to the terminal, Walker's Paducah operations include a boat yard, a midstream operation and R & W Marine.

The agreement is expected to offer a number of benefits to both parties. According to **Wayne Meunier,** port director, the Port Authority will have more time to develop the Port of Paducah. Mr. **Meunier** said he will actively solicit new business prospects for all existing port facilities and attempt to develop new industrial growth in the Port Authority's Industrial Park.

Enthusiastic about the agreement, Mr. **Wheeler** pointed out that the terminal is particularly well-suited to handle specialty cargoes such as veneer logs and zircon sand. The facility is serviced by all transportation modes and has over 35,000 square feet of covered storage. Mr. **Wheeler** indicated that his company looks forward to operating the Walker General Cargo Terminal and has established a goal of maintaining the facility's excellent reputation.

For additional information, contact **David Harris** at 502/444-4000.

Full-Color, 16-Page Brochure On Gantry Cranes Offered By Paceco, Inc.

Paceco, Inc., Gulfport, Miss., is offering a free, full-color, 16-page brochure on Transtainer® cranes.

The brochure includes several examples of rail-mounted and rubber tired stacking container gantry cranes manufactured by Paceco and its licensees worldwide. In addition, the brochure provides a brief synopsis of how the cranes are manufactured, designed, typical specifications, and a list of standard and optional features.

Paceco, Inc., is a subsidiary of the Fruehauf Corporation and one of the world's leading manufacturers of container handling cranes.

For a free copy of this colorful, detail-filled brochure,

Circle 57 on Reader Service Card

Bailey Controls Forms Marine Market Group To Handle Worldwide Sales

Bailey Controls has formed a Marine Market Group that will concentrate on worldwide sales of process control systems and related equipment for use on marine vessels and offshore drilling platforms. The new group, based at the Bailey corporate headquarters in the Cleveland suburb of Wickliffe, Ohio, serves the global market through a network of domestic and overseas sales offices.

The market for semisubmersible drilling rigs and construction vessels alone is estimated at nearly $300 million over the next five years, according to **John Glowe,** group manager. In addressing this market, Bailey will feature its highly successful microprocessor-based Network 90® system. The system has proven itself in a broad range of applications including the operation of compressor, pump and other offshore drilling rig equipment, and has been readily accepted by the marine industry to perform complex ballast control functions as well as provide propulsion control on vessels and platforms. Network 90 is the only integrated digital control system to be approved under the American Bureau of Shipping Type Equipment Approval Program.

Bailey Controls is a division of Babcock & Wilcox, and a leading worldwide supplier of instrumentation, controls, and computer systems for power generation, process automation and energy management in the petrochemical, electric utility and process industries. Babcock & Wilcox is a major operating unit of McDermott Incorporated, a subsidiary of McDermott International, Inc.

For free literature containing full information on Bailey Controls,

Circle 56 on Reader Service Card

Metropolitan Offers New Grooved Pipe Fittings —Literature Available

Metropolitan Master Machinists, Manufacturing Division of Metropolitan Plumbing Supply Corporation, has introduced a new line of grooved victaulic-type pipe fittings in several sizes and material types.

According to the manufacturer, the company has doubled its machine shop capacity and they are diversifying their line to include all types of regular and special valves and fittings, in various sizes and metals.

The new grooved pipe fittings will be offered in sizes from 2 inches to 24 inches in carbon steel, galvanized, stainless, aluminum, carpenter alloy 20 and cast iron. Included are tees and elbows in 11¼°, 22½°, 45°, 60° and 90°. Also offered are lateral Ys, true Ys, transition pieces, numbers 40, 42, and 43 nipples, crosses, and reducers, in male and female thread, plus tees, flanges, return bends, long turn TYs and manifolds.

For more information and free literature on Metropolitan Master Machinists and their full line of products,

Circle 76 on Reader Service Card

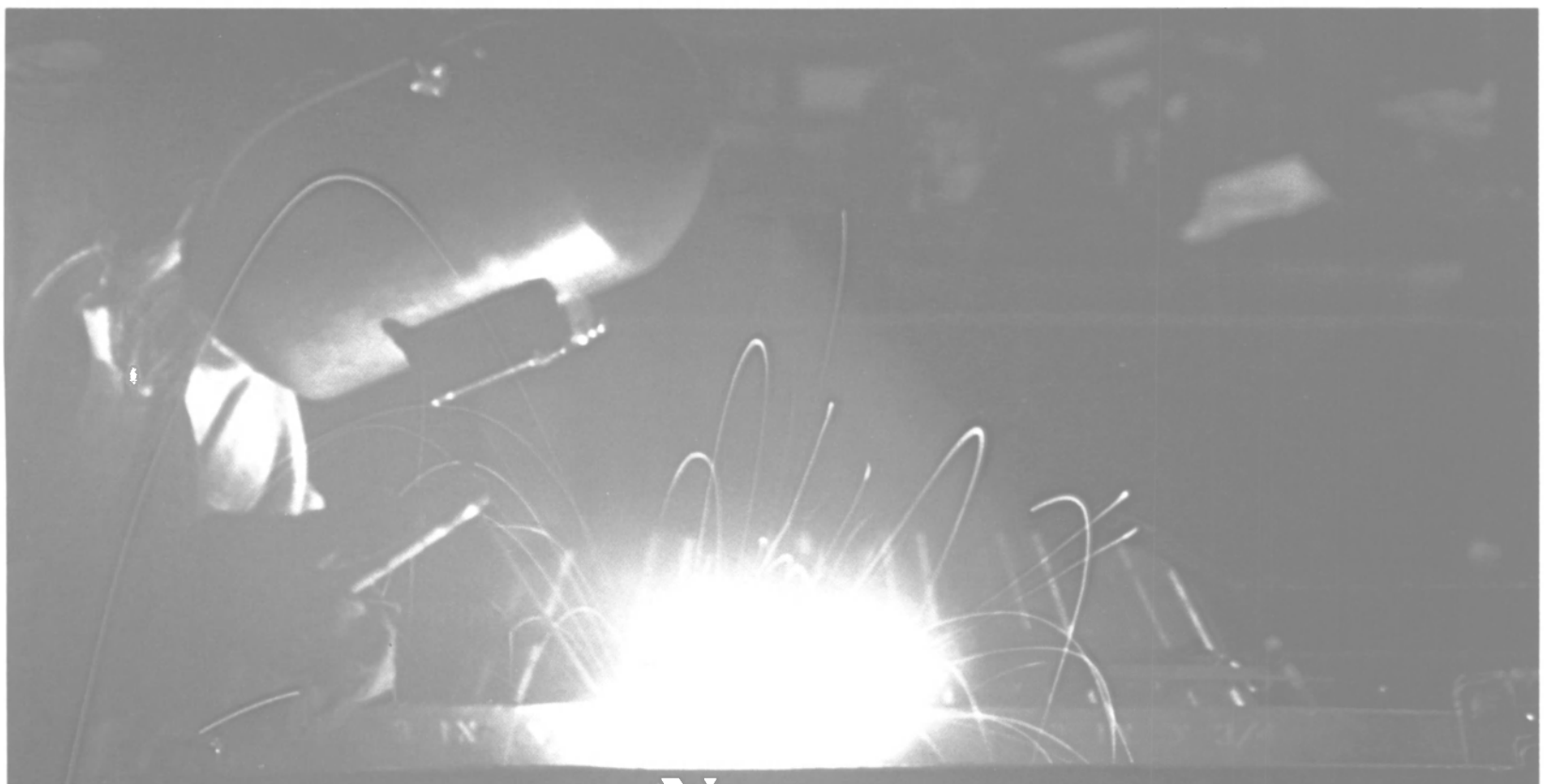
New Product Literature From Drew Ameroid Marine

Drew Ameroid Marine, Boonton, N.J., is offering new literature describing its chemical products and services for the marine industry. This pocket-size brochure describes their products and services for water and fuel treatments, maintenance, cleaners, feeding and testing equipment. Also included are brief descriptions of its welding and refrigerant products as well as packing, jointings and mechanical seals.

Drew Ameroid Marine is a leading supplier of chemicals to the maritime industry and maintains a worldwide product supply and service capability.

To obtain a free copy of this product and service literature,

Circle 59 on Reader Service Card



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Hagglunds Appoints Mahler Sales/Applications Manager

Nils H. Mahler has been appointed to sales and applications manager-disc brakes, for ASEA Hagglunds Inc., the U.S. subsidiary of AB Hagglund & Soner of Ornskoldsvik, Sweden. ASEA Hagglunds Inc. is headquartered in The Woodlands, Texas, north of Houston.

Mr. **Mahler,** who has been with the company for 14 years, was previously production and planning engineer for the firm. In his new position, Mr. **Mahler** will be responsible for the company's intensified marketing efforts for disc brake systems in the U.S. Mr. **Mahler** holds a B.S. degree in Production Engineering and is a member of the American Stern Wheel Association.

Jeffboat, Incorporated Delivers Twin-Screw Towboat 'Alois Luhr'

Jeffboat, Incorporated of Jeffersonville, Ind. recently delivered the towboat M/V Alois Luhr to Luhr Brothers, Inc., of Columbia, Ill. The 6,600-hp, twin-screw towboat incorporates the unique features of a "floating deckhouse" and 118-inch-diameter propellers.

The Alois Luhr is the culmination of many research projects conducted by Jeffboat over the past several years concerning hydrodynamic efficiencies and habitability.

Hydrodynamic research has been an ongoing program at the MARIN research facilities in Holland. MARIN was previously known as the Netherlands Ship Model Basin, or NSMB. Jeffboat conducted its first model test in 1966, and has progressively tested hull forms and appendage design through its latest tests.

The Alois Luhr has incorporated in its design all the latest refinements to hull form, nozzle design and steering and flanking rudder shape to provide one of the most efficient 6,600-hp, twin-screw towboats in service today.

Habitability has been a subject of investigation at Jeffboat over the past decade. The floating deckhouse concept appeared to be the most effective means of providing crew comfort when considering noise and vibration, and Jeffboat's refinement of this design has proven without a doubt that the Alois Luhr has accomplished the ultimate in crew comfort. Noise and vibration has been virtually eliminated, giving the feeling of being at home. The floating deckhouse concept on the Alois Luhr is expected to be standard, by which all future new construction will be measured.

In simplest terms, the entire Luhr deckhouse between the rope locker and the engine room—approximately 130 tons—is supported by a series of isolators. Although the space between the deckhouse and the main deck is covered by a shroud, the most casual observer can see that the two entities are not connected in the normal fashion. Ladders that are affixed to the deckhouse end a few inches above the main deck, and so on.

The new towboat is named Alois Luhr for the company's co-founder and president. It is 10 feet longer than the standard Jeffboat 6000, because of the increased horsepower, larger propellers, and finer lines forward and aft. Luhr's towboat Twyla A., delivered in 1982 by Jeffboat, is the standard design: 160 by 48 by 11.6 feet with 110-inch wheels. The Alois Luhr measures 170 by 48 by 11.6 feet with 118-inch wheels.

When asked to compare the degree of noise and vibration between the Twyla A. and his new boat, Mr. **Luhr** said, "There is a marked difference even though the Twyla is a relatively smooth boat." He said he could see the pilothouse windows shake when the Twyla flanked a bend, something that he doubted would happen on the Alois. Mr. **Luhr** told of how important this aspect is to a crew's comfort and to wear and tear on certain pieces of equipment.

Jeffboat continues innovative techniques in research, design, and construction of marine equipment, providing owners with efficient and serviceable equipment. Jeffboat remains the technological leader in the field.

The Alois Luhr is propelled by two General Motors (Electro-Motive) model 16-645F7B diesel engines, each developing 3,300 hp at 900 rpm through a Lufkin RHS3622 reduction gear. The reduction ratio is 4.51:1. The engines and gears are cooled with clean water circulated through a Jeffboat-designed skin cooling system. The five-blade, stainless steel, Columbian propellers turn in specially designed Kort nozzles on A.B.S. Grade 2, twelve-inch shafts with Cooper split bearings.

Built into the all-welded steel hull of 5/8-inch and 3/4-inch plating are fuel oil tanks with a total capacity of 140,200 gallons, washwater tanks having a total capacity of 21,000 gallons, and potable water tanks having a total capacity of 14,000 gallons. Also, there are 3,400-gallon and 2,200-gallon tanks for engine and gear lube oil.

Electric power is provided by two International 155-kw generator sets driven by Detroit 8V-71 diesel engines each turning 1,800 rpm. The

(continued)

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Jeffboat Delivers Towboat 'Alois Luhr'

(continued)

auxiliary engines were supplied by Western Diesel Services. A Power Panels, Inc., deadfront switchboard is wired for parallel operation of the generators.

The vessel's two steering (redesigned to the latest state-of-the-art technology) and four flanking rudders (adapted to the new refined stern lines) are mechanically/hydraulically linked to pilothouse controls in a Jeffboat designed system using Racine flanking and steering pumps. All moving parts are automatically greased by a Lincoln lubrication system.

A Kiddie Halon 1301 fixed fire extinguishing system is provided for the engine room. Additionally, there are carbon dioxide units elsewhere, an Ingersoll-Rand fire pump and alarms.

A Fast model M3 sewage treatment plant, and appropriate pumps and holding tanks, assure that the vessel is in compliance with all existing environmental protection requirements.

Deck machinery consists of one Schoellhorn-Albrecht, 10-hp, motor-driven, double-barreled capstan; six Beebe 5-hp motor-driven winches and a 3,000-pound-capacity boat hoist. There are twelve 10-inch button chocks, four 10-inch roller chocks, eleven 48-inch kevels and six 42-inch kevels welded to the deck.

M/V ALOIS LUHR
Equipment List

Main Engines (2)	EMD
Generators (2)	International
Reduction Gears	Lufkin
Engine Monitoring System	EMD Annunciator
Propellers	Columbian
Pollution Equipment	Fast
Air Compressors (2)	Westinghouse LeRoi
Radar (2)	Sperry
VHF Radio (2)	Raytheon
SSB Radio	Motorola Triton
Depth Finder (2)	ELAC LAZ
Steering System	Jeffboat
Swing Indicator	Rivertronics
Searchlights	Carlisle & Finch
Airhorn	Kahlenberg
Deck Winches	BEEBE
Capstan	Schoellhorn-Albrecht

Noise and vibration in the floating Alois Luhr deckhouse is further dampened by Marlite paneling, floor coverings, and suspended ceilings. Unusually wide passageways and stairways allow for considerable ease in moving around.

The galley, mess and pantry are on the port main deck with crew's lounge, bathroom and engineer's control room on the starboard. The galley and mess area are equipped with a stainless steel counter top and sinks, Toastmaster electric range, Foster freezer and refrigerator, Hobard dishwasher, Oasis drinking fountain, Sunbeam ice maker, and Frigidaire night box.

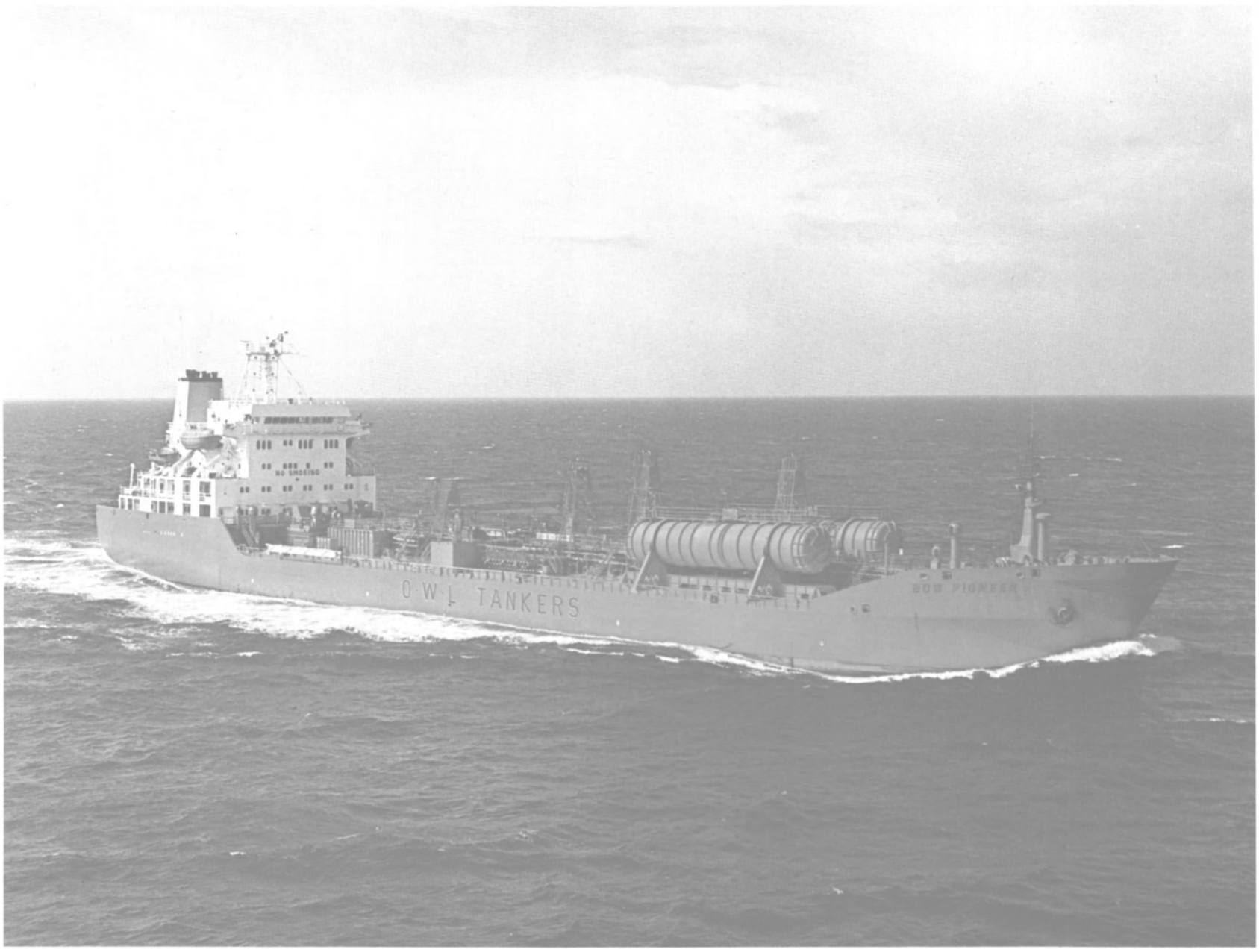
The cook's stateroom is on the second deck along with the pilot's, deckhands', mates', and engineers'. A hotel-like guest room and lounge with wet bar highlight the Texas deck which also houses the captain's room, a spare bedroom and an electronics room. All living quarters, lounges, galley, mess and pilothouse are air-conditioned and heated.

The pilothouse has an eye level of 39 feet, and from it all four corners of the vessel are clearly visible. In addition, each of the forwardmost side windows extends nearly to the deck of the pilothouse to provide greater visibility.

Two Carlisle & Finch 1,000-watt xenon searchlights are located atop the pilothouse. One Kahlenberg Q4 airhorn is provided. Two Sperry 340 radars, two Raytheon Ray-78 VHF radios, one Motorola Triton 20 single sideband radio, two ELAC LAZ 43 depth sounders with Paragon digital display, one Rivertronics RT-500AC swingmeter, one Rivertronics RT-1000 TV antenna, and two Standard 834S walkie-talkies complete the communication and navigation equipment package from Rivertronics, Inc.

The Alois Luhr is used to push thirty barge tows of crushed rock from the company's quarry in Ste. Genevieve, Mo., to Baton Rouge, La., where it is met by other Luhr boats who take the rock on to various job sites. One of the boats is the new Cletus, also built by Jeffboat and which was designed primarily for the Red River. Luhr Bros. has a number of projects on the Red. The Cletus has a retractable pilothouse

(continued)



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Circle 290 on Reader Service Card

Jeffboat Delivers Towboat 'Alois Luhr'

(continued)

that enables it to clear the low bridges on the waterway.

A general contractor specializing in river and port construction, Luhr Bros., Inc. was founded in 1948. Some of the firm's more recent activities include the provision of all the rock for the construction of Lock and Dam 1 on the Red River; channel excavation and bank stabilization work connected with the construction of a nuclear plant at St. Francisville, La.; sand dredging, filling and capping dam cells, constructing the earthen section of the cofferdam and providing all the rock revetments for Lock and Dam 26; eighty percent of the river work, from dredging to rock placement, on the Kaskaskia Navigation Project; and excavating and placing three million cubic yards of fill including half-a-million tons of rock, 17,000 tons of filter gravel and 130,000 cubic yards of sand, as subcontractor on the $303-million Clarence Cannon Dam.

The Luhr company has branch offices in Cape Girardeau, Mo. and Alexandria, La. It recently moved its headquarters from downtown Columbia to a modern complex outside of town, on a 19-acre site overlooking the river valley. Besides a 26,000-square-foot office building, there is a 25,000-square-foot maintenance shop, a 13,300-square-foot warehouse, a welding and machine shop (that houses a 36-foot lathe the company bought recently to repair shafts), and a paint and clean shop.

For more information and free literature on Jeffboat, Incorporated,

Circle 73 on Reader Service Card

Envirovac Receives Contract To Equip Twelve U.S.C.G. Cutters

Envirovac Systems, Rockford, Ill., was recently awarded an initial contract to begin the renovation of toilet systems on 12 high-endurance cutters as part of a major rehabilitation and modernization project by the U.S. Coast Guard. Todd Pacific Shipyards Corporation, Seattle, Wash., who will handle eight of the cutters on the West Coast, and Bath Iron Works, Bath, Maine, who will handle four cutters on the East Coast, are both involved in the project.

At present, five of the 12 vessels are equipped with the Envirovac vacuum toilet system. On the ships now containing Envirovac equipment, the toilet system will be upgraded; mechanical equipment will be refurbished, 30 toilets will be replaced and 10 toilets added, and the control system modified to include two new features. On those ships containing other equipment, the toilet system will be redesigned according to Envirovac specifications and replaced with Envirovac equipment.

The work is scheduled to begin this month and extend over a period of three years.

Canadian Engineers To Hold MariTech '86 In Vancouver, June 5-7

The Canadian Institute of Marine Engineering is holding its annual convention in Vancouver at the Holiday Inn Harbourside on June 5, 6 and 7, 1986.

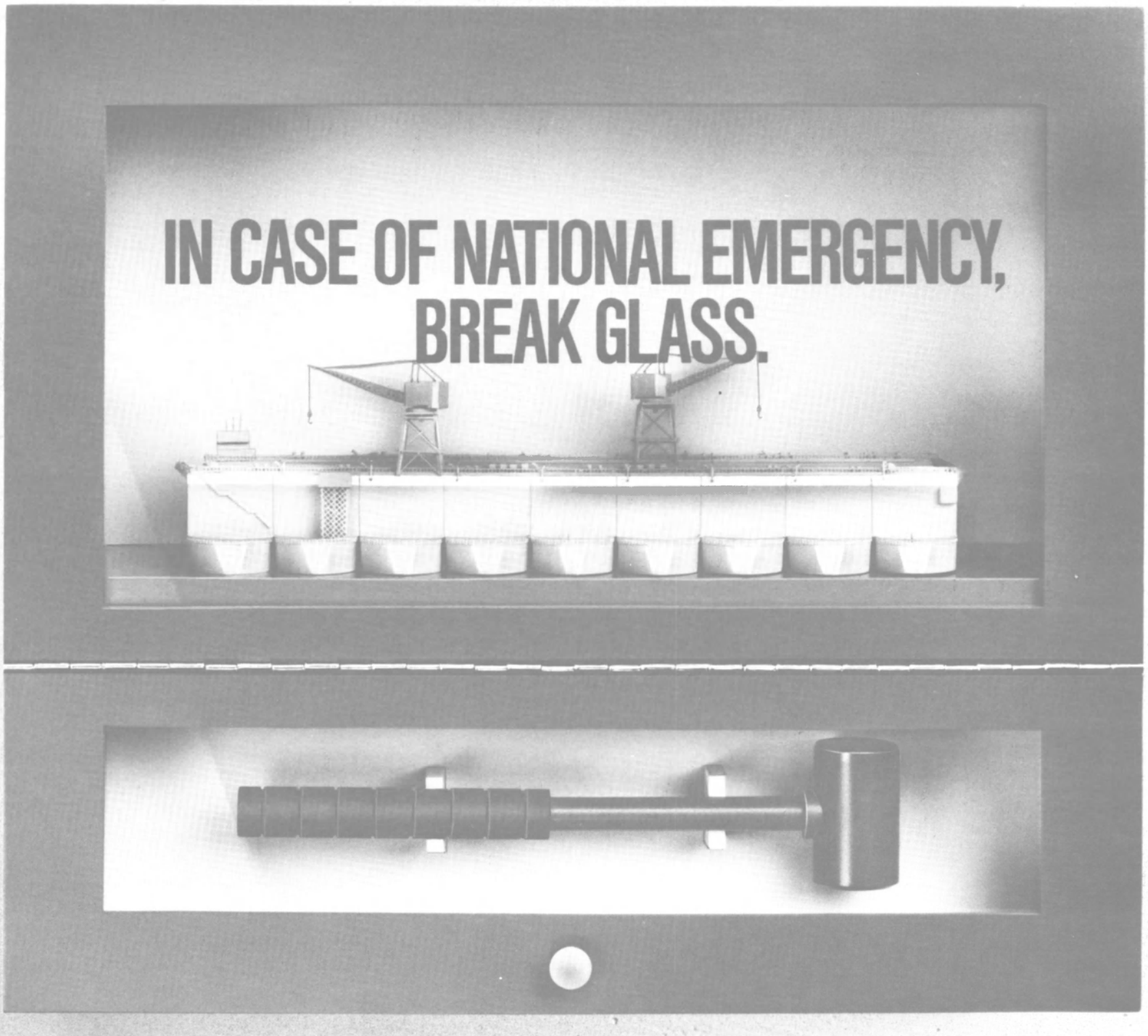
This eighth annual meeting of Canada's marine engineers is being held in conjunction with the world's fair EXPO 86, and will complement the transportation theme of this world-scale exposition.

The Canadian Institute of Marine Engineering is now assembling a program of international and Canadian papers on the theme of "Marine Engineering . . . The Future?" and are interested in hearing from authors willing to present a paper on this subject.

In addition to the A.G.M. and presentation of technical papers at MariTech 86, there will also be an exposition by manufacturers of their equipment and products.

The convention will conclude with a dinner and dance. Saturday, June 7, will be MariTech day at EXPO 86.

Inquiries should be directed to **Peter Davies,** Convention Chairman, #10, 1934 Barclay Street, Vancouver, B.C., Canada V6G 1L3.



If only it were this simple.

A shipyard is not a fire hose. It can't be enclosed in glass, frozen in readiness, until a national emergency reminds us of its importance. When a shipyard is shut down, its assets disperse. Equipment is disposed of, and skilled workers find new jobs in more stable industries.

In the past eight years, 30 private shipyards have closed. Commercial shipbuilding in the U.S. is virtually non-existent today, with no immediate improvement forecast for the near future. As more work is lost to foreign yards, still more American shipyards will be forced to shut down.

An adequate shipbuilding and repair industrial base is vital to America's defense planning. Foreign yards cannot be counted on to support our navy or our merchant marine.

There is no simple answer to the problem. What must first be realized is that we have a problem.

BIW®

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Circle 140 on Reader Service Card

Transamerica Delaval's Deltex Repair Facility Offers Free Color Brochure

Deltex of Houston, Texas, a facility of Transamerica Delaval's Turbine and Compressor Division dedicated to the service and repair of rotating machinery bearing the Delaval nameplate, is offering free an attractive full-color brochure on its facilities and capabilities.

The publication explains that factory-trained personnel at the 100-employee facility in Houston maintain daily contact with Compressor Division headquarters in Trenton, N.J., and that the Deltex library of more than 100,000 drawings, engineering standards and repair procedures for rotating machinery is continuously updated. This attention to detail ensures that customers receive the best service and response available. Also discussed are Deltex's facilities for machining, welding, blading, heat treating, erecting and nondestructive testing of rotating machinery, and its vacuum bunker rotor balancing facility—said to be the only one in the Western Hemisphere solely used for repair.

The brochure is well-illustrated with large photos showing various types of work in progress, such as overhaul of a centrifugal compressor, tenon forming on a turbine blade, a compressor shaft taper being submerged arc welded, babbitting, etc., and the back page has an aerial view of the Deltex facility as well as photos of some of the personnel principals.

For a free copy of the brochure and further information on Transamerica Delaval's Deltex Repair Facility,

Circle 36 on Reader Service Card

Al Garcia Joins Adams & Porter

Al Garcia

Al Garcia, CLU, has joined Adams & Porter Life Associates, Inc. as a vice president.

Mr. **Garcia** was previously with American General Life Insurance Company and has 18 years' experience in personal and business insurance, estate and financial planning. At Adams & Porter he will be responsible for implementation of personal and corporate life insurance programs.

He earned a bachelor's degree in business administration from Ball State University in Muncie, Ind. Mr. **Garcia** is a member of the American College of Life Underwriters, where he received his CLU designation in 1974.

Adams & Porter Life Associates, Inc. is the employee benefit and estate planning affiliate of Adams & Porter Associates, Inc., a Houston-based international insurance brokerage company founded in 1907.

Drew Ameroid Announces Its New Port Directory

Drew Ameroid® Marine recently introduced its new port directory listing product and service availability in over 650 ports and 47 countries worldwide.

Products available at the various ports are clearly identified by appropriate coding and include chemicals, welding and refrigerant products, packing, jointings and mechanical seals.

For a copy of the port directory and further information on Drew Ameroid Marine's products and services,

Circle 34 on Reader Service Card

Jorgensen Company New Licensee For Escher Wyss CP Propellers— Literature Available

Jack T. Bunt, vice president and general manager of the Seattle division, announced that the Earle M. Jorgensen Company, Forge Division, Seattle, Wash., and Escher Wyss GmbH of Ravensburg, West Germany, have recently signed an agreement which enables Jorgensen Steel to market and manufacture the full range of Escher Wyss controllable-pitch propellers.

Escher Wyss has been a major manufacturer of marine controllable-pitch propellers for the military and commercial markets for more than 50 years. At present, over 1,500 Escher Wyss propellers are in service, including what is said to be the world's highest horsepower controllable-pitch propeller, rated at 46,000 hp and 24-feet diameter. Also included is the world's largest 3-bladed and 5-bladed controllable-pitch propellers, 36 feet and 31 feet in diameter, respectively.

The Jorgensen Company has been a distributor and processor of steel and aluminum, as well as a manufacturer of marine shafting and related components for more than 60 years. The company's forge facility consists of two plants, one on a 22-acre site in Seattle and the other covering 4 acres within the large Jorgensen complex in Los Angeles, Calif.

The Forge Division facilities include capability for melting steel, open die forgings, ring rolling, heat treating, and machining forgings and other marine-related products weighing up to 150 tons. For many years the company has been a major supplier to the Navy and Coast Guard programs.

Under the newly formed association, Jorgensen-Escher Wyss, **Herb Streb**, formerly director of Northern Line-Escher Wyss at Tacoma Boat Building Company, will assume the position of manager propeller operations. Mr. **Streb** brings over 30 years' marine experience to Jorgensen, the past 15 years of which have been associated with controllable-pitch propellers.

The Earle M. Jorgensen Company reports its new affiliation with Escher Wyss will result in the largest manufacturing facility of controllable-pitch propellers and marine shafting in the world.

For free literature and further information on the Escher Wyss line of controllable-pitch propellers,

Circle 30 on Reader Service Card

New Manual Details Tank Protection Against 5,000 Products

A detailed "tank coating manual" has been published by Sigma Coatings BV as a guide for shipbuilders, ship repairers, petrochemical and allied industries, painting contractors, and many others. The publication is one of the most comprehensive guides to cargo tank protection against the effects of more than 5,000 liquid chemical and petroleum products which need to be stored, shipped in bulk or as "parcels" in products tankers.

The problems, surface preparation and coating solutions, are shown in this newly issued Sigma Coatings manual and code of practice covering the requirements and precautions involved in such things as: tanks for crude oil and cargo/ballast; zinc-based and other epoxy primers for various paint systems; coal tar epoxy coatings for exceptional resistance to water and chemicals; zinc silicates; and much more.

Guidance is given on drying times for various Sigma tank coating systems, primer considerations, film thicknesses, overcoating possibilities and intervals, fime required for curing, suitable ambient temperatures for applications, recommended methods of applying various coatings, pretreatment and other relevant information.

For a free copy of the manual and specific information in the tank-coating code of practice on protective tank coatings for special chemicals or products,

Circle 41 on Reader Service Card

YORK®

MARINEPAK

FULLY FACTORY ASSEMBLED YORK MARINEPAKS SAVE SPACE AND INSTALLATION COSTS

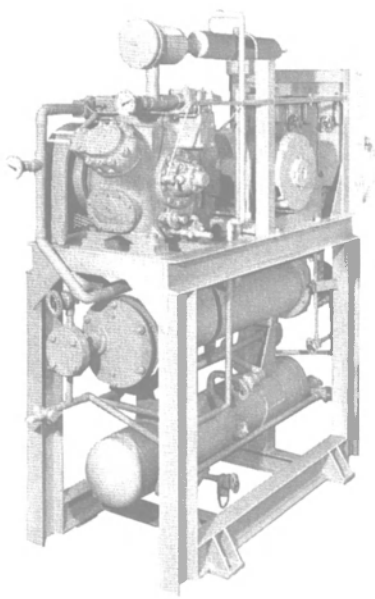
York Marine engineers are continuously developing new ideas in marine air conditioning and refrigeration and the excellent research and test facilities at York accomplish the conversion of these ideas into products that have established the standard of quality in the entire marine industry.

These York Marine products are built with considerable pride and workmanship in accordance with stringent quality control systems to assure the outstanding quality for which York has become famous.

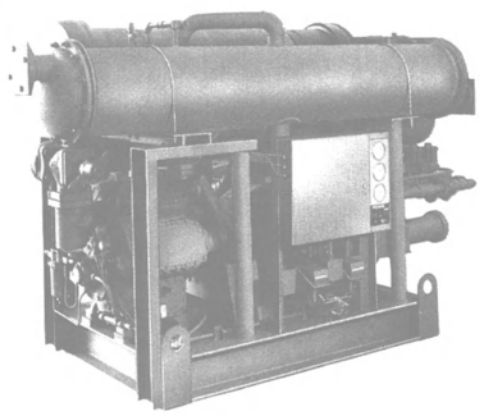
CUSTOM-TAILORED TO EACH NEED

A York air conditioning or refrigeration MARINEPAK is a complete system, factory assembled on a compact steel base. Interconnecting piping, controls, gauges, power and control wiring are all installed at the York factory. Wherever possible, standard York components are used. Thus, you enjoy a custom-made MARINEPAK without paying custom-made prices.

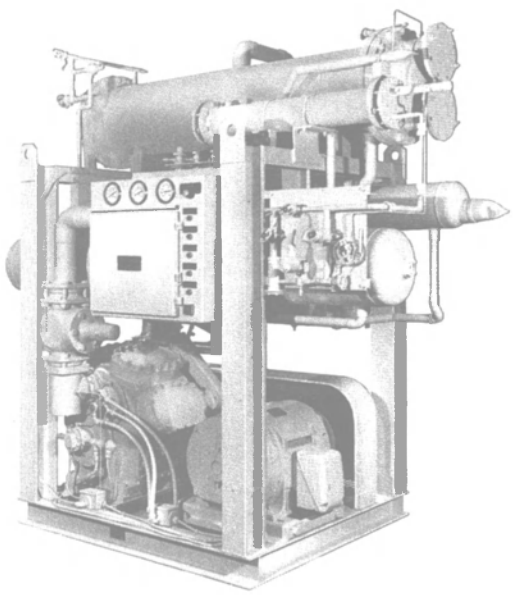
More than 1,000 YORK MARINEPAKS Installed for use *on both Merchant and Naval Vessels*



SHIP STORES
CONDENSING UNITS



WATER CHILLING
SYSTEMS



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Circle 342 on Reader Service Card

Blue Streak Industries Delivers First Lift Boat With 110-Foot 'Legs'

Blue Streak Industries, Inc. of Pearlington, Miss., recently delivered what is said to be the first self-elevating, self-propelled lift boat with 110-foot "legs" in operation in the Gulf of Mexico.

The new 64- by 32- by 7-foot vessel, the Blue Streak 14, is equipped with three 110-foot legs which, when lowered to the seafloor, make the boat a stable platform from which a variety of work can be performed.

According to Blue Streak president **Dennis L. Good** and the company's vessel operations affiliate in Belle Chasse, La., the new boat is the 17th vessel to enter the fleet, and the 39th boat built by Blue Streak.

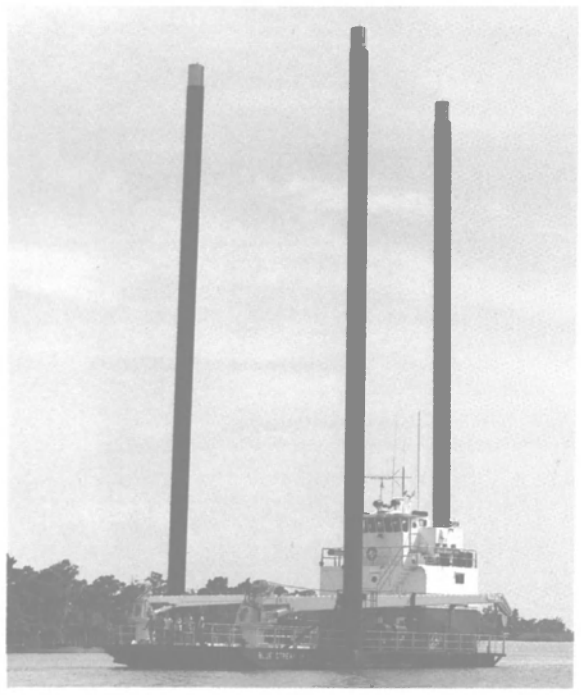
"This boat is a welcome addition to our fleet," said Mr. **Good,** "because it fills the gap between our 100 and 130 class lift boats. To my knowledge, it will be the only jack-up in the Gulf of Mexico with 110-foot legs."

The Blue Streak 14 features an open deck area of 1,600 square feet and can carry up to 110,000 pounds of deck cargo. She is equipped with a 25-ton-capacity, 60-foot boom crane, and a 7.5-ton-capacity, 40-foot boom crane. The American Bureau of Shipping rules were used as guidelines in both design and construction.

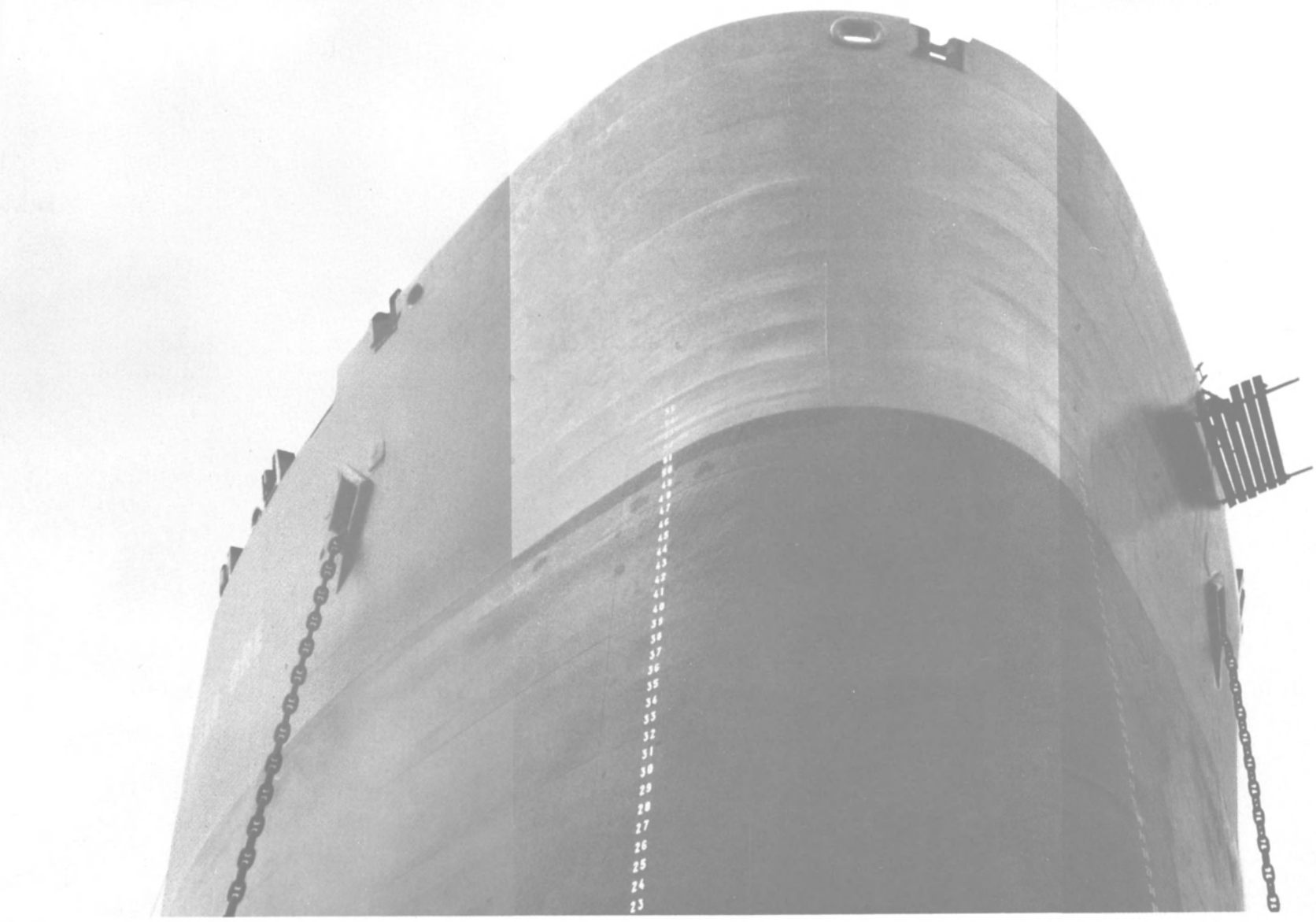
The lift boat, which is powered by two Detroit Diesel 8V71N diesel engines, cruises at 8 knots and has two 50-kw generators aboard. It can jack itself up at a speed of 9-10 feet per minute utilizing a closed loop hydraulics system.

The vessel has modern quarters and galley accommodations for 20, including its two-man crew. It can carry 1,500 gallons of fuel oil, and 2,000 gallons of potable water.

Blue Streak Industries is one of the world's largest builders of lift boats. The company also has manufacturing licensing agreements with shipyards in Brazil and Singapore.



The Blue Streak 14, which is operating in the Gulf of Mexico, is capable of serving rigs in waters up to 65 feet deep.



If you think you are 100% protected against corrosion you might be some 33⅓% wrong.

Ballast tanks are often neglected when corrosion protective systems for a vessel are considered. This is surprising as - depending on construction type - they can comprise as much as one third of the vessel's potential corrosive environment.

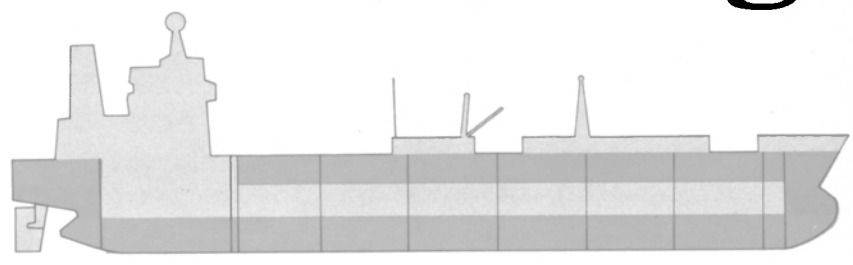
Ballast tanks are subjected to extreme conditions during ship operation and can contribute significantly to high maintenance costs and ships' offhire time. A fact which shipowners are now becoming painfully aware of.

Hempel has analysed the problem areas - with emphasis on a selection procedure providing the right type of coating for the individual tank - and this has resulted in the creation of:

Hempel's Ballast Barriers. The first complete system for cost reducing ballast tank protection.

Hempel's Ballast Barriers embrace 15 separate anticorrosive products which together with easy-to-follow selection charts enable you to:

Tailormake your specification and obtain the optimum solution regardless of either tank type or condition.



Example: The Ballast tanks on a 60.000 dwt bulk carrier represent around 35% of the total area protectively coated.

Within the "Hempel Ballast Barriers" product range, 3 new products have been developed, each designed as a one coat system. Two of the new products are solvent free types and one is a cementitious based coating.

Don't discharge your money with your ballast. Use "Ballast Barriers", the tailormade system from Hempel.

HEMPEL'S BALLAST BARRIERS

Ahead of corrosion

To get your own copy of Hempel's Ballast Tank Protection Guide, please contact your local Hempel office

Circle 324 on Reader Service Card

Pyramid Pump Offers Brochure On Deepwell Barge Pumps

Transamerica Delaval, Pyramid Pump Division, Monroe, N.C., is offering a free, four-page brochure on their AMR™ Vertical Deepwell Barge Pumps.

The brochure, which comes with three binder holes for easy storage, is entitled "AMR Vertical Deepwell Barge Pumps For New Installations, Replacements, or Conversions."

According to the publication, for economical conversions from centrifugal units, AMR pumps replace centrifugal pumps plus supporting stripping; fit most common size deepwells (24-inch diameter or larger); and utilize standard deepwell centrifugal pump columns and discharge heads.

In addition, the text of the brochure states that AMR pumps eliminate the initial cost of expensive stripping systems, as well as permitting the use of smaller drivers than required by centrifugal pumps, and do not need to have the product heated to acceptable centrifugal pump temperatures.

Some of the special features which highlight the brochure are: a cutaway drawing showing the "simple design" (no timing gears, precision bearings or mechanical seals) of pump type 4131C-800JD; a graph of typical VUP-4131C-800JD data; and a drawing showing the typical deepwell systems dimensions.

To obtain a copy of this free brochure on AMR™ Vertical Deepwell Barge Pumps,

Circle 88 on Reader Service Card

Circle 145 on Reader Service Card

Nissen Metal Marker Readable At 2,100°F —Literature Available

A high temperature metal marker usable in metalworking applications such as heat treating, coding and identification for hot castings and forgings, and layout work for cutting and brazing has been introduced by J.P. Nissen Company, Glenside, Pa.

According to the manufacturer, under independent testing the marker has been proven to exhibit readability with 24 hours of continuous exposure to temperatures up to 1,700°F. In an uncontrolled atmosphere, marks were clearly readable at the end of the following test cycles: 500°F, 1,325°F and 1,550°F using time cycles of one, four, 16 and 24 hours; 1,700°F, 1,900°F and 2,100°F using time cycles of one, two, four, nine, 16, 20 and 24 hours.

The marker utilizes a lead-free proprietary pigment and base formulation in conjunction with the patented Nissen® ball point to provide economical, durable marking on wet, dry, oily, rough and smooth surfaces.

For more information on J.P. Nissen Company's high temperature metal marker,

Circle 82 on Reader Service Card

SNAME Southeast Section Holds General Meeting

A general meeting of the Southeast Section of The Society of Naval Architects and Marine Engineers was held recently at the Jacksonville Hilton, Jacksonville, Fla.

The theme of the meeting was the conversion and repair of the cruise ship M/V Skyward, operated by Norwegian Caribbean Lines. The vessel was in drydock at Jacksonville Shipyards, Inc. for extensive repairs and fitting of a new bulbous bow.

The all-day technical session was convened by vice chairman-North **Andy Lebet.** The first presentation, titled "The Operator's Perspective" by **Svenn Dahl**, senior vice president, operations, Norwegian Caribbean Lines, discussed the reasons behind adding the bulbous bow, stern skirt and various other means of reducing operating costs.

The second preparation by **Tage Wandborg,** featured a video tape

offering an interesting look at a futuristic cruise ship concept, The Phoenix, expected to be operational in the next three years.

The third presentation, titled "The Shipyard's Perspective" by **Frank DeGrim,** manager of engineering, Jacksonville Shipyards, Commercial Division, provided an in-depth look at how a shipyard gears up to meet the varied tasks and requirements of a cruise ship repair in the minimal amount of time in which the ship can be out of operation.

The highlight of the meeting was an extensive tour of the M/V Skyward in the drydock, conducted by Jacksonville Shipyard personnel.

$3.5-Million Conversion Contract Won By ASMAR

ASMAR Shipbuilding and Docking Company, one of Chile's largest ship repairers and shipbuilders, was recently awarded a $3.5-million ship conversion contract.

The complex six-month contract is to convert a 2,670-dwt RO/RO vessel, formerly the M/V Merchant Navigator, into an underwater research support ship to be renamed the M/V Canada's Tomorrow.

The converted vessel will be operated by the Canada's Tomorrow Discovery Corporation, a Canadian-based research institution of Horning's Mills, Ontario.

Fred Olsen To Convert 'Black Prince' Into Luxury Cruise Ship

Fred Olsen Lines of Norway recently announced plans to convert the 20-year-old passenger/car ferry Black Prince into the "cruise ship of have accommodations for 487 passengers and a crew of 150. Among the passenger amenities to be added is an outdoor swimming pool, as the ship is expected to "follow the sun" when she enters service in early 1987, operating in the Norwegian fjords in summer, the Mediterranean and Canary Islands in the off-

IMODCO Announces Management Reorganization

Robert C. Byrd, president of IMODCO, recently announced a management reorganization ing capabilities in the offshore industry.

Alfred W. Allchorn, executive vice president, has been given responsibility for the company's commercial activities including marketing, contract negotiations and purchasing. Mr. **Allchorn** is a longtime IMODCO employee with over

Raytheon Introduces Loran-C With New Features —Literature Available

magnetic course compensation, and automatic ASF correction. The RAYNAV-750 MKII provides constant memory of current position, bearing, and speed information for ing only a simple "auto-advance" command to proceed to the next fishing ground or other destination selected. With automatic ASF (Additional Secondary Factor), the TD as velocity toward destination, velocity along route, and course made good help make navigation easier.

Other features include a numerical steering guide showing how far

Daewoo Completes Largest Merchant Ship Order For United States Lines

The recent delivery of the American Washington to United States Lines by Daewoo Shipbuilding and Heavy Machinery Ltd. marked the completion of a 12-ship contract that set several world records. The USL vessels, built at Daewoo's Okpo yard on Koje Island off the southern coast of Korea, are the largest containerships ever built. The $570-million contract for the construction of the vessels also ranks as the largest single merchant ship order ever awarded, and represents the biggest peacetime expansion ever undertaken by an American shipping line.

Daewoo built the ships over a period of some 27 months, from the cutting of steel for the first vessel to the delivery of the 12th. Like her 11 sister ships, the American Washington has the capacity to carry 2,129 forty-foot containers—1,232 in the cellular holds and 897 on deck.

Designed by C.R. Cushing & Company, naval architects and marine engineers of New York City, the ships are powered by a low-speed Hyundai/Sulzer 7RLB90 diesel with a maximum continuous rating of 28,000 bhp at 102 rpm. To achieve optimum fuel efficiency, the ships operate at a normal rating of 25,200 bhp at 98 rpm, producing a service speed of about 18 knots. They have an overall length of about 950 feet, beam of 105.7 feet (Panamax), and design draft of about 35 feet. Each ship operates with a crew of only 21 persons.

With an overall length of 521.65 feet, beam of 75.46 feet, and draft of 32.8 feet, the ships will be powered by 10,192-bhp M.A.N. diesels providing a service speed in excess of 16 knots.

Harry Raymond Joins Southwest Marine

Southwest Marine, Inc. recently announced that **Harry D. Raymond** has joined the staff of Southwest Marine, Inc. Mr. **Raymond** comes to Southwest Marine with years of experience in the management and operation of ships. He will fill the position as liaison with the cruise ship industry. He was formerly operations manager with Western Cruise Lines.

Woodward Offers Free 10-Page Brochure On Steam Turbine Controls

The Woodward Governor Company is offering a free 10-page booklet on their extensive line of mechanical-hydraulic governors, electronic controls, and other products commonly applied to steam turbines.

The publication has a convenient and very detailed table of contents. The table of contents gives a concise account of the booklet's four sections.

The first section describes the six mechanical-hydraulic governors offered by Woodward for steam turbine applications—TG-13, TG-17, UG, PG-PL, PGG and PGD. Each description is accompanied by a black and white photograph of the equipment.

The second section concerns itself with the various types of electronic controls that are offered by Woodward. Text is included on: the 2301 speed control; 2301 load sharing and speed control; pressure control; 43027 control; integrated control/sequencer; EGM control; and magnetic pickups.

The third section devotes itself to Woodward's actuators and hydraulic amplifiers. Descriptions are given of: the hydraulic amplifier; EGB governor/actuator; electric drive motor (for EG-10P and EGP); TG-13E actuator; TG-17E actuator; EGR actuator; and the EG-10P

• Four new 7600/8600 models • Instantaneous, brilliant, steady presentation of all information on a high-resolution daylight-quality 16 in. display • True target trails for rapid orientation • Unique Centered Display mode maintains own ship in a fixed position on the display, but provides true trails of moving objects • Manual acquisition of up to 10 targets; semi-automatic plotting with target data readout, including CPA and TCPA on 7600 RM and TM models • 7600 ARPA complies with all IMO requirements • 8600 ARPA provides manual acquisition of up to 20 targets and automatic tracking and data readout including CPA and TCPA. Automatic acquisition and tracking of up to 40 targets with guard zones and limitation lines.

Sales to U.S. vessels, subject to FCC type approval

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Krupp International Inc. · Krupp Atlas Elektronik Division
1453 Pinewood Street · Rahway, New Jersey 07065 · USA · Phone 2013881500 · Telex 7109965843 krupp rway

Circle 189 on Reader Service Card

Alexander Industries Appointed Microphor Representative

Appointment of Alexander Industries of New Orleans, La., and Houston, Texas, as manufacturers' representative for Microphor, Inc. has been announced by **John M. Mayfield Jr.**, president of Microphor. Microphor manufactures several lines of marine equipment at its Willits, Calif., headquarters facility.

Alexander Industries will be the exclusive representative for Microphor's marine division products in Louisiana, Mississippi and Texas. Alexander Industries also represents a variety of marine vessel and offshore equipment suppliers nationwide, according to **Arthur J. Sevin Jr.**, vice president of Alexander Industries.

Microphor manufactures and markets several lines of marine equipment, including patented Microflush half-gallon marine toilets, marine sanitation devices, sump/pump assemblies, oily water separators and oil content monitors.

"We are pleased to be affiliated with Alexander Industries," Mr. **Mayfield** said. "We are confident that their professional approach will effectively represent Microphor marine products."

Microphor also manufactures and markets a wide range of products for the railroad, commercial plumbing and custom manufacturing industries. Microphor is a subsidiary of the Harrow Corporation.

For further information,

Circle 49 on Reader Service Card

Harold Derusha

Harold Derusha, former owner, chairman of the board and past president of Marinette Marine Corporation, Marinette, Wisc., died last month at the age of 76.

Mr. **Derusha** was a pioneer of shipbuilding on the Great Lakes in the 1930s, before joining Marinette Marine in 1942. He assumed ownership of the fledgling shipyard in 1952 and guided the company until his retirement in 1968. During this period, Marinette Marine became one of the most successful medium-size shipbuilders in the U.S., building hundreds of vessels for the U.S. Navy and Army as well as both foreign and commercial clients.

Under the stewardship of Mr. **Derusha**, Marinette Marine became a leading supplier of landing craft and auxiliary vessels to the U.S. navy.

Pyrotenax Offers Full Line Of Insulated Cable —Literature Available

A full range of mineral-insulated (MI) thermocouple cable is now being made available from stock by Pyrotenax USA Inc. of East Syracuse, N.Y. The company, which specializes in the design and production of MI cables, offers a broad selection of J, K, T, and E cable calibrations in simplex, duplex, and triplex types—all in accordance with ANSI standards. Special tolerance requirements and custom fabrications can also be accommodated.

Pyrotenax MI thermocouple cables feature a metal sheath in which thermoelectric elements are embedded in highly compressed magnesium oxide insulation. Cables range from 0.020 to 0.750 inches OD and are engineered in a wide variety of sheaths including 304, 310, 316, 346, and 446 stainless steel; Inconel 600; and Incoloy 825. Metric size cables, RTD extensions, terminations, and specialty products such as square and hollow core types are also offered.

For additional information and free literature,

Circle 91 on Reader Service Card

Hitachi Zosen To Build Giant Submersible Barge

Hitachi Zosen recently received an order from Canmar/Reading & Bates Limited Partnership, a joint venture of Canadian Marine Drilling Ltd., Canada, and Reading & Bates Drilling Company (USA), to build the world's biggest submersible barge for the development of offshore oilfields in the Beaufort Sea.

The giant barge is a steel structure designed to sit directly on the seafloor and support the Single Steel Drilling Caisson (SSDC), which is an offshore drilling vessel now in operation in the Canadian Beaufort Sea, and is called the "steel mat base."

The barge is 168 meters long, 110 meters wide, 13.5 meters high and has a deck area on top of 9,720 square meters. The weight of the steel to be used is approximately 34,800 tons, and it has two aft towers for mating with the SSDC and one forward control room tower.

It can be towed to a designated area with the SSDC on deck, and then can sink and float horizontally by gravity feed ballasting system with the SSDC on top, which enables the SSDC to begin operations safely and promptly.

The SSDC was converted from a VLCC to an offshore drilling vessel at Hitachi Zosen's Osaka Works, Sakai, in 1981-82.

The barge will be constructed at the Osaka Works and Ariake Works with an expected delivery date of June 1986.

Bailey Offers New 12-Page Navy And Marine Catalog

Bailey, a manufacturer of control valves and strainers for the Navy and marine market for over 45 years, recently introduced their new Navy and Marine Catalog. This color catalog features informative cutaway drawings and technical data on their complete line of mil-spec control valves and strainers, including the Bailey Model 30 Pressure Reducing Valve, Model 442M Magazine Sprinkler Valve, Model 200A Duplex Strainer and Model 100B "Y" Type Strainer.

The newest additions to the Bailey line, the Model 1385 Relief Valve for gas services and the Model 825Y-M Reduced Pressure Backflow Preventer for marine applications, are also featured in this catalog.

For your free copy of the new Bailey catalog,

Circle 63 on Reader Service Card

Samson Ocean Introduces High-Strength Dock Lines —Literature Available

A major advance in the wet-strength retention of nylon fiber has paved the way for Samson Ocean Systems, Shirley, Mass., to develop dock and anchor lines with high tenacity and abrasive resistance.

The wet-strength retention is made possible using a special process developed by Allied Fibers and Plastics, and identified as Caprolan 2000 SeaGard. Samson dock and anchor lines made with the SeaGard nylon are reported to test 35 percent stronger than conventional stranded nylon and 20 percent stronger than conventional braided ropes used in the marine environment.

Reportedly, the new Samson high-strength nylon braid has dynamic elongation which virtually eliminates shock loading from surges and reduces loads on fittings. It is also torque-free which eliminates hockles and kinking, and makes the line easy to heave, fake down and pay out. Working loads of the new nylon dock and anchor lines are rated at 20 percent of average tensile which provides over 50 percent higher safety margins when compared to three-strand nylons, based on American Boat and Yacht Council standards for vessel loads at anchor.

For further information and free literature on the Samson Ocean Systems new high-strength dock and anchor lines,

Circle 28 on Reader Service Card

MacGregor-Navire Wins Contracts For RO/RO Ramps In U.K. And India

MacGregor-Navire (MGN) has won the contract to supply the burgeoning port of Plymouth with an additional link span. To be installed at the Millbay Docks early in 1986, this second RO/RO berthing facility will satisfy not only current growing demand on the port from both tourist and commercial traffic, but will also enable Plymouth to bid for handling of the extra trade generated by the advent of Spain into the EEC.

The link span, which is designed to receive the stern or bow ramps of freight or passenger ferries drawing 26 feet and up to 590 feet long, will be sited at the port's West Wharf, Outer Basin, parallel with the existing link span.

MGN also has secured an order to supply a link span of the floating, portable type to the Bombay Port Trust, the first facility of its kind in India. Due for delivery by mid-1986, the RO/RO facility will fill a long-felt need. Its installation had been urged by the Indian Oil & Natural Gas Commission and the Mogul Line Shipping Company, though its presence is expected to stimulate use by others.

The Bombay unit is designed to service axial-ramped ships having beams of 52½ to 82 feet and threshold heights that may vary from 5 to 11½ feet. It is designed to cope with tidal variations of almost 14 feet at its designated site, the Ferry Wharf in Bombay Harbour.

BFGoodrich Awarded $3.3-Million Contract For Sub Sonar Equipment

BFGoodrich Company, Akron, Ohio, was awarded a $3,350,950 cost-plus-fixed-fee contract for rubber sonar domes and related material for submarine sonars.

The work, which will be performed in both Long Beach, Calif. (90 percent) and Akron (10 percent), is expected to be completed in October 1987.

Approximately $1,335,000 of the contract funds would have expired at the end of the current fiscal year. The contracting activity is the Naval Sea Systems Command (NAVSEA), Washington, D.C. (N00024-85-C-6542).

Vikubo Offers Free Brochure On Foam-Filled Floating Fenders

Vikubo B.V., Nijverheidsweg, Holland, is offering a free four-page brochure on their foam-filled floating fenders, Vikubo Shipcushions®.

Vikubo ship cushions are built from a combination of polyethylene foam of 49 kg/m³ (3.06 lbs/ft³) core, covered with a polyurethane elastomer coating. Running the length of the axis is a heavy polyurethane elastomer pipe for passing the "hanging up" chain through or a protected tensed chain between two end caps or a net of chains and tires around the fender.

Several photos, as well as charts, graphs and diagrams are included in the brochure to supplement the text, and further explain the structure and durability of the Vikubo Shipcushion.

According to the brochure, the Vikubo Shipcushion not only provides greater stand-off distance than conventional fenders at the same energy absorption level, but also is unsinkable and cannot explode under pressure or excessive compression, and even when the fender is overcompressed, there will always be energy absorption material between the two objects. In addition, the publication states that the fender does not require inflation and is not impaired by seawater, sunlight or oil.

For a free copy of the brochure on Vikubo foam-filled floating fenders,

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Circle 123 on Reader Service Card

'85 Sales Of Imperial Survival Suits Nears 100,000—Literature Offered

Sales of cold-water survival suits by Imperial Manufacturing Company of Bremerton, Wash., approach 100,000 this year, according to production manager **Jim Skelly**. A big boost in sales for the company, which has been producing survival suits for 15 years, came last summer when new U.S. Coast Guard requirements became effective. Interest of the marine community in improving protection against drowning and hypothermia—death from loss of body heat—continues to increase both in the U.S. and abroad.

In a four-month period last summer, Imperial sold 8,500 survival suits, nearly its total sales volume in some years. According to Mr. Skelly, Imperial supplies 75 percent of the U.S. market for survival suits, with the remaining production split among a handful of companies.

Imperial has worked with various governing bodies, including the Coast Guard and Underwriters Laboratory, in testing and developing safe standards, and is said to be the only U.S. manufacturer of survival suits to pass the Norwegian Maritime Directorate standards, the most stringent in the world. More than 300 individuals have reported incidents where their lives were saved through the use of Imperial survival suits.

For details and free literature on these suits,

Circle 31 on Reader Service Card

New Calendar Now Available From Hempel

Hempel's Industrial Coatings Inc. has announced the release of the 1986 Hempel calendar commemorating the classic sailing ships of the 1500 to 1900 era. These paintings by **John Gardner** have been in demand by collectors and are now available on request until the supply is exhausted.

The Hempel calendar has been issued each year for the past 40 years. For a copy,

Circle 62 on Reader Service Card

BPNAP Offers Free Color Brochure On Products And Services

BP North America Petroleum, Houston, Texas, is offering a free, full-color, 12-page brochure on its petroleum and petroleum-related products and services.

BP North America Petroleum Inc. (BPNAP) is part of an international network which provides petroleum and petroleum-related products and services to customers around the world. The principal activities of the company include: trading crude oil and petroleum products from BPNAP offices in New York, Houston and Los Angeles; fuel handling, storage and terminals at major seaboard locations; sales of marine bunker fuels at the large seaports; sales of aviation fuels at airports across the U.S.; and sales of marine lubricants to ship operators and commercial fleets throughout the nation.

In addition, according to the brochure, BPNAP services shipowners' requirements competively, promptly and efficiently. It also connects the U.S. into BP's unique worldwide bunkering network, providing rapid, competitive quotations to shipowners whose vessels trade in ports worldwide.

For a free copy of BP North America Petroleum's 12-page brochure on their products and services,

Circle 37 on Reader Service Card

Newport News Receives $11.1-Million Increase To NAVSEA Contract

Newport News Shipbuilding and Dry Dock Company, Newport News, Va., was awarded an $11,091,652 face value increase to a previously awarded cost-plus-fixed-fee contract to plan for the overhaul, alteration and repair of the USS Dwight D. Eisenhower (CVN-69).

The work, which will be performed in Newport News, is expected to be completed in January 1987.

The contract funds would not have expired at the end of the current fiscal year. The contracting activity is the Naval Sea Systems Command (NAVSEA), Washington, D.C. (N00024-84-C-2079).

Driscoll Joins Arnessen As Service Manager

James J. Driscoll recently joined the Arnessen Corporation as service manager. His appointment continues the 75-year-old Arnessen tradition of offering electrical and mechanical service and repair excellence to the worldwide shipping and related communities.

Before joining Arnessen, Mr. **Driscoll** managed Oval Marine Services, and organization well-known on all major waterfronts. Earlier his experience encompassed supervisory positions with Bethlehem Steel, Brooklyn Navy Yard, and several marine electrical repair organizations.

New Chemical Parcel Barging Service Offered In Port Of New York

Chemical parcel barging is now being offered within the Port of New York, according to a recent announcement from Stolt-Nielsen Inc. of Greenwich, Conn., who will be the marketing agent for the new service on behalf of the owners, Maryland Marine, Inc. Said to be a "first" for the port, the service will permit the intraharbor shipment or ship lighterage of small lots, or parcels of bulk liquid chemicals and related products. The barge will be operated by Manhattan Oil Transportation of New York, Inc.

The double-skinned, fully segregated chemical parcel barge MMI 301 will be available for service throughout the New York Port area, Long Island Sound, as far east as Boston, and on the Hudson River north to Albany. The barge has six independent, zinc-coated cargo tanks with external heating channels, six Framo stainless steel deepwell cargo pumps, and all stainless steel cargo lines, enabling it to carry six completely segregated cargoes at the same time. The MMI 301 has a capacity of 18,285 barrels, and can carry 1,968 metric tons of IMO II cargo on a line-foot draft, or 2,583 metric tons of IMO III cargo on a draft of 11 feet.

This new barge service draws upon 25 years of worldwide experience in the transportation and storage of specialty bulk liquids, and Manhattan Oil's many years of operating experience in New York Harbor. Stolt-Nielsen owns Stolt Terminals (Perth Amboy) Inc., which provides waterfront public storage for bulk liquid chemicals, vegetable oils, petroleum products, and dry bulk products for New York area shippers and receivers.

Norway's Seatrans Group Awards $10-Million Order To Kleven Shipyard

A contract valued at about $10 million for construction of a 4,000-dwt cargo ship has been awarded by the Seatrans Group to the Norwegian shipyard Kleven M.V. of Ulsteinvik. Should negotiations for two additional similar vessels be successful, the total value of the three ships would be approximately $29.5 million. Competition for the contract was fierce, and included other yards in Norway as well as foreign builders.

The contract for the first ship means full employment for the Kleven yard's 250 workers. A contract for the additional two ships would guarantee full employment through 1987.

MARITIME REPORTER
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Special Pull-Out Section

93RD SNAME ANNUAL

NOVEMBER 1985

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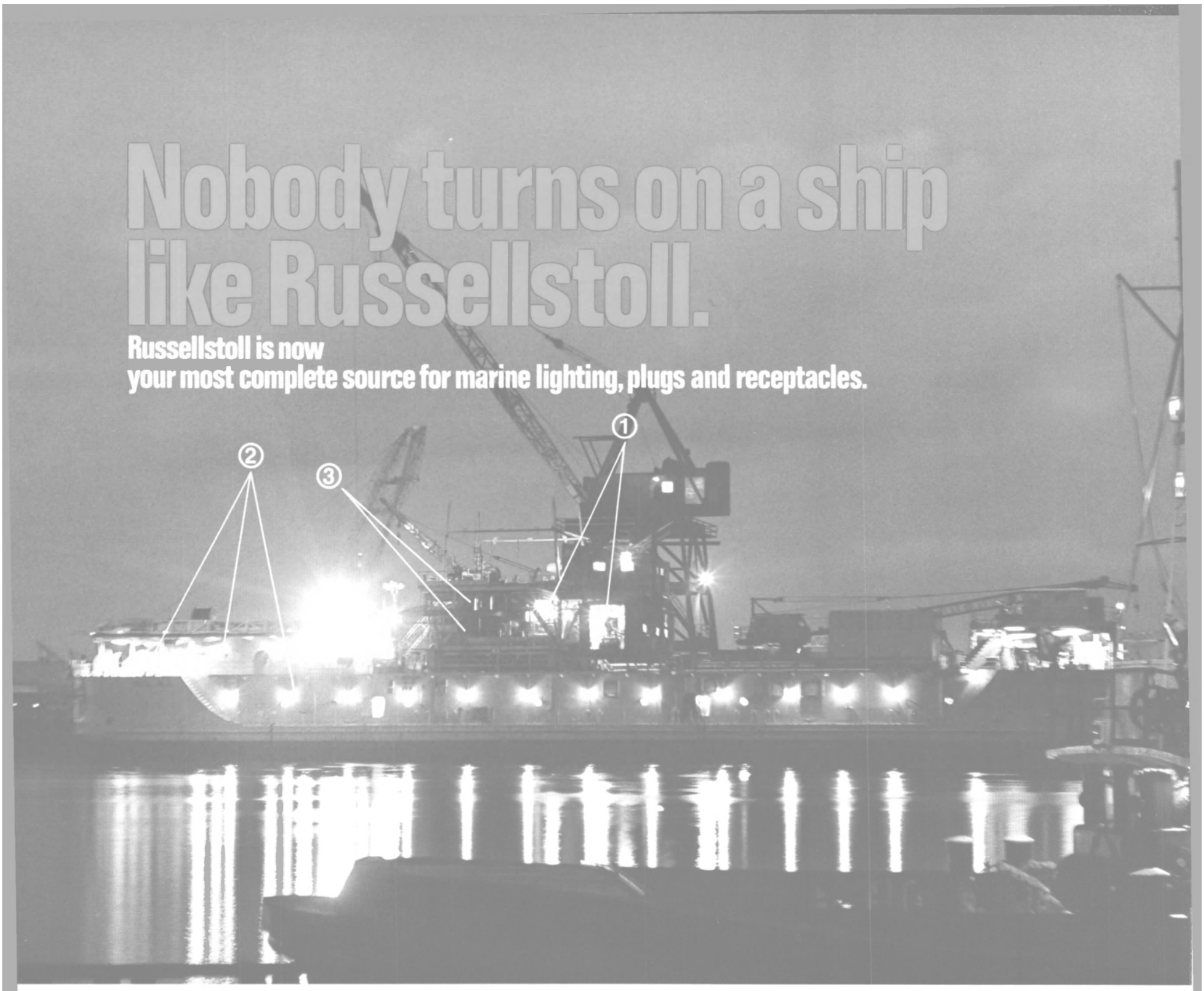

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- Convenience Outlets
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No. 1. Are you able to reach your ships on an instant's notice when volatile conditions in financial and commodity markets make it necessary to alter itineraries at the last moment?

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No. 2. Are you continuously able to track the exact position and course of your vessels in areas of political unrest, terrorist activity, declared and undeclared wars?

In the face of clandestine mine laying, surface and aircraft attacks, and even outright piracy, can you endanger hundreds of millions of dollars of assets by not knowing exactly where on the high seas they are? This is your predicament with ordinary radio. SATCOM, however, can be interfaced with SATNAV and when you send an interrogating signal, it will respond automatically with position information no matter what the time of day or how occupied the master and radio operator are.

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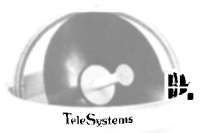
Out of a dozen different makes there is only one real contender: the MCS-9100 from TeleSystems. Why? *First, reliability.* The MCS-9100 has none of the flywheels, chains or other trouble-prone mechanical components that have plagued less sophisticated systems. Space age sensors and servos drive the antenna within its sealed dome. Below-decks electronics employ VLSI microminiaturized circuits on quick-change PC boards. The MCS-9100 is INMARSAT type approved and has passed MIL STD 167 testing. That means it's structurally rugged enough for all vessels.

Second, capability. The MCS-9100 gives you voice, telex, facsimile, medium and high speed data capabilities. It can actually be mated to shipboard and shoreside computer systems.

Third, size. The MCS-9100 is the lightest and smallest equipment there is. Compare its 99 pounds to the 250 pounds of its lightest competitor. The antenna dome is only 44 inches in diameter and stands just 58 inches high. The below-decks module is the size of your sound system tuner-amplifier.



Fourth, reputation. After we remind you that TeleSystems' parent, COMSAT *started* SATCOM, need we say more?

For an informative brochure on the MCS-9100, please get in touch with us at 2700 Prosperity Avenue, Fairfax, VA 22031 USA. Or if you want, phone us at 703: 876-3000, Telex 90-1137.

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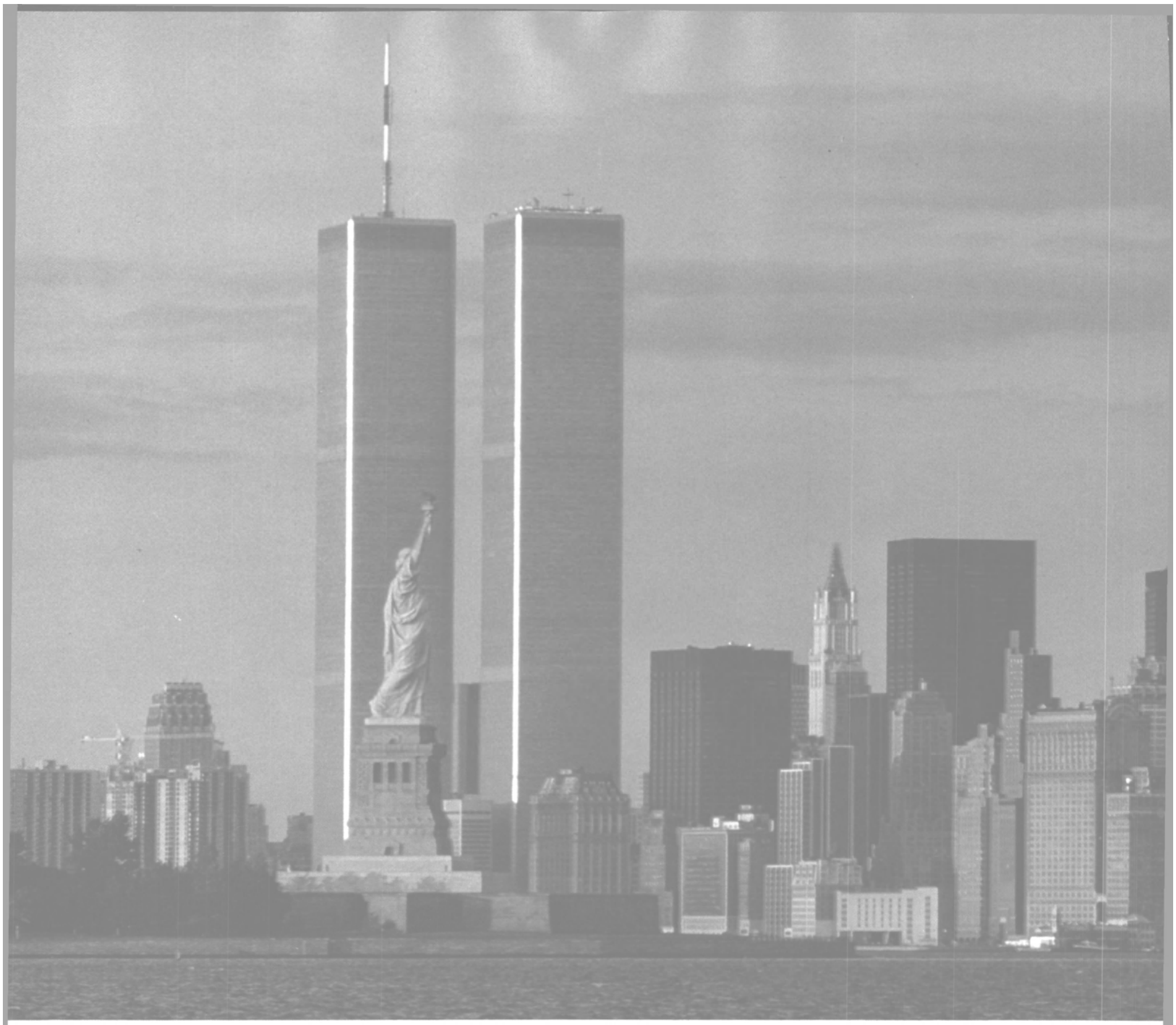

93rd S N A M E
Fourth International

The 93rd Annual Meeting and Fourth International Maritime Exposition of The Society of Naval Architects and Marine Engineers will be held November 13-16 at the New York Hilton. The Exposition will again occupy the entire 25,000 square feet of exhibit space on the second floor of the Hilton. Some 150 companies will display their products and services to a large cross section of maritime industry leaders from around the world. Exposition hours are from 2 to 6 pm on Wednesday, November 13; 10 am to 6 pm on Thursday; and 10 am to 4 pm on Friday. Registration for the Annual Meeting includes admission to the Exposition; tickets for daily admission will be available at the registration desk at $7 each.

SNAME's Papers Committee, chaired by Capt. **Jack A. Obermeyer,** USN (Ret.), has selected 13 papers to be presented in the third floor Trianon and Mercury Ballrooms on November 14 and 15. Among the topics are: semisubmersible stability, diesel engine propulsion shafting systems, rough propeller penalties, icebreaker structure under extreme loads, new warship design strategy, and evaluating

Annual Meeting Maritime Exposition

strength of ship hull configurations.

The President's Luncheon will be held in the Grand Ballroom on Thursday, November 14, preceded by a general reception in the East Ballroom Foyer at noon. Featured on the program will be the presentation of several important awards and an address by **Perry Nelson,** president of the Society.

This year's Annual Business Session will immediately follow the President's Luncheon in the Grand Ballroom at 2 pm. The agenda for this meeting will include a report on the elections that will be held at the council meeting on Wednesday, November 13; consideration of proposed amendments to the bylaws; and such other business as may be introduced by the chair. All SNAME members are encouraged to attend the Business Session.

The 93rd Annual Banquet, open to members and guests, will take place on Friday, November 15, in the Grand Ballroom at 7:30 pm. Featured on the banquet program will be the presentation of the Sperry, Smith, Land, and Taylor Medals, and a significant address by **Walter F. Williams,** president

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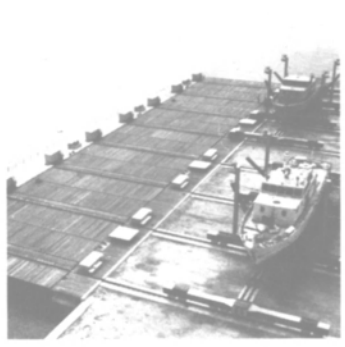

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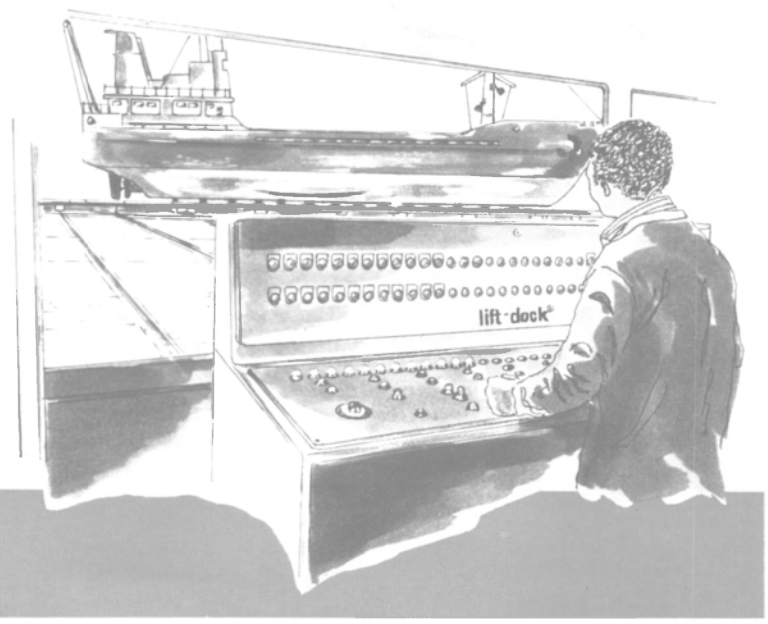

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93rd SNAME Annual Meeting — A Preview

and chief operating officer of Bethlehem Steel Corporation.

The David W. Taylor Medal "for notable achievement in naval architecture" will be presented to **J. Randolph Paulling Jr.,** professor of naval architecture at the University of California in Berkeley. **Thomas B. Crowley,** president of Crowley Maritime Corporation of San Francisco, will receive the Vice Admiral "Jerry" Land Medal "for outstanding accomplishment in the marine field."

The Blakely Smith Medal "for outstanding accomplishment in ocean engineering" will go to **John A. Mercier,** senior staff naval architect, Continental Oil Company, Houston. The Elmer A. Sperry Award for 1985 will be given to **Richard K. Quinn, Carleton E. Tripp,** and **George H. Plude** for design concepts and construction methods of the Stewart J. Cort, the first 1,000-foot self-unloading Great Lakes bulk carrier.

The 93rd Annual Meeting will come to a gala conclusion on Saturday evening with the dinner-dance and entertainment in the Grand Ballroom, with more than 500 couples expected to attend.

Technical Papers

(See table for time and location.)

Paper No. 1—"Evaluation of the Longitudinal Ultimate Strength of Various Ship Hull Configurations," by **Lembit M. Kutt, Christopher M. Piaszczyk, Yun-Kuand Chen,** and **Donald Liu.**

SYNOPSIS—The longitudinal ultimate strength of several ship hull configurations is analyzed with the nonlinear finite element method. Included in each analysis are the effects of buckling, post-buckling, and plasticity, and their proper interaction. In addition, an extensive treatment of the modeling procedures for nonlinear finite element analysis and a study on the sensitivity of the ultimate strength to variations in several parameters are included.

Paper No. 2—"Strength Evaluation of a Novel Unidirectional Girder System Product Oil Carrier by Reliability Analysis," by **Tomiyasu Okamoto, Tohru Hori, Masuru Tateishi, Sherif M.H. Rashed,** and **Shigeru Miwa.**

SYNOPSIS—This paper describes the design concept of a newly developed product oil carrier, of which double hulls are stiffened only by longitudinally arranged girders. The structural safety in extreme loads and the redundant strength in damaged conditions are discussed, applying reliability analyses. Based on these results, the structural system is found to offer more safety than conventional design.

Paper No. 3—"Prediction of the Behavior and Propulsive Performance of Ships with Bulbous Bows in Waves," by **Peter Blume** and **Alfred M. Kracht.**

SYNOPSIS—As a result of research programs performed by the Hamburg and Berlin, West Germany, Model Basins, design data are now available for the estimation of the seakeeping qualities of bulbous bow ships. Studies on speed loss under service conditions yielded that bulbous bow ships have almost the same seakeeping qualities as comparable ships without bulbous bows in sea states up to Beaufort 6. Thus the bulbous bow may be designed with regard to its smooth-water performance only. It is prudent, however, to avoid extremely large bulb bodies.

Paper No. 4—"A Realistic Approach to Semisubmersible Stability," by **Dracos Vassalos, George Konstantopoulos, Chengi Kuo,** and **Yousri Welaya.**

SYNOPSIS—This paper de-

(continued)

93rd SNAME Annual Meeting — A Preview

scribes the rationale behind the development of practical semisubmersible stability criteria that reflect the current state of the art while maintaining the simplicity of existing regulations. The proposed criteria are based on an energy balance approach and incorporate the effects of wind, waves, and vessel motions. Practical applications are considered and discussed.

Paper No. 5—"A New Warship Design Strategy—A Perspective," by **William H. Garzke Jr.** and **George Kerr.**

SYNOPSIS—This new warship design approach to naval ship design is intended to provide the ability to relate a warship's physical attributes (which will define its cost) to the mission requirements they serve, and to use these relationships in the design, development, and construction of more cost- and combat-effective warships.

Paper No. 6—"Vibration Response on Propulsion-Efficient Container Vessels," by **Hans G. Payer** and **Iwer Asmussen.**

SYNOPSIS—Fairly detailed vibration calculations are required during the design phase in order to effectively avoid vibration problems in propulsion-efficient vessels. Typical calculation results including the forced vibration response are presented in this paper and compared with results from measurements for a 2,000-TEU containership. It is shown that the vibration behavior can be predicted with sufficient accuracy to base design decisions on the results.

Paper No. 7—"Rough Propeller Penalties," by **R.L. Townsin, D.S. Spencer, M. Mosaad,** and **G. Patience.**

SYNOPSIS—The ship operator is offered a standard procedure for measuring blade surface roughness using a stylus instrument of comparator gauges. From the resulting single number Average Propeller Roughness, the power penalty may be calculated simply from a nomograph. The theoretical basis for the

nomograph is described, including the correlation of the roughness measurements with increments in blade section drag and propeller performance.

Paper No. 8—"Structural Reliability of Marine Diesel Engine Propulsion Shafting Systems," by **Efstratios Nikolaidis, Anastassios N. Perakis,** and **Michael G. Parsons.**

SYNOPSIS—A method for estimating the reliability of diesel propulsion shafting systems is presented, involving probabilistic excitation modeling, first excursion and fatigue failure mode analyses, and estimation of failure probabilities. In the examples presented, significant criticals that cannot be identified by the traditional deterministic analysis are revealed. High values of the traditional safety factor may not always insure system reliability and safety.

Paper No. 9—"Finite-Element Analysis of Elastohydrodynamic Stern Bearings," by **Zissimos P. Mourelatos** and **Michael G. Parsons.**

SYNOPSIS—A finite element analysis is performed for a marine shafting system using a hydrodynamic, plastic stern bearing. The analysis consists of three-dimensional analyses of the shafting and the bearing liner, a two-dimensional analysis of the oil film hydrodynamics, and iterative techniques to establish the equilibrium position among the shaft, the oil film, and the anisotropic bearing. Results are in good agreement with available laboratory experiments.

Paper No. 10—"Innovative Naval Designs for North Atlantic Operations," by **Colen Kennell, Brian White,** and **Edward N. Comstock.**

SYNOPSIS—A SWATH ship design and two monohulls designed to carry the same payload are summarized. The two monohull designs used state-of-the-art, hull-form technology. One monohull included excess volume to achieve seakeeping performance comparable with the SWATH. Seakeeping performance assessments were made for mobility and anti-submarine warfare operations in the upper North Atlantic region.

Paper No. 11—"Analysis of the Structure of the Proposed CCG Polar Class 8 Icebreaker Under Extreme Ice Loads," by **I. F. Glen, C. G. Daly,** and **G. Tam.**

SYNOPSIS—The proposed structure design for a large Polar icebreaker for the Canadian Coast Guard has been analyzed using recent understanding of ice loads on vessels, and analytical models to extrapolate areas far beyond current experience. Local bow strength and hull girder response were examined. The study revealed areas for potential improvement in the current regulations.

Paper No. 12—"Dynamic Analysis as a Tool for Open-Sea Mooring System Design," by **Michael S. Triantafyllou, Antoine Bliek,** and **Hyunkyoung Shin.**

SYNOPSIS—Methods to change the performance of mooring lines are outlined, based on an extensive study of the effect of the principal parameters on the dynamic tension of cables. Tables and graphs are provided to estimate the equivalent stiffness and natural frequencies of cables, while examples illustrate the application of the proposed methodology.

Paper No. 13—"Hydro-Numeric Design of SWATH Ships," by **Nils Salversen, Christian H. von Kerczek, Carl A. Scragg, Christopher P. Cressy,** and **Michael J. Meinhold.**

SYNOPSIS—A new computational method for the design of Small Waterplane Area Twin Hull (SWATH) ships is presented. The integrated computer system generates mathematically faired SWATH hull forms, computes the total calm water resistance, minimizes the wave resistance by contouring the lower hulls, and predicts the turbulent boundary layer and the wake into the propeller.

(continued)

93rd SNAME Annual Meeting — A Preview

Participating Exhibitors

Company	Booth
Admiral Marine	123
Aero Nav Laboratories	823
Alfa-Laval	909
Allied Marine Crane	124
Amatech	D-4
American M.A.N.	505
American Piping Products	**911**
Ameron	**408**
Anschuetz of America	324
Aqua-Chem	208
Arnessen	237
W.B. Arnold	409
Asbestos Abatement of America	202
Atco Marine	608
Autronica Marine USA	228
Bailey Refrigeration	**231**
Bardex Hydranautics	514
Bay Shipbuilding	**905 & 7**
Bethlehem Steel	837
British Shipbuilders	825
Bromma	401
Business Press International	928
CDI Marine	210
CTI Industries	327
Canadian Consulate General	612-646
Centrico	E-3
Colt Industries/Fairbanks Morse	600
Combination Pump Valve	934
Combustion Engineering	728
Commodity News Service	941
Computervision	A-1
Comsat Telesystems	**800**
Consolidated Controls	901
Cooper Bearings	207
Cornell-Carr	900
J. Cowhey & Sons-Spanset	B-3
Crossfield Products	317
Cummins Engine	**830**
Dampa (USA)	700
Designers & Planners	932
Deutsch Metal Components	126
Devoe Marine Coatings	304
Electro-Motive Division-GM	104
Engelhard	**722**
Engine Efficiency Associates	913
Envirovac	**306 & 8**
Esgard	**819**
Falk	E-2
Farboil	118
Ferguson/Columbian Bronze	**331**
R.W. Fernstrum	**812**
Ferrous	**116**
Fincantieri-Cantieri Navali Italiani	**832**
Flexaust	810
Furuno USA	F-11
Genstar Stone Products	530
Golar Metal	815
Guill Technologies	839
Morris Guralnick Associates	D-1
Hayward Industrial Products	225
J.J. Henry	400
Hilman Rollers	311
Hydrocomp	**811**

(continued)

EXPOSITION COMMITTEE

Robert G. Mende, Chairman

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Robert B. Hedges — Charles P. O'Malley
Thomas P. Mackey — Harry R. Yagel

93rd SNAME Annual Meeting — A Preview

The following listings are brief descriptions of the products and services to be exhibited at participating company booths. Listings are as provided at press time.

ADMIRAL MARINE

Booth No. 123

Admiral Marine Company of Staten Island, N.Y., will display a complete line of products for container securing. Of particular interest are the flex head lashing rod and the twist lock stacker. The stacker features a one-piece cone design that is being copied worldwide. Lashing equipment for RO/RO vessels will also be displayed, featuring AMC's well-known chain last system presently used by the U.S. Navy on the T-AKR and T-AK ships.

Also represented will be a full line of wire rope, fittings, anchors, anchor chain, and cordage. A topic for discussion at the booth will be the company's inhouse computer program service—a computer analysis of container securing systems based on the physical characteristics of the vessel and the forces generated by the wind and sea.

AERO NAV

Booth No. 823

Aero Nav Laboratories, Inc. of College Point, N.Y., is a research and testing firm featuring noise measurement, shock testing, acceleration simulation, vibration testing, climatic environment simulation, and explosion-proof testing.

The firm's shock testing capabilities run the full range of Military Specifications. It has the ability to check safety and explosion propogation effectiveness of military and commercial equipment in a controlled gas atmosphere. A complete facility is available for vibration simulation and testing. Aero Nav has successfully conducted many airborne noise, structure-borne noise, and Type II vibration tests to military and industrial specifications.

ALFA-LAVAL

Booth No. 909

Alfa-Laval, Inc. of Fort Lee, N.J., will be featuring the NIREX® freshwater distillers, fuel oil purification equipment, and plate heat exchangers.

AMERICAN PIPING

Booth No. 911

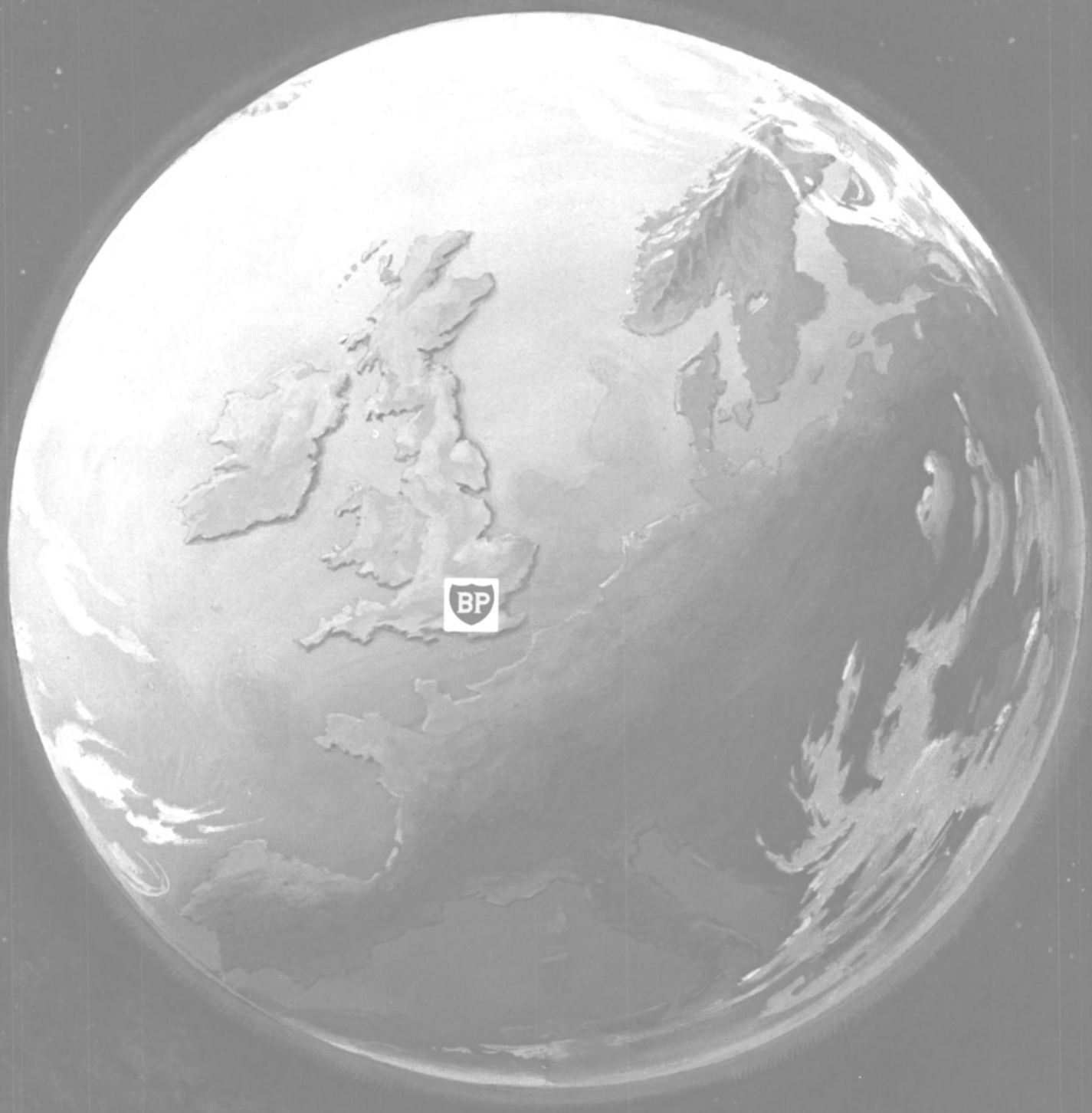
American Piping Products, Inc. of New Hyde Park, N.Y., will exhibit a complete line of spectacle blinds in sizes 1 inch through 24 inches, in all body materials and with either butt well or flanged ends. The company will also display a wide variety of basket, "Y" type, and duplex strainers, as well as check valves and needle valves.

AMERON

Booth No. 408

(continued)

We're not just "over there."



In fact, BP marine operates in 60 countries, servicing over 4,000 vessels out of 300 ports worldwide.

We provide a complete lubrication service and technical expertise just about everywhere. We've got top quality oils and greases that are essential—for cruise ships, tankers, ULCC's and container ships.

In over 30 years of service, we've built up a wealth of valuable trust and know-how, especially in the growing diesel area, working closely with the people who build diesels and the people who use them.

OK, so BP is a very large worldwide

We're over here, too!

marketer of marine lubricants. What about here in the U.S.A.? We're ready, willing and able to offer you the same quick and competent services on America's three coasts. Just give us a call or telex for our latest product information. (And note our new New Jersey location).

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The American arm of BP marine international

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  (201) 750-8828 (800) 524-1567 Telex: 176082
- 1125 Fourth Street, Gretna, LA 70053 (504) 368-2560 Telex: 784029
- 1363 N. Gaffey Street, San Pedro, CA 90731
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BP marine international

You've got us where you want us.

SOME OF THE BEST THINGS ABOUT FAIRBANKS MORSE DIESELS TODAY NEVER GET SEEN

And, we want you to know about them.

Like our new service training school. Advanced parts warehousing, Modernized service centers. Dedicated field service personnel.

They are all part of a new, and very special kind of customer service operation created to assure you, and every user of Colt-Pielstick* and Fairbanks Morse O-P diesel engines, that Fairbanks Morse engines will deliver the RPM or kilowatt specified.

It is also our dedication to provide every Fairbanks Morse engine owner with genuine Fairbanks Morse engine parts and the type of service that will always minimize engine downtime and help assure maximum return on engine investments.

In our view, there's no better service available ...anywhere!

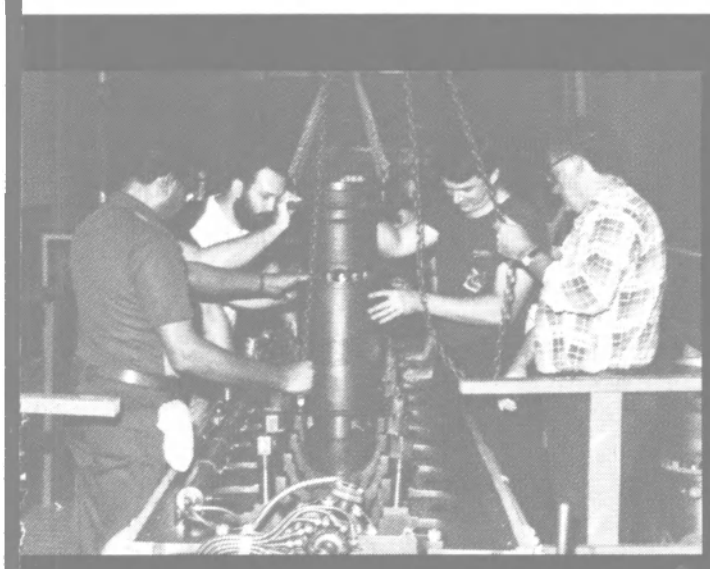
For more information, call 1-800-356-6955. Fairbanks Morse Engine Division, Colt Industries, Beloit, Wisconsin 53511.

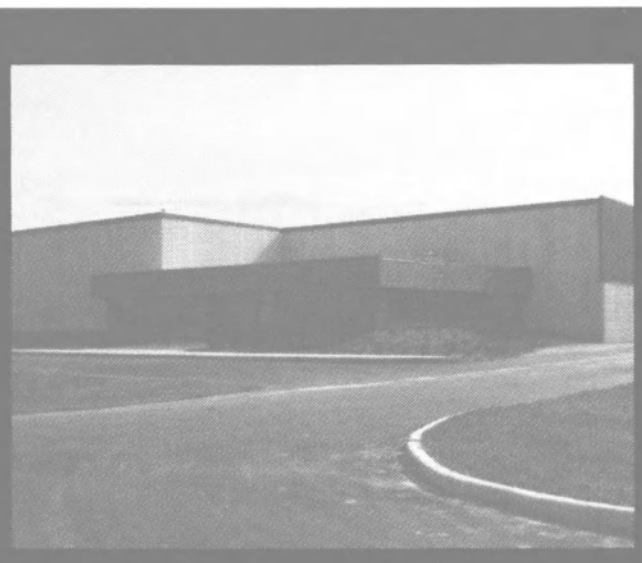
Fairbanks Morse

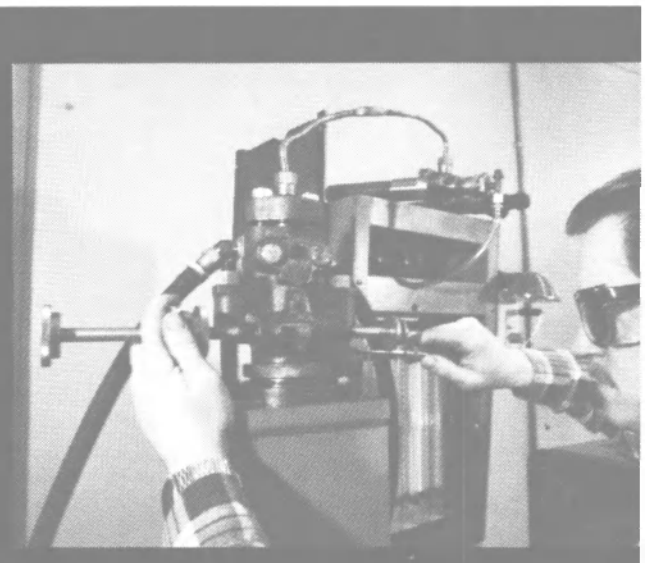
Engine Division

Colt Industries

Circle 168 on Reader Service Card







Training

Our completely new and modern service school is designed to give our customers and service personnel the finest in hands-on training on O-P and Pielstick engines. The school has two completely installed engines, plus specially created sound-proof class rooms with the most modern audio visual and video tape equipment available for training aids. The school is staffed by Fairbanks Morse skilled service personnel.

Advanced Centralized Distribution and Warehousing

Newly established and stocked regional warehouse in Reno, Nevada, and central parts distribution center in Indianapolis, Indiana, maximize parts inventory control and parts distribution effectiveness to all Service Centers and Sales Offices. A new fuel injection and governor overhaul service facility in Reno also provides complete service with the newest state-of-the art equipment. These facilities also maintain stocks of rebuilt and exchange assemblies in all Fairbanks Morse service locations to complement their new parts inventories.

Modern Service Facilities

Newly modernized and expanded service facilities in Beloit, New Orleans, Norfolk, Reno, Seattle, and now San Diego have the capability to handle complete engine rebuilding including engine disassembly to bare cylinder block, cleaning and reassembly. They can also rebuild blowers, fuel pumps and accessory components. The centers are also computer integrated with the centralized warehouses in Reno and Indianapolis to quickly process requirements for special and made-to-order parts.

* S.E.M.T. — Pielstick is a registered trademark of Societe d'Etudes de Machines Thermiques Paris, France.

93rd SNAME Annual Meeting — A Preview

Ameron, a world leader in marine corrosion control technology, will feature Bondstrand 2000USN fiberglass pipe and fittings approved for non-vital service on U.S. Navy combattant and noncombattant vessels, and state of the art Amercoat 698HS ablative copolymer high solids antifouling. Significant additional products will also be featured at Ameron's S.N.A.M.E. exhibit.

AQUA CHEM

Booth No. 208

Aqua-Chem, Inc. of Milwaukee designs and manufactures all types of desalination plants for the marine market, including reverse osmosis, vapor compression, flash, submerged tube, and plate type units. The exhibit will include literature, photographs, and a scale model of the 12,000-gpd reverse osmosis plant for the U.S. Navy.

ARNESSEN

Booth No. 237

Arnessen Corporation of Roselle, N.J., will be displaying the products of five manufacturers that it represents. These include: Electrolux Marine of Sweden—laundry and galley equipment and washdown systems; Flakt Marine of Sweden—heating, ventilation, and air conditioning systems; Megator Corporation of Pittsburgh—pumps and vent check valves; Duap Ltd. of Switzerland—diesel fuel injection equipment; and Hatlapa of West Germany—deck machinery, compressors, steering gears, freshwater evaporators, and transverse thrusters.

ATCO MARINE

Booth No. 608

Atco Marine Corporation of Brooklyn, N.Y., is a manufacturing/sales representative serving the marine industry. It specializes in deck/mooring fittings, lifeboats, davits, oil/sewage pollution control equipment, pumps, generators, and other machinery. The firm also offers machine shop, installation, and application engineering services.

BAILEY

Booth No. 231

Bailey Refrigeration Company, Inc. of Avenel, N.J., this year will not only be showing and describing its well-known HVAC maintenance, design, installation, and spare parts services, but will also be introducing its cooperative program with Dunham-Bush, Inc.

Bailey has taken on the exclusive U.S. marine representation of Dunham-Bush's unique and highly reliable line of rotary screw compressors. Cutaway exhibits, technical literature, and engineering personnel will be at the Bailey booth.

BARDEX

Booth No. 514

Bardex Hydranautics of Goleta, Calif., will have personnel at their display to show and explain the latest developments in shiplift and transfer systems, floating drydock transfer systems, and lifting systems. Literature and photographs in the booth will detail applications and technical specifications for the Bardex line of heavy-load moving systems for shipbuilding and ship repair.

BAY SHIPBUILDING

Booth Nos. 905 & 907

Bay Shipbuilding Corporation of Sturgeon Bay, Wisc., is one of the most modern full-service shipyards in the U.S. With access to the world's oceans through the St. Lawrence Seaway, Bay Ship can design, engineer, build, repair, convert, repower, retrofit, and jumboize oceangoing vessels to 760 feet and Great Lakes ships to 1,100 feet. The yard has a proven record of quality work, reduced costs, and on-schedule deliveries.

BETHLEHEM STEEL

Booth No. 837

Bethlehem Steel Corporation's Shipbuilding Division will feature its expanded capability for ship construction and repair at three facilities—the new Sabine repair yard at Port Arthur, Texas; the recently upgraded yard at Sparrows Point near Baltimore; and the Far East Singapore shipyard. All represent recent major capital expenditures, reflecting Bethlehem's commitment to the maritime industry.

BRITISH SHIPBUILDERS

Booth No. 825

The British Shipbuilders exhibit will show the company's latest technology and designs available.

CENTRICO

Booth No. E-3

Centrico will provide technical experts on their two-stage purification system for heavy fuel oil with a density up to 10/10 kg/m-; their line of automatic self-cleaning oil separators type OSA used in purifying heavy fuel oil and heavy lubricating oils and the company's ablative treatment system used to purify residual and crude oil for gas turbines. Free literature on Centrico's full line of products will be available.

COLT INDUSTRIES/ FAIRBANKS MORSE ENGINE

Booth No. 600

Colt Industries, Fairbanks Morse Engine Division will be exhibiting literature and sales data for the Pielstick PA series engine with a horsepower range of one to 8,000 used for stationary and marine applications, as well as literature and a model of the Pielstick 2.6 engine.

COMBUSTION ENGINEERING

Booth No. 728

C-E Marine and Industrial Package Steam Systems will be displaying a complete product line including main propulsion boilers, auxiliary boilers, and waste heat boilers, as

(continued)

93rd SNAME Annual Meeting — A Preview

well as various support groups such as Engineering, Program Management, Research & Development, and Field Services. C-E Computer Services representatives will be present to demonstrate and discuss various software available for the marine industry.

COMSAT TELESYSTEMS

Booth No. 800-1

Comsat Telesystems Inc., will be displaying its mobile satellite communications system. Included in the display will be the MCS 9100 ship earth station and the company's recently introduced TCS 9000 110-pound transportable communications system.

CORNELL-CARR

Booth No. 900

In addition to its display of windows, which will feature the new Clear View Screen and electrically heated models, Cornell-Carr Company of Monroe, Conn., will be showing window wipers and its line of heavy-duty, stainless steel locks. Also on display will be a selection of the company's weathertight and sliding doors.

JOHN CRANE

Booth Nos. 702 & 704

John Crane-Houdaille, Inc. of Morton Grove, Ill., will be exhibiting its complete line of fluid sealing devices and systems, including mechanical shaft seals, engineered packings, rudder stock seals, bulkhead seals, and stern tube seals that are targeted for military and commercial applications.

CUMMINS

Booth No. 830

Cummins Engine Company of Columbus, Ind., will exhibit photographs and literature covering marine diesel propulsion engines in the 50 to 1,385 horsepower range, and marine diesel auxiliary generator sets of 30 to 925 kilowatts.

(continued)

93rd SNAME Annual Meeting — A Preview

ENGELHARD

Booth No. 722+724

Corrosion protection and preventive systems that can save millions of dollars for marine and offshore operators will be exhibited in Engelhard's display. Also included will be a shipboard corrosion control system proven through 20 years of applications; electrochemical water treatment equipment to reduce internal corrosion and eliminate marine growth fouled seawater systems and deep submergence diver serviceable anodes for continuous 20-plus year corrosion protection on offshore exploration rigs and platforms.

ENVIROVAC

Booth Nos. 306 & 308

Envirovac Inc. of Rockford, Ill., will exhibit its ORCA sewage treatment systems, Type I & II physical/chemical MSDs, which are of compact design and microprocessor controlled, with U.S. Coast Guard, IMO, and various other approvals. The company's E-VAC vacuum sewage systems save water by using only two pints per flush, and eliminate many of the problems associated with gravity piping because vacuum piping does not require slope, can run upwards, and is smaller in diameter.

ESGARD

Booth No. 819

Esgard, Inc. of Lafayette, La., represented worldwide, will promote its entire line of rust- and corrosion-preventive coatings. Included will be ballast coatings, self-priming paints, wire rope and cable lubricants, and inventory storage coatings.

FATHOM OCEANOLOGY

Booth No. 638

Fathom Oceanology Limited of Mississauga, Ontario, Canada offers engineering design, development, manufacture and service of vari-

93rd SNAME Annual Meeting — A Preview

able-depth sonar (VDS), towed line array (TLA), mine countermeasures (MCM) handling systems incorporating passive and active motion compensation, hull-mounted sonar domes, towed bodies, marine winches, hydrodynamic cable fairings, and deepwater towing hardware.

FERGUSON/ COLUMBIAN BRONZE

Booth No. 331, 333

Ferguson/Columbian Bronze will display the company's line of propellers, nozzles, computerized propeller program, CP blades, thruster propellers, and shaft line accessories.

FERNSTRUM

Booth No. 812

R.W. Fernstrum & Co., of Menominee, Mich., will be exhibiting the Gridcooler®, a compact, highly efficient form of keel cooling adaptable to all types of workboats, fishing craft and pleasure boats.

The Gridcooler® is used to cool propulsion engines, generator set engines, bow thruster engines, pump and winch engines, hydraulic oil and compressors on board vessels.

FERROUS CORP.

Booth No. 116

Ferrous Corporation produces FE-4 fuel catalyst which makes fuel burn better in boilers and diesels. Improved combustion reduces maintenance needs by keeping boiler tubes and diesel rings and valves cleaner, and improves fuel economy from two to five percent. Ferrous will be showing a new video tape which explains how the catalyst works and how equipment is used to add the catalyst to fuel.

FINCANTIERI- CANTIERI NAVALI ITALIANI

Booth No. 832

The Fincantieri-Cantieri Navali Italiani exhibit will be highlighted by photographics panels and models representing the yard's production: merchant ships and naval vessels of every type and dimension; repairs and ship conversions; 2- and 4-stroke diesel engines for marine applications power generation and railway traction.

FLEXAUST

Booth No. 810

The Flexaust Company of Amesbury, Mass., a division of Callahan Mining Corporation, has been serving both the U.S. Navy and the commercial shipbuilding and ship repair industry for more than 40 years with ventilation hose and duct for welding fume removal, paint drying, dehumidification, and grit dust applications. The hose products are permanently flame-retardant and are recognized by Underwriter Labs with a rating of U.L. 94V-0.

GOLAR METAL

Booth No. 815

Golar Metal, Inc. of Lionville, Pa., a subsidiary of Golar Metal A/S of Norway, will display an aluminum helicopter deck, A-60 Safety Window, and a cutaway stripping ejector. In addition, the company will be introducing the NORAC Akerpanel Accommodation Systems. Literature will be available describing the Golar marine incinerators and safety doors.

HILMAN

Booth No. 311

Hilman Incorporated of Wall, N.J., will feature its Accu-Roll Guidance System that uses side cams on the standard Hilman rollers

(continued)

93rd SNAME Annual Meeting — A Preview

to guide the rollers on a flat bar, rail, beam, or channel. The company's rollers are used extensively in the translation of ships and ship modules either during launch or in the assembly phase. They can be supplied in stainless steel to prevent corrosion, and their lack of maintenance requirements, low coefficient of friction, and high durability make their life expectancy extremely favorable.

HYDROCOMP

Booth No. 811

HydroComp Inc., is a progressive naval architectural firm offering a complete network of engineering services for marine design firms, independent naval architects and engineers, shipyards and private companies. HydroComp will be displaying general design services and will introduce the first release of NavCad—software for the computer-aided-design of marine systems. Available for demonstration will be NavCad:Props and NavCad:Props Plus for propeller analysis and selection; and NavCad:Power for vessel resistance and shaft power prediction.

INDAL

Booth No. 640

Indal Technologies Inc. of Mississauga, Ontario, Canada, is internally known as a supplier of systems to safety land, secure, traverse, and protect helicopters on ships at sea. This combination of equipment and expertise has been termed the ship/helicopter interface, and includes the helicopter recovery assist, securing, and traversing (RAST) system; telescopic hangars, doors for fixed and telescopic hangars, lightweight flight decks, and aviation lighting packages.

INTERTRADE

Booth No. E-7

Intertrade Industries exhibit will feature the company's foam filled marine fenders, marine buoys and composite toolings.

ITT MACKAY

Booth No. 323

ITT Mackay of Elizabeth, N.J., a division of ITT Telecom Products Corporation, a name synonymous with quality marine communications for 58 years, introduces the Total Package concept of providing all communications and navigation needs. Additionally, high-quality engine room products are available, as well as satellite communications, lifeboat radio, radar, ballast oil pollution monitor with sample assembly, EPIRB, fuel meter, and viscotherm.

JAMESBURY

Booth No. 805

Jamesbury Corporation of Worcester, Mass., offers high-performance Wafer-Sphere butterfly valves with all of the performance features of the company's commercial marine valves, modified to meet stringent U.S. Navy requirements.

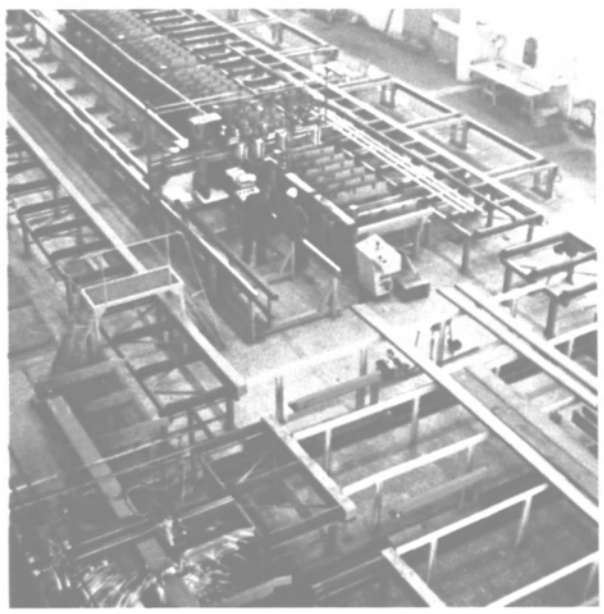
(continued)

TECHNICAL AND SOCIAL PROGRAMS

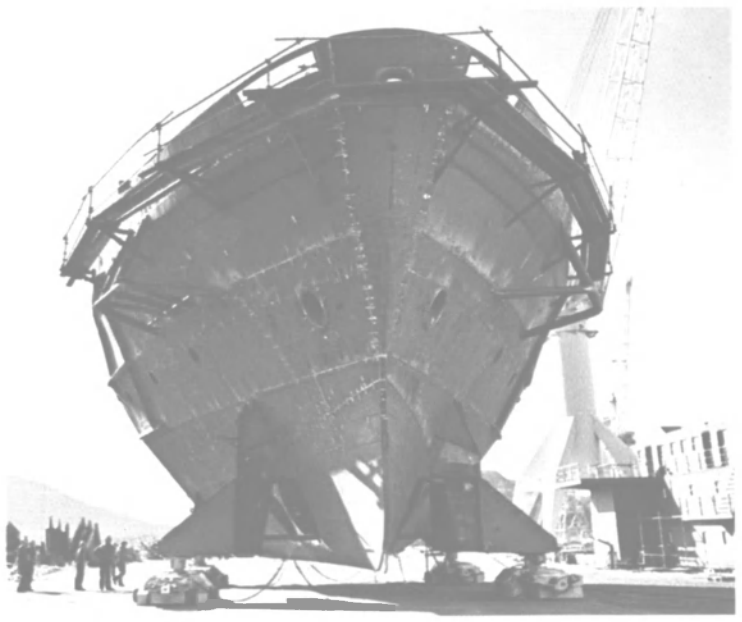
	THURSDAY, NOVEMBER 14	
	TRIANON	**MERCURY**
9:00	1. **Evaluating Longitudinal Ultimate Strength of Ship Hull Configurations** Kutt/Piaszcyk/Chen/Liu	3. **Predicting Behavior and Propulsive Performance of Ships with Bulbous Bows** Blume/Kracht
10:30	2. **Strength Evaluation of Unidirectional Girder System Product Oil Carrier** Okamoto/Hori/Tateshi/Rashed/Miwa	4. **Realistic Approach to Semisubmersible Safety** Vassalos/Konstantopoulos/Kuo/Welaya
12:00	**PRESIDENT'S LUNCHEON** **Grand Ballroom** Reception, East Ballroom Foyer	
2:00	**BUSINESS SESSION** **Grand Ballroom**	
3:00	5. **New Warship Design Strategy** Garzke/Kerr	

	FRIDAY, NOVEMBER 15	
	TRIANON	**MERCURY**
9:00	6. **Vibration Response on Propulsion-Efficient Container Vessels** Asmussen/Payer	8. **Structural Reliability of Marine Diesel Engines** Nikolaidis/Perakis/Parsons
10:30	7. **Rough Propeller Penalties** Townsin/Spencer/Osaad/Patience	9. **Finite Element Analysis of Elastohydrodynamic Stern Bearings** Mourelatos/Parsons
2:00	10. **Innovative Naval Designs for North Atlantic Operations** Kennel/White/Comstock	12. **Dynamic Analysis as a Tool for Open Sea Mooring System Design** Triantafyllou/Blier/Shin
3:30	11. **Proposed CCG Polar Class 8 Icebreaker Under Extreme Ice Loads** Glen/Daley/Tam	13. **Hydro-Numeric Design of SWATH Ships** Salvesen/von Kerczek/Scragg/Cressy/Meinhold
7:30	**93rd ANNUAL BANQUET** **Grand Ballroom**	

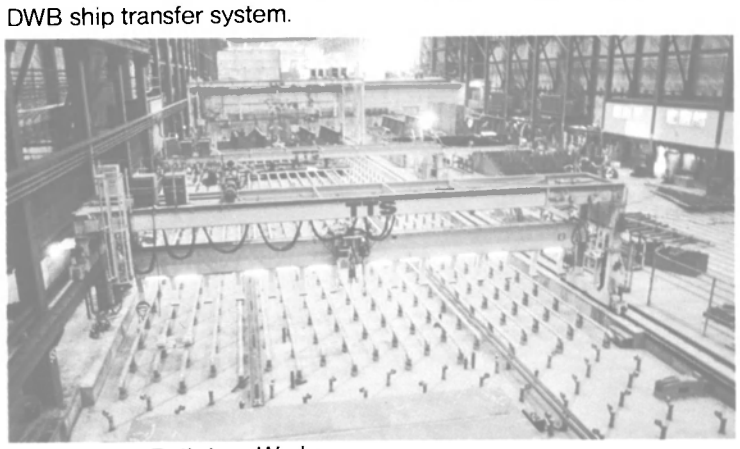
Production systems for ships, barges and offshore structures.



Beam line.



DWB ship transfer system.



Panel line at Bath Iron Works.

If you're looking for productivity, you should talk to TTS.

TTS specializes in solutions that offer immediate increases in productivity for your yard. Shotblast and paint lines. Panel lines. Beam lines for N/C cutting and marking of stiffeners. Heavy lift and ship transfer systems. Material handling systems.

Proven, flexible, custom-designed to suit any size shipyard, any existing facility.

Give us your particular production problems. Let us propose how to reduce material handling costs, mechanize production and increase productivity. We are just a phone call away.

TTS

TOTAL TRANSPORTATION SYSTEMS INC.

813 Forrest Drive
P.O. Box 6127
Newport News, Virginia 23606
Telephone: (804) 595-5153
TWX 710-880-0003.

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93rd SNAME Annual Meeting — A Preview

Qualifying for this new Navy specification required rigid testing in all critical performance areas. Ranging in size from 2½ inches, these valves suit practically every shipboard requirement with such features as tight shutoff, wide temperature range, compactness and light weight for easy installation, corrosion resistance, and long life cycle. Available as an option are a wide selection of Jamesbury actuators for both automatic on/off and proportioning control.

WALTER KIDDE

Booth No. 523

Walter Kidde is a leading manufacturer of USCG approved fire detection and suppression systems for military and commercial vessels. Walter Kidde display will include the KMSD (Kidde Marine Smoke Detection) system; carbon dioxide suppression systems; and Halon systems.

LEROY SOMERS

Booth No. 634

Leroy Somers Motors Canada Ltd. of St. Laurent, Quebec, manufactures a complete line of ac and dc electric motors, alternators, generators, frequency converters, and circuit breakers for commercial and naval vessels. The company's exhibit will feature motors and alternators.

MARINE INDUSTRIE

Booth No. 632

Marine Industrie Limitee of Sorel, Quebec, Canada, is a major Canadian shipbuilder in the design and construction of naval, commercial, and scientific vessels, conversions, and major refits. The company offers its services as prime contractor for turnkey projects, subcontractor for U.S./Canada Defense Sharing Program, and offset arrangements.

MMS/MARDATA

Booth No. 310

Marine Management Systems, Inc. (MMS) of Stamford, Conn., will be presenting its ship management application systems, designed for use on the IBM Personal Computer, for both shipboard and shoreside use. Available for demonstration will include systems for spare parts management, planned maintenance, cargo loading, and fleet payroll, among others.

The MMS Maritime Data Network (MARDATA) will demonstrate its on-line database services of shipping information for the ocean transportation industry. New this year are major enhancements to worldwide Ship Movements and Charter Fixtures libraries, communications software for the IBM PC, and INTEX/BIFFEX Freight Futures data, including the daily Baltic Index and Trading Components.

MARINE MOISTURE CONTROL

Booth No. 112

Marine Moisture Control Company (MMC) of Inwood, N.Y., will exhibit its direct electronic gauging systems for liquid transport and storage, with open, restricted, or closed tank gauging, with portable, fixed automatic, remote, and computerized systems. The MMC stand will also feature vapor control valves, Hi/Lo alarm level alarms, clarifier/coalescers, RO water purification systems, gear case dehydrators, line blind valves, deck and tank covers, C-L closures, in-line strainers, Seacology 2000 slop tank logic system, bunker and slop tank discharge flanges, and Camlock® couplings.

MARLO COIL

Booth Nos. F6 & F7

Marlo Coil of High Ridge, Mo., has been a leading manufacturer of Navy and commercial marine heating, ventilating, and air conditioning equipment for more than 60 years. It will display a Navy fan coil unit, a Navy fan coil assembly, and a new design Navy Standard cooling coil. Marlo will also demonstrate its computer programs for selecting and rating Navy Standard HVAC equipment.

MASONITE

Booth No. 213

Masonite Inorganic Technology Division produces a variety of products and services to the marine industry. Among these are Firetest™ 80-32 non-combustible bulkhead panels, steel doors and frames, joiner trim, Marlite® Brand Plank and HPL doors.

MIDLAND ROSS

Booth No. 307

Midland Ross, Russellstoll offers one of the marine industry's most complete lines of lighting. Basic fixture types include incandescent, fluorescent and three types of HID illumination: mercury vapor, high pressure sodium and metal halide. Applications range from table and mirror lamps in ship's quarters to vapor-tight, water-tight corrosion-resistant, or explosion-proof fixtures for any type of vessel, rig or shore location.

MITSUBISHI

Booth No. 708

The exhibit of Mitsubishi Heavy Industries America, Inc. of Chicago will feature the following: a standard oil tanker, Aquarius-80; a dual-fuel diesel engine, combined with turbogenerating plant (Mitsubishi-DFD); a modern VLCC design; modification work on a containership; and an insulation reamer coupling bolt for propulsion power transmission.

NKS/LEXINGTON TRADING INTERNATIONAL

Booth No. 313

NKS/Lexington Trading International supplies heavy marine and industrial castings and forgings.

NATIONAL MARINE SERVICE

Booth No. 915

National Marine Service, Shipyard Division will exhibit their services and capabilities in a pictorial display of the company's facilities at St. Louis, Mo., New Orleans, La., and Norfolk, Va. The company provides diesel engine repairs and parts in addition to shipyard repair services.

NAV-COM/ MAGNAVOX

Booth No. 429, 430, 529

Nav-Com, Inc. of Deer Park, NY will introduce the new Magnavox next generation satellite communications terminal and the Magnavox GPS navigation receiver. The exhibit will include a live demonstration of NavCom's BUSISHIP shipboard management system, including vessel application software; a demonstration of GEONAV electronic charting system; as well as various other marine navigation and communication equipment.

NEWPORT NEWS

Booth No. 204

Newport News Shipbuilding of Newport News, Va., a Tenneco Company, will display its ability to design, construct, overhaul, repair, convert, retrofit, and jumboize a wide variety of ships for the U.S. Navy and commercial customers. Also featured will be the IM (Intelligent Machine) microcomputer-based delivery system being marketed for training, consultation, diagnostic, and information kiosk applications.

RAYTHEON MARINE

Booth No. 824

Raytheon Marine Company of Manchester, N.H., will be exhibiting a number of new products, including: the RAYPATH ARPA with simulator JUE-35B SatCom (INMARSAT Ship Earth Station); DSL-150 doppler speed log; RD-500 echo sounder (both meeting new IMO requirements; RAYFAX-500 weather facsimile receiver/recorder; RAYNAV-750 Mk II Loran C navigator; as well as satnav, SSB and VHF-FM radiotelephones, and other equipment.

RILEY-BEAIRD

Booth No. 108

Riley Beaird supplies the Maxim line of desalinators and silencers to the marine industry. Maxim desalinators include reverse osmosis systems providing fresh water for workboats, offshore platforms, tankers, submarines and large vessels of all types. Riley Beaird also supplies Maxim silencers, heat exchangers and deaerators.

SAAB

Booth No. 212

Saab Tank Control of Hoboken, N.J. (formerly Salwico, Inc.), will be exhibiting with Saab Marine Electronics. On display will be Saab's TankRadar for measuring the level in cargo tanks; the TankRadar System, a self-contained cargo measuring and control system for level, temperature, volume, weight, draft, inert gas pressure, etc. Also shown will be the Salwico oil content monitor, Howden inert gas systems, Gunclean fixed tank-cleaning equipment, and Hi/Lo level alarms. Technical literature and engineering personnel will be at the booth for additional information.

SEACOAST ELECTRIC

Booth No. 211

Seacoast Electric provides military spec 24643, 24640 and 915E cable, navy symbols, circuit breakers and marine electrical equipment, and airframe wire and cable for marine applications.

SIEMENS-ALLIS

Booth No. 734

The Power Engineering Marketing Division of Siemens-Allis, Inc., South Plainfield, N.J., will exhibit the following equipment:

A complete main engine control console and automation system, Siemens type DIFA 41. This system has been certified by M.A.N./B&W for control of its entire range of slow- and medium-speed diesel engines.

A Simos 32 unit with color graphic—a microprocessor-controlled monitor and alarm system with added-on color graphic.

SIGMA

Booth No. 606

Sigma Treatment Systems of Chester Springs, Pa., distributes the Shimadzu ET-30A, said to be one of the most rugged and reliable 15 ppm oil content meters available. Completely automatic, with worldwide regulatory approvals, the ET-30A is both self-cleaning and self-calibrating. Its ultrasonics used for measurements are virtually unaffected by dirt, rust, or air bubbles.

SPERRY

Booth No. 931

Sperry Corporation's Aerospace & Marine Group of Charlottesville, Va., will exhibit a full range of advanced marine navigation and control systems, including the Sperry SRD 421 two-axis doppler speed log, the SRP 2000 autopilot, the 340 CAS collision-avoidance system, and the Sperry satellite communications system.

TANKER EQUIPMENT

Booth No. D-8

Tanker Equipment Company of

(continued)

93rd SNAME Annual Meeting — A Preview

Hoboken, N.J., is agent for and will exhibit the following equipment: Dasic tank-washing machines, COW equipment, and water- and air-driven blowers; TEC cargo and tank-wash hoses; and Gastech portab gas-detection gear.

TATE ANDALE

Booth No. 413

Tate Andale, Inc. of Baltimore, a division of Tate Industries, will exhibit manually operated and power-operated simplex and duplex manifold valves; seawater, lube oil, and fuel oil strainers; PV valves, scupper valves, vent valves, P-traps, deck drains, special marine machining and fabricating capabilities, valve actuators, and heat exchangers.

THOMSON-GORDON

Booth No. 404

Thomson-Gordon Limited of Burlington, Ontario, Canada, will be displaying its full range of Thordon® marine bearings for propeller shafts and rudder bearings on all types and classes of ships. From Compac to Staxl, from XL to Composite, Thordon synthetic-polymer-alloy marine bearings have provided consistent, cost-effective, trouble-free performance for owners and operators. There is said to be a Thordon marine bearing to meet any requirement.

TTS

Booth No. 227

Total Transportation Systems, Inc., (TTS) of Newport News, Va., is a major supplier of custom-engineered production systems, surface treatment lines for plates and shapes, and heavy-material-handling systems to modern shipyards throughout the world, including several prominent U.S. yards. The recently acquired Kenmark Industries adds a new dimension to the TTS material-handling systems with Mega Grip and Mega Latch jacking equipment for ship transfer and rig jacking, and Twin Lift hoist shiplift systems.

TYTON SEAL

Booth No. 628

Tyton Seal of Pointe Claire, Que-

bec, Canada will exhibit its bulkhead seal type TR250 that is widely used by the U.S. Navy. It is automatically activated, does not need auxiliary systems, and accommodates shaft movement up to plus or minus 1.75 inches radial. Tyton air admission seals for Prairie and Masca systems convey air into the propulsion shaft for impeller noise reduction.

UNITOR/PEROLIN

Booth Nos. B5 & B6

Perolin Marine UK, a Unitor company, will be demonstrating the latest in its range of on-board test kits, the TBN kit. TBN (Total Base Number) is a measure of the ability of the oil to neutralize strong acids, which has a critical influence on cylinder liner and piston ring wear. The prime development criterion for this kit was "sea-suitability," and allows the following end-user benefits: ease and speed of use, high portability, ease of cleaning, and accuracy and decisiveness.

VERSATILE GROUP

Booth No. 646

The Versatile Group now includes Versatile Davie (Levis, Quebec); Versatile Systems Engineering (Ottawa, Ontario); Versatile Vickers (Montreal, Quebec); and Versatile Pacific Shipyards (No. Vancouver, BC).

The Versatile Group display will highlight the facilities and services of their affiliated companies.

VIKING LIFE-SAVING EQUIPMENT

Booth No. 908

Viking Life-Saving Equipment provides a complete Davit Launching system with USCG approved liferafts for 12, 16, 20 or 25 persons, USCG approved stainless steel automatic release hook and a choice of USCG approved Davits. Full details will be available at the Viking Life-Saving Equipment display.

WARREN PUMPS

Booth No. 132

Warren Pumps-Houdaille, Inc. of Warren, Mass., a subsidiary of Houdaille Industries, will feature its complete range, said to be the widest line of marine pumps available from a single U.S. manufacturer. Warren's centrifugal, mixed-flow, propeller, reciprocating, and rotary pumps meet nearly all marine services, and are backed by the company's 85-year-old tradition of know-how and service.

WARTSILA DIESEL

Booth Nos. 422, 424, & 426

Wartsila Diesel of Finland, one of the world's leading manufacturers of medium-speed diesel engines, will exhibit its Wartsila Vasa 32 and Vasa 22HF engine types with an output range of 760 to 9,180 bhp at 720-1,200 rpm. Also on display will be the Wartsila ENCOM engine monitoring system, as well as some of the key components for reliable heavy-fuel operation.

S.S. WHITE

Booth No. 610

S.S. White Industrial Products of Piscataway, N.J., a division of Pennwalt Corporation, will have an all-new display highlighting a Type RGS in-line torque multiplier that allows turning difficult high-torque valves with ease. The display will allow visitors to apply torque to the remote hand wheel and experience a simulated digital readout in pounds feet, and observe the increased torque at the valve site.

An easy way to add 16 tons of variable load

The lightweight qualities of Firetest™ 80-32 Joiner Panels can make a big difference in the variable load a vessel can handle

Among the many benefits offered by Firetest™ 80-32 Joiner Panels, you'll find the fact each 4′ × 8′ panel weighs 30% less than the next most competitive panel. Given the importance of variable load factors in modern marine vessel design, it's not hard to see the competitive edge such a huge weight reduction allows.

In fact, if you were to consider a typical offshore rig, utilizing about 1,100 Joiner Panels, you would add 16 tons or more of variable load capacity. Now, that's a competitive edge.

Competitive System	Sq. Foot Weights Core	System
A Rock wool/Steel faces	—	5.0
B Gypsum/Steel faces	4.5	5.5
Masonite ½″	2.13	2.96
80-32 ¾″	2.69	3.5

But, there are even more reasons asbestos-free Firetest 80-32 has rapidly become the most specified core material for marine joiner panels.

Consider that they will not wick water. Panels remain stable even when exposed to moisture at the job site and after installation.

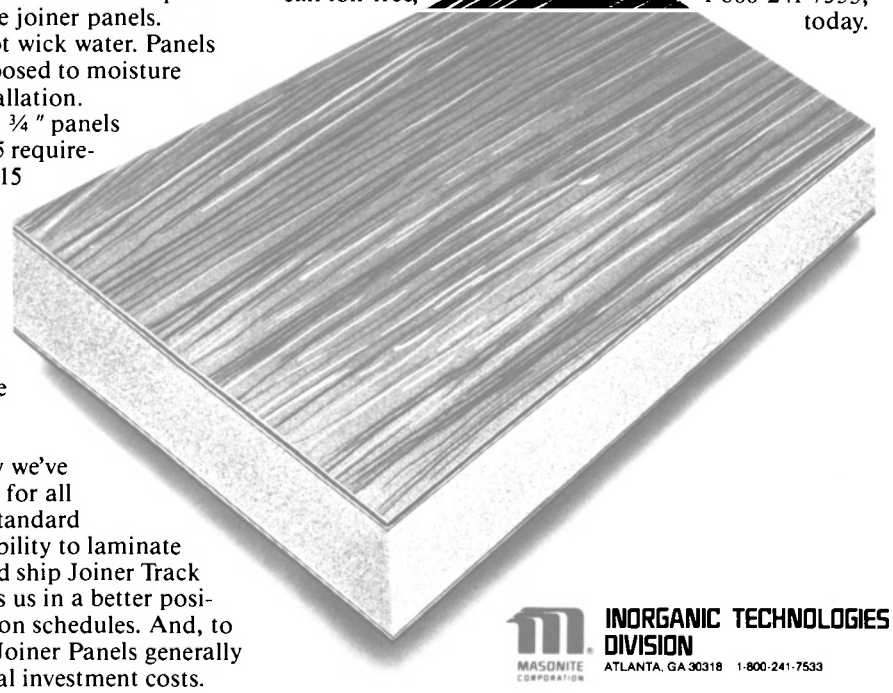
In addition, both ½″ and ¾″ panels meet Coast Guard Class B-15 requirements, allowing its use in A-15 construction and as a component in A-30 and A-60 construction. ¼″ Core meets A-0 requirements.

And, there are other benefits due to low density and light weight.

Panels are easier to handle and machine, with less wear and tear on equipment.

Finally, consider how easy we've made it to use Firetest 80-32 for all your Joiner Panel needs. 3 standard thicknesses, and then, our ability to laminate panels in our own facility and ship Joiner Track from the same location, puts us in a better position to meet tight construction schedules. And, to top it all off, Firetest 80-32 Joiner Panels generally cost less, lowering your initial investment costs.

Modern marine design puts a premium on variable load factors, cost and performance. It's small wonder that the most performance-minded joiner panel specifiers rely on one panel above all others... Firetest 80-32 Joiner Panels. Part of a growing family of interior products for the marine industry from the Marine Business Department of Masonite Inorganic Technologies Division. Write or call toll-free, 1-800-241-7533, today.



INORGANIC TECHNOLOGIES DIVISION
MASONITE CORPORATION
ATLANTA, GA 30318 1-800-241-7533

Only Westfalia's On-Demand Purifying System Removes All the Dirt and Water from your 1010 fuel.

Whether your fuel oil is heavier or lighter than water, only Westfalia's two-stage Unitrol/Secutrol system assures maximum purity even under widely varying feed conditions. Here's why.

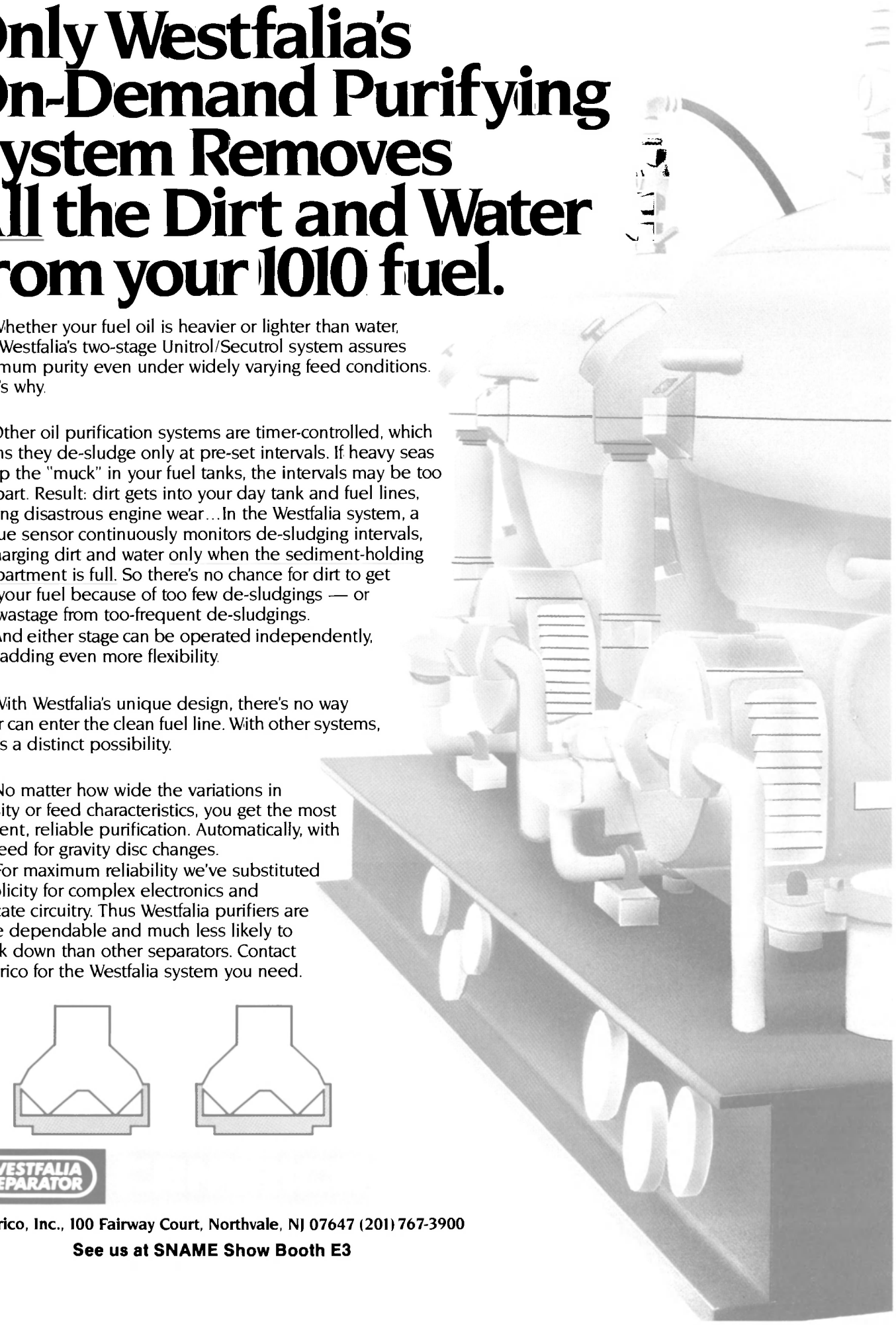
Other oil purification systems are timer-controlled, which means they de-sludge only at pre-set intervals. If heavy seas stir-up the "muck" in your fuel tanks, the intervals may be too far apart. Result: dirt gets into your day tank and fuel lines, causing disastrous engine wear...In the Westfalia system, a unique sensor continuously monitors de-sludging intervals, discharging dirt and water only when the sediment-holding compartment is full. So there's no chance for dirt to get into your fuel because of too few de-sludgings — or fuel wastage from too-frequent de-sludgings.

And either stage can be operated independently, thus adding even more flexibility.

With Westfalia's unique design, there's no way water can enter the clean fuel line. With other systems, this is a distinct possibility.

No matter how wide the variations in density or feed characteristics, you get the most efficient, reliable purification. Automatically, with no need for gravity disc changes.

For maximum reliability we've substituted simplicity for complex electronics and intricate circuitry. Thus Westfalia purifiers are more dependable and much less likely to break down than other separators. Contact Centrico for the Westfalia system you need.



WESTFALIA SEPARATOR

Centrico, Inc., 100 Fairway Court, Northvale, NJ 07647 (201) 767-3900

See us at SNAME Show Booth E3

Circle 175 on Reader Service Card

Falk Names Peter Davis Director Of Marketing

Peter Davis

J.M. Blank, president of The Falk Corporation, recently announced the appointment of **H. Peter Davis** as director of marketing.

Mr. **Davis** joined Falk in 1968. He was assigned a product manager in 1971 and appointed head of fluid power in 1973, appointed manager of standard product sales in 1979, and manager of product marketing in 1982.

The Falk Corporation, Milwaukee-based subsidiary of Sundstrand Corporation, is a major manufacturer of industrial power transmission machinery.

Spratt Joins Anixter Bros. In National Account Sales

Bob R. Spratt recently joined Anixter Bros., Skokie, Ill., in national account sales, according to corporate vice president **Bob Wilson**.

Mr. **Spratt's** efforts will be devoted to the industrial community in the states of Illinois, Iowa and the greater metropolitan area of Chicago and northwestern Indiana. He will be based at Anixter's Evanston, Ill. location.

Prior to joining the company, Mr. **Spratt** was vice president of marketing at Lissner Corporation in Chicago. In addition, he had spent 21 years with Ericsson Inc. in New York, serving in a variety of sales and management positions.

Raytheon Adds New Frequency To DSF-6000 Fathometer Depth Sounder

Raytheon Ocean Systems Company has added a new frequency to its popular DSF-6000 Digital Survey Fathometer® depth sounder, creating a newly configured, "deep-water" instrument package at no increase in price.

The DSF-6000 now has, in addition to existing frequencies of 24, 40, 100, and 200 kHz, a 12 kHz frequency for 5,000-meter capability.

The portable depth sounder continues to feature a permanent chart display and both serial and parallel output ports. It provides high resolution, quality bathymetric profiles with automatic or manual switching among seven overlapping phases. The system will also continue to have a simultaneous dual frequency or individual frequency operating capability.

The DSF-6000, when interconnected with position-finding equipment and a suitable digital tape recorder or data logger, can generate depth and position data in permanent digital form for precision bathymetric survey operations.

For a brochure detailing the specifications and operating features of Raytheon's newly enhanced DSF-6000 Digital Survey Fathometer,

Circle 66 on Reader Service Card

ORI Incorporated Wins $4.5-Million Contract For Submarine Work

ORI Incorporated, Rockville, Md., was recently awarded a $4,512,272 cost-plus-fixed-fee term contract to provide research and development efforts in support of advanced submarine ship control design. The work will be performed in both Rockville (70 percent) and Bethesda, Md. (30 percent), and is expected to be completed by September 1988. At the end of the current fiscal year, $183,000 of the funds would have expired. There were 61 bids solicited and one offer received. The David Taylor Naval Ship Research and Development Center, Bethesda, Md., is the contracting activity (N000167-85-C-0116).

Ogden Completes Sale Of Avondale Industries Common Stock

Ralph B. Ablon, chairman of Ogden Corporation, has announced that Ogden recently completed the sale of Avondale Industries, Inc. common stock to the Avondale Employee Stock Ownership Plan (ESOP), in accordance with the plan announced in July this year. The ESOP includes certain employees in the companies that formerly comprised Ogden's Marine and Modular Construction and Industrial Products groups.

The transaction has the following effects:

• Generates approximately $200 million in cash for redeployment, and results in no profit or loss, although substantial expense was incurred in completing the transaction.

• Provides funds for Ogden Marine Systems' solid waste resource recovery business, currently constructing projects in Tulsa, Okla.; Marion County, Ore.; Hillsborough County, Fla.; and Bristol, Conn., and recently awarded projects in Babylon, N.Y., and Indianapolis, Ind. Negotiations continue in several other communities. All projects will be operated by Ogden Allied Services under contracts of at least 20 years.

• Significantly improves financial position, as net worth is unchanged, and available cash is sufficient to retire all senior debt if desirable.

• Reduces exposure to cyclical businesses and substantially reduces administrative overhead.

• Provides a participation in Avondale Industries, Inc. through the ownership of preferred stock and warrants convertible into 30 percent of the common stock of Avondale.

• Insures ability to maintain common stock dividend.

William F. Connell, formerly an Ogden executive vice president, will be chairman and chief executive officer of Avondale Industries. **Albert L. Bossier Jr.,** formerly president of Avondale Shipyards, Inc., will continue as president of the Avondale division and will assume additional responsibilities in connection with the Mayville, Ortner, and Yuba divisions. **Robert S. Miller,** formerly chief administrative officer of Avondale Shipyards, will retain the same post at Avondale Industries.

New Edition Of 'Research Manufacturing, Engineering' Now Available From M.A.N.

M.A.N. Maschinenfabrick Augsburg-Nurnberg Aktiengesellschaft of West Germany recently brought out Number 16 of the annual publication "Research, Engineering, Manufacturing," which is printed each year to coincide with the Hanover Fair. This issue contains readily understandable articles by authors from the company and its subsidiaries on the latest developments in the M.A.N. divisions, and includes items on the following topics.

—Maximizing economy through advanced technologies—exemplified by M.A.N.-B&W four-stroke diesel engines.

—Fettling with the aid of numerically and sensorially controlled machines.

—Optimizing the drive system on commercial vehicles with the aid of a dynamic development test rig.

—The use of pre- and postprocessors in FEM computation.

—L220 structural tank—M.A.N. develops assemblies for Ariane 4 with the aid of advanced manufacturing technologies.

—Assembly—welded crankshafts for large-bore two-stroke marine diesel engines.

—A new M.A.N. grabbing ship unloader for cost-effective handling of coal.

—Solar and wind energy systems for isolated areas.

—New EMU trains for the Athens-Piraeus line.

—Pipeline compressors for gas handling applications.

The 68-page, four-color brochure is available in English, French, German and Spanish. It is elaborately presented and profusely illustrated with photos, cutaway drawings, graphs, charts, etc., illustrating the various articles it contains.

For a free copy of the publication from M.A.N.,

Circle 77 on Reader Service Card

Rig-A-Lite Offers Free Brochure On Explosion-Proof Light Fixtures

The Rig-A-Lite Company, Inc., Houston, Texas, is offering a detailed brochure on its line of explosion-proof lighting fixtures.

The brochure, entitled "XP Series," covers the company's XP Series of fluorescent lighting recommended for "hazardous hostile locations." Detailed charts describe the four fixtures available: two-lamp, two-foot and four-foot fixtures; and four-lamp, two-foot and four-foot fixtures.

Tables on coefficients of utilization, candlepower, fluorescent photometrics, dimensions and other planning data are included in the four-page publication, plus an exploded view of a four-foot fixture.

For a free copy of the "XP Series" brochure,

Circle 78 on Reader Service Card

High-Performance Bearings Reduce Costs By Extending Dredge Life

Permanently on station along a 100-mile stretch of the Orinoco River in Venezuela, one of the world's largest, hardest-working dredges, the 23-year old Icoa, works day and night to keep open a 300-foot-wide channel for deep-draft vessels bringing iron ore out from the mines of Venezuela.

The big vessel dredges the river 24-hours-a-day for 42 consecutive days before anchoring for two or three days to refuel and reprovision.

Water-lubricated rubber bearings of a unique design have extended the life of propeller shafts, and bearings themselves, by reducing friction, wear, and heat.

Built in Japan in 1961 by the Kure Shipyard of National Bulk Carriers, the Icoa carries an average crew of 100. A trailing suction dredge with boom delivery, she is outfitted with four 36-inch-diameter suction pumps, with dragheads, each driven by a diesel-powered centrifugal pump. A revolving boom supports a 57-inch pipe capable of discharging spoil up to 328 feet to either port or starboard. Icoa can dredge to a depth of 59 feet below the surface of the water.

While dredging, the Icoa's shaft and rudder pintle bearings are awash in dirty, gritty water, yet the bearing and propulsion systems are able to perform at optimum wear levels with nil or minimum damage.

One key to this performance has been the use of water-lubricated, soft, thin-rubber, plastic-backed segmental bearings reportedly able to endure up to three years of operation before replacement. This bearing system—produced jointly by the BFGoodrich Company and Lucian Q. Moffitt, Inc., both of Akron, Ohio—has been developed and refined over a number of years, and the Icoa experience has played a major role in the achievement.

One of the earliest marine bearing surface materials was brass, but in 1839 **Isaac Babbitt** of Massachusetts developed "white metal," an alloy composed of tin with small percentages of antimony and copper. It quickly became a popular choice for bearing surfaces.

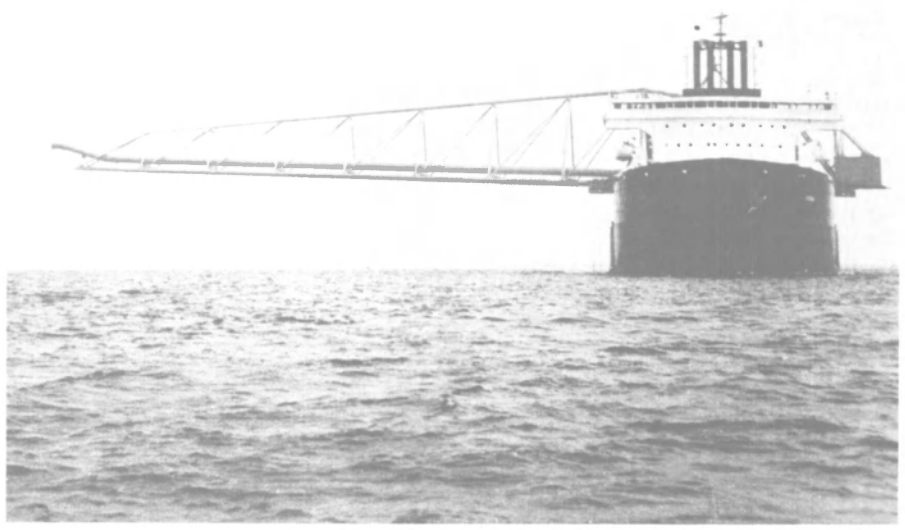
The use of rubber as a bearing material appears to have originated when a mining engineer named **Charles Sherwood,** working a California mine during the early 1900s, found that a bearing had failed in an important drainage pump. With no spares available, he resorted to a field expedient by splitting a piece of rubber hose longitudinally and slipping it over the shaft. Surprisingly, the rubber worked better than the metal bearing it had replaced, and the rubber bearing industry was born.

Mr. **Sherwood** and the Oliver Pump Company later joined forces to form the Oliver Sherwood Company to design and manufacture rubber bearings. In 1922 that company sold, to the BFGoodrich Company, a number of patents covering the application of rubber to mechanical devices.

The underwater bearing system on the Icoa consists of six BFGoodrich Cutless® brand, water-lubricated, thin-rubber segmental bearings that include: a 51½-inch-long after stern tube bearing; a 37½-inch-long after stern tube bearing; and a 97½-inch-long main strut bearing on each end of the two propeller shafts. All these bearings have inside diameters of 19 inches and outside diameters of 23½ inches. The load on each main strut bearing approximates 54,000 pounds.

Additionally, each of the Icoa's dual rudders is hung on pintles that utilize 13-inch ID upper pintle bearings, and 16½-inch ID lower pintle bearings. All bearings in the system are free-flooded except the top pintle, which is fed by pipe from the engine room.

Fundamental to the efficiency of water-lubricated rubber bearings are the inherent characteristics of both water and rubber. Water, of course, is free, nonpolluting, and an inexhaustible resource. More importantly, because of its low viscosity and high specific heat, it can be the most efficient of all liquids in lowering fluid friction and drawing off heat. Further, if it can be trans-



ported properly through the bearing so that it produces a continuous film between the bearing and the shaft, it can eliminate almost all contact between the two. The creation and maintenance of that film is the function of the critical design of the bearing configuration.

Rubber, on the other hand, brings to the bearing equation its own set of desirable traits, principally the fact that when it is sufficiently wetted, it has a naturally lower coefficient of friction than other traditional bearing materials.

The final factor in the bearing equation is design, which optimizes the natural characteristics of the rubber and water to produce a bearing system that achieves maximum levels of attainment in the reduction of friction temperature, and wear.

The Cutless brand bearing configuration provides a rubber surface designed to provide, in a perfect circle, a series of alternating "water wedges" and "water grooves." The water grooves serve as reservoirs through which incoming water is the lubricating coolant; the outgoing water functions to flush out dirt and potentially damaging grit.

The water grooves approach the surface of the shaft in a very exact and narrow angle, which causes a volume of water from each groove to form a wedge of water between the bearing and the shaft surfaces. These wedges of water in turn produce a continuous film of lubricating water that keeps that shaft and the bearing separated, a condition that obviously keeps wear on both parts to a minimum.

The ability of rubber to deform and rebound accommodates load changes from the shaft and permits the bearing to continue to perform effectively even though the shaft may be bent or misaligned.

For bearings designed to fit shafts with outside diameters greater than 6½ inches, such as those on the Icoa, BFGoodrich/Moffitt has designed a segmental type bearing that produces the same bearing surface configuration and performance as a full molded bearing. In the segmental bearing, longitudinal staves composed of thin rubber facings molded to noncorroding, high molecular weight polyethylene backing strips (Romor® brand staves), are precision made to fit into matching, trapezoidal slots, machined into the bearing housing. With all staves in place, the bearing surface provides the same "water groove/water wedge" profile. A major advantage of the segmental type bearing is the fact that individual staves can be replaced one or more at a time.

The dredge Icoa is but one of the many vessels that have employed these water-lubricated rubber bearings. But this vessel, during her nearly quarter century on the Orinoco, has served as a hostile proving ground, and as the "necessity of invention" for a number of Cutless bearing refinements.

For a copy of a brochure containing complete data describing the Cutless bearing line,

Circle 17 on Reader Service Card

Systonetics Offers Free Brochure On Automated Project Management Systems

An informative, four-color brochure explaining how automated project management can help keep projects on-time and within budget is now available from Systonetics, Inc., Fullerton, Calif.

This colorful publication details the importance of combining up-to-the-minute information with total visibility for effective project control. It gives brief history of how Systonetics pioneered the converting of computer-generated information into easy-to-read project graphics (networks, gantt barcharts and cost/resource graphs) and reports.

Furthermore, the brochure presents Systonetics' innovative software systems: EZPERT—what is said to be the recognized standard for project graphics systems; VISION, a solution to project management; and VISIONmicro, project management software for the PC. The systems are defined in clear text, which is accompanied by colorful graphics.

In addition, a convenient, prepaid "information request" postcard is included in the brochure.

For a free copy of this interesting and informative brochure,

Circle 79 on Reader Service Card

BFGoodrich Offers Literature On Romor® Brand Bearing Staves

BFGoodrich, Akron, Ohio, and its marketing subsidiary Lucian Q. Moffitt, Inc., have announced publication of a four-page color brochure defining the extended wear Romor bearing staves, which are said to offer cost and weight savings over conventional staves. The Romor stave is qualified to Class III of MIL-B-17901B specification.

The brochure illustrates design advantages as well as installation and replacement information. Charts comparing stave wear and friction test results are contained in the literature.

For a free copy of the brochure or additional data,

Circle 67 on Reader Service Card

Ocean Shipholdings Announces Three Management Appointments

Ocean Shipholdings, Inc. of Houston has announced the election of **James P. McGregor** as vice president responsible for marketing and corporate development. He previously held the position of vice president in charge of marine transportation for the Coastal Corporation and Belcher Towing Company.

Ocean also announced the appointment of **Jeremy E. White** as manager of engineering and **Calvin A. Bancroft** as senior port captain. Mr. **White** was previously director of engineering for Tanker Management, Inc. Mr. **Bancroft** had been senior port captain for Gulf Oil Products Company.

The Ocean Shipholdings group is a U.S.-flag vessel operator that recently took delivery of the Paul Buck, first of five new products tankers being built for long-term charter to the Navy's Military Sealift Command. The ships are being constructed by Tampa Shipyards, Inc.

P.A.D.D. Co. Opens New Drydock To Begin Shipyard Improvements

Peter McMullen, president of the Perth Amboy Dry Dock Company (P.A.D.D. Co.), has announced that the company has placed a new drydock into service as the first step in a shipyard improvement program to provide better service for commercial and government ship repair customers.

Mr. **McMullen,** who succeeded **Alfred Brugeman** after his resignation, stated that the company, which his family has owned since 1971, is prepared to make further committments to the future. He announced that **Donald F. Nurge,** formerly of Coastal DryDock Co., has been named vice president and general manager, and **Joseph E. Eckhart,** formerly of Jackson Engineering, is now vice president of estimating/marketing. The two men will join **William T. Harth,** vice president of finance, who has been with P.A.D.D. Co. since 1948, to form a three-man executive committee. The committee will have overall responsibility to Mr. **McMullen** on day-to-day activity at the shipyard.

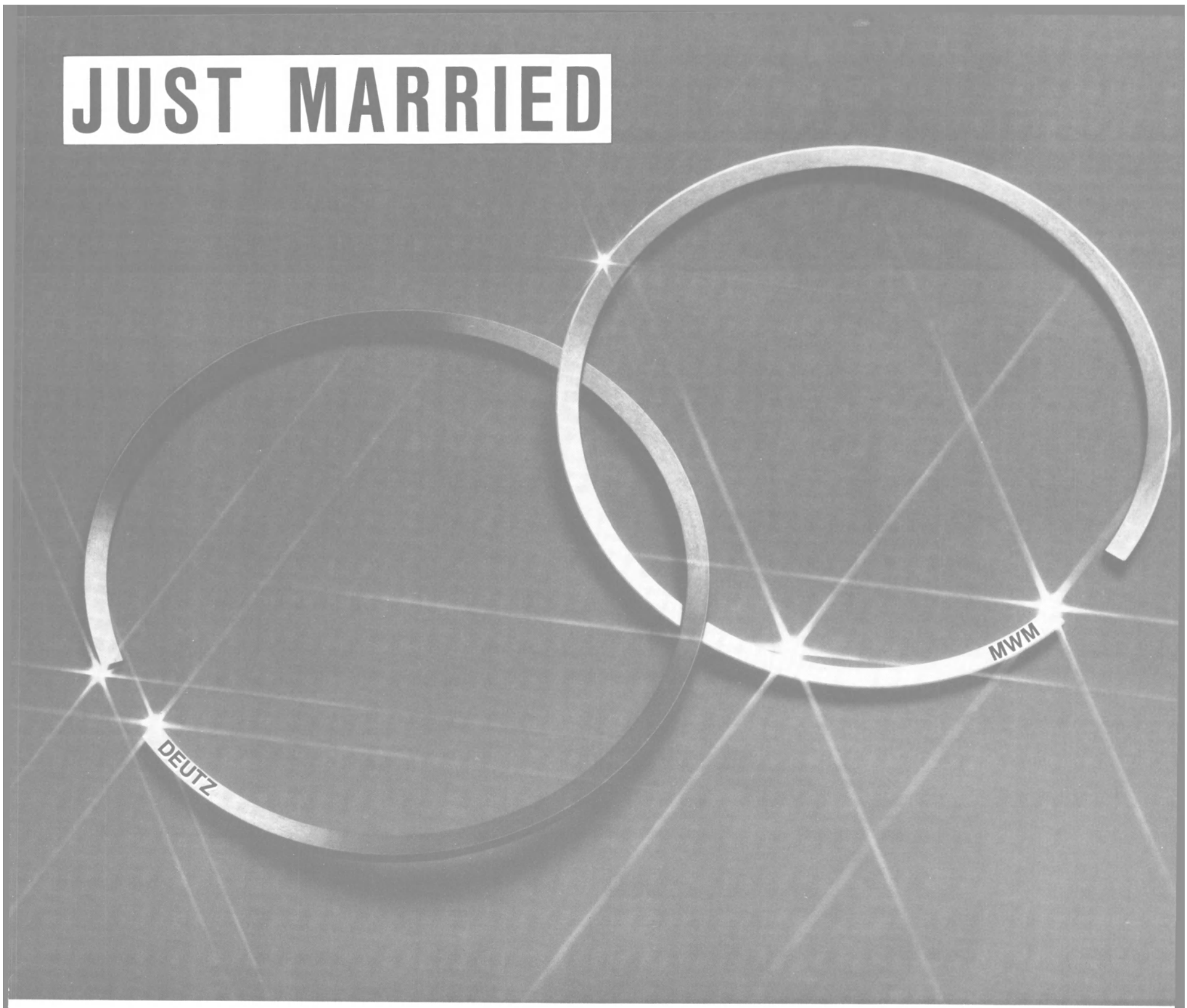
The first vessel to be drydocked under the 7,000-ton capacity was the tug Elise M owned by Poling Transportation, Inc. The owner of Poling Transportation, **Janet Mahlan,** was on hand at the shipyard for the occasion.

Meyer Werft To Build Gas Tankers For Brazil

Meyer Werft's Papenburg yard has received orders from the state-owned Brazilian oil company Petrobras, Rio de Janeiro, to build two 8-cubic-meter liquefied gas carriers. These newbuildings are the 37th and the 38th gas tankers for the yard.

The liquefied gas carriers, which have an overall length of approximately 135 meters (442.8 feet) and a breadth of approximately 19 meters (62.3 feet), are scheduled for delivery at the end of 1986 and the beginning of 1987, respectively.

JUST MARRIED



At the time when economic growth appears to be coming to a standstill and stagnating sales figures are seen as a sign of success, it is good to hear there are still companies around that refuse to be associated with this attitude.

We are ready to prove it – with the powerful partnership DEUTZ MWM. Klöckner-Humboldt-Deutz AG has taken a majority interest in the Motoren-Werke Mannheim AG and is now concentrating both companies' activities in medium and big engines at Mannheim.

Thus a new symbol is born. DEUTZ MWM stands for years of experience, outstanding engineering and economy propulsion.

Our customers are guaranteed international service, high trained service personnel and a fast supply of genuine spare parts anywhere, anytime.

Give us a call!

DEUTZ MWM

KHD

The economical ones.

Circle 230 on Reader Service Card

Motoren-Werke Mannheim AG, P.O. Box 1563, D-6800 Mannheim 1

$400,000 Overhaul Planning Contract Awarded MDT

Marine Design Technologies, Inc. (MDT), headquartered in Cherry Hill, N.J., has been awarded a $400,000-plus indefinite Quality/Requirements Contract (Lot 1) to support the Supervisor of Shipbuilding, Conversion and Repair, USN, Groton, Conn., with overhaul planning.

Donald Tarquini, president of MDT, stated that MDT would provide planning disciplines for the development of specification packages for procurement of repairs, conversion and alteration of various naval vessels. These services will be provided through MDT's office in Staten Island, N.Y. The Naval Underwater System Center, Newport, R.I., is the contracting activity.

USS Safeguard Commissioned At Peterson Builders' Sturgeon Bay Yard

The USS Safeguard (ARS-50), the lead ship of the new Auxiliary Rescue/Salvage class vessel built by Peterson Builders, Inc., was recently commissioned at PBI's Sturgeon Bay, Wisc. yard. It was the first U.S. Navy ship commissioning held in Sturgeon Bay since the early 1940s.

In response to a commissioning directive read by Comdr. **John Drucker**, USN, Commander, Service Squadron Five, Lt. Comdr. **Kenneth D. Harvey**, USN, was named the ship's new commanding officer.

Following remarks by Vice Adm. **Thomas J. Kilcline**, USNR, the ship's crew boarded the vessel. Other speakers at the ceremony included PBI president **Ellsworth L. Peterson**; Capt. **Thomas J. Kile**, Supervisor of Shipbuilding, Sturgeon Bay, and Comdr. **Lowell Mays**, USNR, CHC (who rendered the invocation). A special guest at the ceremony was the ship's sponsor, **Mrs. E. Dornell Kilcline,** who had christened the vessel at its launching.

The USS Safeguard's sophisticated computer controls as well as advanced mission-essential equipment place a greater demand on the level of expertise from the crew. These new ARS class ships are 255-foot, steel strongholds capable of towing a Nimitz class aircraft carrier, and are equipped to support extensive salvage diving operations with what is said to be the finest diver life support air system in the Navy fleet. In addition, the ARS will perform firefighting services as part of its broad scope of lifesaving and salvage/assistance operations.

As part of the four-vessel Navy contract at PBI, this fall the USS Safeguard will depart for her homeport in Pearl Harbor, Hawaii, while her sister ship, ARS-51, Grasp, is commissioned, and a third vessel, the Salvor (ARS-52), will undergo trials at PBI.

Other activities at the yard include the final steps involved in the 108-foot Yard Patrol Craft program. The YP ships are ahead of schedule in trialing and subsequent delivery to the Annapolis Naval Academy. This seven-ship contract marked the return to wood construction by the yard, incorporating all of the latest state-of-the-art techniques in wooden shipbuilding. The yard's expertise in wooden ship construction is also benefitting the Navy mine countermeasure program. PBI launched the lead ship of the 224-foot wooden MCMs this past spring, and keel-laying ceremonies were also held for another MCM under contract.

USS SAFEGUARD EQUIPMENT LIST

Main Engines (4)	Caterpillar
Reduction Gears	GEC of England
Propellers/Shafting	Bird-Johnson
Bow Thruster	Brunvoll
Ship Service Generators	Caterpillar/GE
Radars	Raytheon
Steering System	Paul Munroe
Ship Control System	Henschel
Boilers	Cyclotherm
Machinery Control System	Eldec
Switchboards	Nelson Electric
Cathodic Protection	Englehard Industries
Anchor Windlass/ Capstans	New England Trawler
Anchor/Chain	Baldt

Fibergrate Offers Free Bulletin On New Tough Grating

The Fibergrate Corporation, Dallas, Texas, is offering a free bulletin which describes and provides technical data on the company's new 2-inch-thick FRP grating.

According to "Fibergrate 2" Bulletin 290, the new grating is 400 percent stiffer than 1-inch grating and 60 percent stiffer than 1½-inch grating. It is designed especially for trench, trough and pit covers subject to heavy-duty traffic in corrosive environments, and offered in four types of resin systems.

Bulletin 290 provides load deflection tables, fire-retardancy Class 1 Flame Spread data, panel sizes, weights, etc.

For further information and a free copy of "Fibergrate 2" Bulletin 290,

Circle 39 on Reader Service Card

Nippon Kokan To Build Semi-Submersible Rig For Norwegian Firm

Nippon Kokan (NKK), Tokyo, Japan, is building an "Ultra Yatzy" semi-submersible offshore drilling rig for the Norwegian Dyvi Group. The construction is expected to be completed in May 1986.

The "Ultra Yatzy" will have a maximum deck load capacity of 4,500 tons and a maximum drilling depth of 2,300 feet. It will be able to operate in severe deep-sea conditions.

The semi-submersible offshore rig is larger than the original Yatzy-type, for which NKK concluded a technical license agreement in 1983 with Dyvi Engineering A/S. The new contract is covered by a "spot" license.

The rig, which will be operated in the North Sea, will be owned by an international consortium formed by the Dyvi Group and several other firms with actual operation managed by Dyvi Offshore A/S.

The main deck area of the rig will be 66 meters (216.5 feet) by 70 meters (229.6 feet). The living quarters will accommodate 90.

Seebeck Awarded $22.6-Million Contract For Floating Drydock

Seebeckwerft AG, Bremerhaven, West Germany, was recentlv awarded a $22,609,999 firm-fixed-price contract for an existing auxiliary floating drydock. The work, which is expected to be completed in August of next year, will be performed in Bremerhaven. The contract funds would not have expired at the end of the current fiscal year. The contracting activity is NAVSEA (Naval Sea Systems Command), Washington, D.C. (N00024-85-C-2074).

Stow Offers New Catalog On Flexible Shafts And Flexible Couplings

Stow Manufacturing Company of Binghamton, N.Y., announces its new 39-page, 9th edition Flex Shaft catalog titled "Flexible Shafts and Flexible Couplings." The publication gives technical information on solving problems of transmitting rotary motion through angles by use of flexible shafting in place of costly and bulky gears and pulleys, and provides the reader with pictorial and dimensional data for complete freedom of design.

Included in the new catalog are sections on standard short lead time, low-cost units, as well as a section on custom and special-material components.

For a free copy of the Stow catalog,

Circle 47 on Reader Service Card

Transamerica Delaval Offers Broad Range Of Solenoid Valves

A broad range of solenoid valves are now available, including 2- and 3-way styles for general purpose use, high-pressure 2-way (to 3,000 psig), explosion-proof 2- and 3-way versions (for hazardous vapors and liquids), high-flow 2- and 3-way models and 4-way valves. These valves are in stock available from Transamerica Delaval, Catalog Sales.

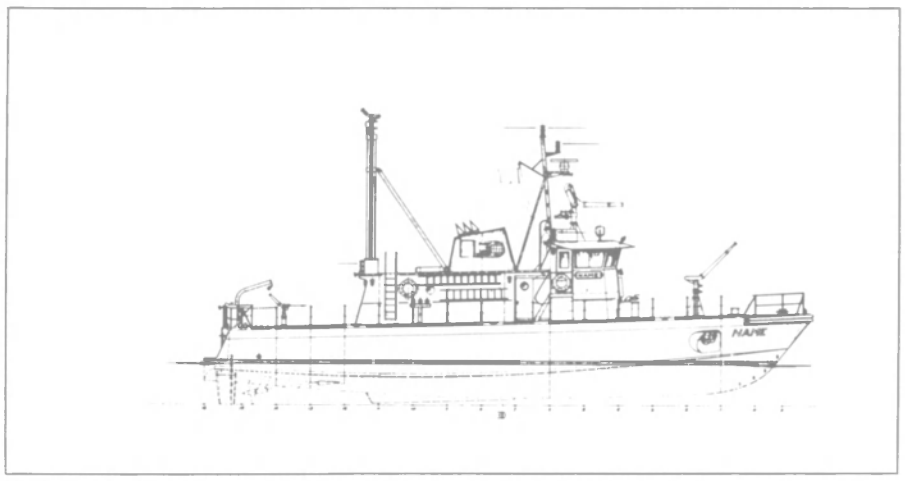
Electromagnetically actuated, the valves are direct operating plunger type with soft seals. They utilize coils, molded in epoxy for maximum moisture resistance, and conduit housings. They provide NEMA 1, 2, 3, and 6 protection. Explosion-proof versions provide NEMA 7C & D, 8C & D and 9E, F & G protection, and are UL and CSA listed. The valve seats are precision-machined to assure many cycles of trouble-free operation.

These solenoid valves seal bubble-tight with a built-in safety factor.

Most versions can be installed in any position. They may be mounted directly to the line or by mounting holes provided on the valve body. The housings can be rotated 360° for mounting versatility.

For more information on Transamerica Delaval solenoid valves,

Circle 89 on Reader Service Card



Outboard profile of one of the fireboats being built by Moss Point Marine.

Moss Point Marine Will Build Two Fireboats Designed By Nickum & Spaulding For Long Beach

Construction will begin soon on the first of two diesel-powered, twin-screw 10,000-gpm fireboats for the City of Long Beach, Calif. The boats were designed by the Seattle-based naval architecture and marine engineering firm of Nickum & Spaulding Associates.

Long Beach has selected Moss Point Marine in Escatawpa, Miss., to build the special-purpose craft; delivery is scheduled for September 1986. Each firefighting vessel will also be equipped for patrol, search, and rescue. A top speed of 15 knots will give the new boats a 10-minute response time, allowing two minutes for startup, to virtually all of Long Beach Harbor.

The 88½-foot LOA boats will have welded steel hulls and aluminum superstructures and fully automated engine rooms. While actual manning will be the Fire Department's decision, the vessel could get underway and bring all firefighting equipment to bear with as few as two people. The boat's 10,000-gpm/165-psi pumping capacity will be split between three pumps—two 2,500-gpm units driven by power takeoffs from the front end of the main propulsion engines, and a single 5,000-gpm pump driven by a dedicated 600-bhp (mcr) diesel. All pumps will discharge into a 12-inch, stainless steel fire-main ring, which in turn will supply all the various monitors and manifolds.

Firefighting equipment on board will include: one 6-inch remote monitor mounted on the foredeck, one 8-inch remote monitor atop the pilothouse, two hull-mounted 4-inch remote underwharf monitors, one 4-inch remote monitor mounted on a telescoping tower at the aft deckhouse face that extends to a light of 70 feet above the water, two manual 4-inch monitors on the main deck aft, and three hose manifolds (hydrants) mounted on deck. The fire-main system will also supply water to a spray system for cooling the deckhouse and pilothouse.

Each vessel will be propelled by two Detroit Diesel 12V92TA engines, each rated to deliver 760 bhp at 2,300 rpm, driving fixed-pitch propellers through Twin Disc 530M "Omega" reverse/reduction gears with a ratio of 3.13:1. These variable-speed gears will enable the engines to be set at a constant rpm for driving the fire pumps, while providing variable-speed propeller control for maneuvering when firefighting.

Three of the design requirements were deemed "controlling" by the Nickum & Spaulding design team headed by **Paul Gow,** and were the foundation upon which the design was developed. These requirements were: machinery size and power to develop a water flow of 10,000 gpm at 165 psi; vessel hull form and length to enable a sprint speed of 15-16 knots; and sufficient beam to provide adequate stability to counteract nozzle thrust athwartships.

The engine configuration selected will provide the necessary horsepower to travel at 15 knots, and once on station at a fire, the boat's crew can switch the gearbox to the Omega mode and set the engines at 1,800 rpm, the required operating rpm for the 2,500-gpm fire pumps. Then by bringing the dedicated fire pump engine on line, the crew will have available the hull fire flow capability of 10,000 gpm, with 600 bhp still available for maneuvering.

Triple A South Wins $3-Million Contract

Triple "A" South, San Diego, Calif., was recently awarded a $3,013,989 firm-fixed-price contract for the selected availability for the USS Tarawa (LHA-1). The work will be performed in San Diego, and is expected to be completed by November 26. The contract funds would have expired at the end of the current fiscal year. The contracting activity is the Supervisor of Shipbuilding, Conversion and Repair, San Diego (N00024-85-H-8241).

Left to right, RADM David P. Donohue; Cliff Geiger; James K. Nunneley, vice president, American Systems Engineer Corp.; William A. Tarbell, deputy commander for acquisition and logistics, NAVSEA; Jack P. Janetatos, director, MMA; Daniel A. Marangiello, executive director, MMA.

Marine Machinery Association Sponsors Government-Industry Forum

At a recent all-day government-industry forum sponsored by the Marine Machinery Association (MMA), representatives of 52 companies engaged in a spirited exchange of views and information with U.S. Navy officials. In 12 presentations, both groups presented positions on the theme, "Maintaining Quality in Acquisition," and each speaker faced searching questions from a totally involved audience. At the meeting, held in Crystal City, Va., more than 100 representatives of the Navy and its suppliers had, as one observer described, "the most useful give-and-take session we've ever had with the Navy."

Daniel Marangiello of ORI, Inc., MMA executive director, opened the forum, explaining that MMA is a nonprofit trade association dedicated to serving the Navy by promoting ethics in business by both industry and the government, and to insuring quality products and services for the fleet. The Association represents the full spectrum of the marine industry, from hull, mechanical, and electrical to electronics, computer, and combat weapons systems. The principal thrust of MMA is assisting both government and industry in better understanding each other's goals, objectives, problems, and restraints.

Standing in for MMA president **Jack Flannigan** of Terry Corpo-

The membership list of the MARINE MACHINERY ASSOCIATION is constantly growing. Current members of the Marine Machinery Association include the following leading corporations:

Alco Power, Inc.
Allied Corporation
American Systems Engineering Corporation
Atlantis Services Inc.
Aurora Pump
Bendix Electro Dynamic Division
Buffalo Pumps, Div. of Buffalo Forge
Byron Jackson Pump
Cameron Pump Division
Cla-Val Company
Colt Industries
Elliott Company
Excelsior Brass Works
Gimpel Corporation
Hale Fire Pump
Hardie-Tynes Manufacturing Co.
Ingersoll-Rand Compressor Div.
Jay-Cee Fastener Corporation
John Crane
Lake Shore, Inc.
Leslie Co.
Machinery Repair Division
Marotta Scientific Controls
Pacific Pump
Rix Industries
Sargent Industries
Solar Turbines, Inc.
Terry Corporation
Transamerica Delaval, Inc.
Treadwell Corporation
Turbodyne
Vacco Industries
Viking Pump–Houdaille, Inc.
Ward Leonard Electric Co., Inc.
Warren Pumps, Inc.
Washington Engineering Co., Inc.
Waukesha Bearings Corporation
Westinghouse Electric Corp. Turbine Division
Worthington Compressor
Worthington Pump

Manufacturers interested in doing business with the U.S. Navy, as well as those now doing business with the U.S. Navy, can derive important benefits from a membership in the MARINE MACHINERY ASSOCIATION. Complete details regarding benefits and membership may be obtained by contacting:

THE MARINE MACHINERY ASSOCIATION, Suite 903, 1700 K St. N.W., Washington, D.C. 20006, (202) 293-7169; or **Jack Flannigan,** Terry Corporation, Industrial Road, Niantic, CT 06357, (203) 739-6271.

ration, who was unable to attend because of illness, was **Jack Janetatos**, MMA's founding president, who recounted the Association's history from its roots as a dozen-member discussion group several years ago to ten times that number at the meeting.

Mr. **Marangiello** contrasted the public perception of contractors as scoundrels and the military as incompetent with the reality. He looked back on a long career in government to observe that the government people, in the main, are "honest, loyal, dedicated, and hard working." He observed as well that industry, for the most part, was providing equipment of good quality at fair prices.

William Tarbell of NAVSEA, Deputy Commander for Acquisition and Logistics, described Defense Secretary **Weinberger's** 10-point program for improving DoD spare parts procurement practices. NAVSEA's efforts, the spare parts improvement program (SPIP), is an active program continually being defined and expanded. Primarily focused on full-scale breakout reviews under the direction of life cycle manager engineers, this program, he said, factors all technical requirements into these reviews that contribute to the set dollar competition goal for each inventory control point. Where lack of technical data precludes coding an item for competitive procurement, the navy will determine whether to procure the data from the manufacturer or pursue reverse engineering. DoD is directing a pilot program to more aggressively attack reverse engineering. He also pointed out that the Navy, at the direction of the competition advocate, is actively challenging restrictive rights.

Rear Adm. **David P. Donohue**, USN, Fleet Maintenance Officer, Atlantic Fleet, talked of the Fleet's need for quality products and services, saying "98 percent quality is not good enough." In a candid give-and-take discussion, industry representatives felt that the Fleet was not adequately vocal in expressing its concern over poor-quality parts. They also spoke of several different and separate Navies—the competition advocate, the legal advisor, the purchasing activity, the technical authority, and the user—all seemingly marching to different drummers.

During the luncheon, Vice Adm. **William H. Rowden**, USN, Commander, Naval Sea Systems Command, spoke of the current NAVSEA organization and its structure. He clearly and strongly intends that NAVSEA be responsible and responsive to the Fleet's needs and interests. NAVSEA is the technical expert of the Navy, and as such will assume full responsibility and authority in this area. To this end, he has appointed Rear Adm. **James Webber** as the Chief Engineer of the Navy, reporting directly to him.

Colleen A. Preston, Counsel, Subcommittee on Investigations, House Committee on Armed Services, explained the concerns of the Congress that precipitate legislation. Congress, she said, understood what caused the absurdly high prices of certain common items. She felt that perhaps some changes in accounting procedures and proration of charges would do much to preclude the excessive costs of these items. However, she recalled that even as far back as Congressman **Herbert** and his committee report, Congress has been telling DoD to clean up its act.

Steve Quatannens, MMA's General Counsel, described current thinking and legislation on rights in data both in Congress and DoD. He responded to many questions from the audience who expressed concern over the reversal of roles in that the burden of providing clear and convincing proof is borne by industry whenever the government challenges those rights, even if those rights have been in existence for 20 years or more. Much discussion ensued over the difficulty of proving one's case when files, correspondence, and agreements are more than 20 years old and no longer available.

Tom Muller, vice president of Leslie Co., opened a discussion on reverse engineering. There are, he said, several kinds of reverse engineering; the one currently in question is the replication of someone

(continued)

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else's product. This, he believes, is tantamount to stealing, and raises serious ethical questions. Reverse engineering, he pointed out, is an extremely difficult job that cannot be done by other than those highly skilled in the specific technical area of that particular item. That skill is not available in government nor the vast majority of engineering firms. He also voiced skepticism that any savings would result if all efforts are honestly accounted for.

Russ Grandinetti of Dayton T. Brown advised that reverse engineering can be done but only on the entire machine and not on its components. To attempt to backfit reverse-engineered components is fraught with danger, as knowledge of configuration does not exist within the Navy, and clearances and tolerances could be unascertainable so as not to permit satisfactory operation. He, too, indicated overall cost savings would be nil for the backfit installations with no one responsible for quality control.

Capt. **William Jarett**, SC, USN, manager of NAVSEA's Industrial Material Improvement Program, told the audience that although very new on the job, he intended to continue Captain **Allnut's** efforts in this area. He introduced **Dick Ulrich** of Puget Sound Naval Shipyard, whom he said he would rely on for continuity and expertise in this program. He also said he needed the help of MMA and the industry to carry out his responsibilities.

VADM **William Rowden**

Mr. **Janetatos** ended the formal presentations by voicing concern that no one is held responsible for material procurement errors, that the stock system contains certain bad parts, and that procurement errors are repeated often.

Mr. **Marangiello**, in closing the meeting, noted the active interest and lively discussion on the topics of the meeting. Each item discussed could have been the subject of an all-day meeting itself from the audience participation that followed each speaker's presentation. Only time forced a close of debate on each subject, but presenters and attendees continued their discussions during the breaks, during the luncheon, and during the social hour that concluded the forum.

Mr. **Marangiello** pointed out the purpose of the forum was to provide an opportunity to air thoughts and feelings. The forum itself was not a problem-solving vehicle because of the large number of issues presented. However, the Marine Machinery Association has already begun preliminary discussions to hold a series of smaller executive committee type workshops between industry and the Navy to solve specific individual problems. The MMA will work with Navy officials and industry in forming these effective working groups. Mr. **Marangiello** stated that no one firm or organization is doing what the MMA is doing. The MMA does not take the place of marketing, sales, enginerring, or contract people. It does not represent any one firm or any one segment of the industry. It complements these people and their efforts.

Together, he said, industry and the Navy can make a difference, can restore order, and solve problems to give the Navy a better product and suppliers a better Navy business.

Every firm should become a member of the Association either as a regular, supplier, or associate member. The Marine Machinery Association, he repeated, is comprised solely of the industry. Industry

must bring its experience, knowledge, skill, and integrity to the attention of the Navy and Congress.

The schedule of future MMA meetings was announced: February 1986, Crystal City area; April 30, 1986, Shoreham Hotel, Washington, D.C. in conjunction with ASNE; August 1986, Crystal City area; and November 1986, New York City in conjunction with SNAME.

The exact dates, format, and agenda will be announced at a later date.

Lucido Promoted To Assistant VP At Waterman Steamship

Waterman Steamship Corporation, New York, N.Y., recently announced the promotion of **Thomas G. Lucido** to assistant vice president-sales, with headquarters at the company's New York offices, 120 Wall Street. In his new position, Mr. **Lucido** will be responsible for all commercial activities in New York, New Jersey and New England.

Immediately prior to his promotion, he had been Waterman's regional sales manager in New York.

Brown Announces Organizational Changes At Maritime Administration

Reorganization of the Maritime Administration's administrative, policy, and international activities has been announced by **Garrett E. Brown Jr.,** acting deputy maritime administrator in the Department of Transportation. One new associate administrator's position has been established and functions of a second position at the same management level have been realigned.

Reginald A. Bourdon, director of MarAd's Office of International Activities for the past 10 years, has been named to the new position of associate administrator for policy and international affairs. **Ernest Hawkins,** who since 1976 had been deputy associate administrator for policy and administration, has been appointed associate administrator for administration.

In addition, Mr. **Brown** announced the appointment of **John L. Mann, Jr.,** formerly director of the Office of Management Services and Procurement, as deputy associate administrator for administration, reporting to Mr. **Hawkins. James A. Treichel** was named director of the Office of International Affairs. He will continue to report to Mr. **Bourdon.**

William W. KinKead, director of the Office of Policy and Plans since November 1983, continues in that position but now reports to Mr. **Bourdon.**

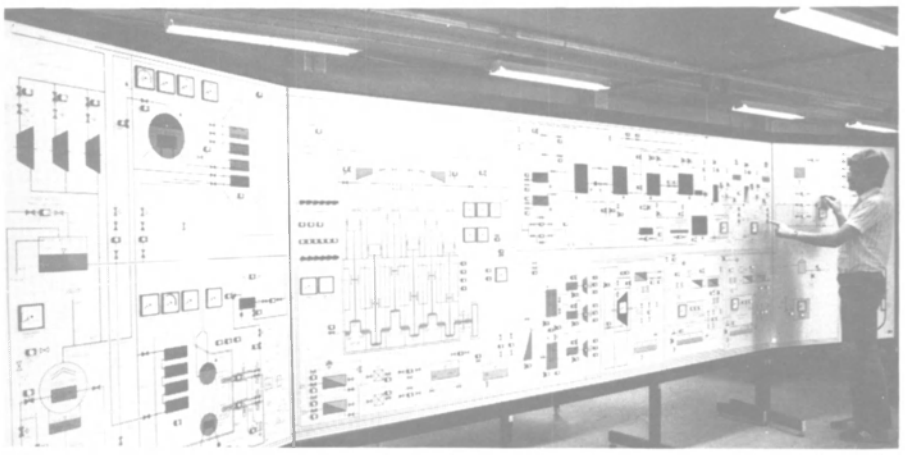
Bretvin Named President And COO Of Stolt-Nielsen

Gunnar Bretvin has been appointed president and chief operating officer of Stolt-Nielsen Inc. of Greenwich, Conn., according to an announcement by **Jacob Stolt-Nielsen Jr.,** chairman of the Stolt-Nielsen Group, who will continue as chairman and chief executive officer of Stolt-Nielsen Inc.

Mr. **Bretvin** was born and educated in Norway and holds an advanced degree from the International Management Institute of Geneva, Switzerland. Prior to joining Stolt-Nielsen he was managing director of A/S Nevi in Bergen, and chief executive of the Nevi Group of companies. In 1979, under his leadership, Nevi launched a development program that led to vigorous expansion through the acquisition and start-up of a number of companies in Scandinavia and elsewhere in Europe. Nevi is now the largest finance company in Scandinavia.

Stolt-Nielsen Inc. is general agent in the Western Hemisphere for Stolt Tankers and Terminals, the bulk liquid transportation and storage company, whose worldwide activities include the ownership and operation of parcel tankers, liquid and dry bulk terminals, tank containers, and the provision of its customers' onward transportation requirements by road, rail, barge, or coastal tanker.

ELECTRONICS UPDATE



This large scale mimic panel is part of the Norcontrol engine room simulator delivery for Singapore Polytechnic. It is only one of several extended features the Singaporeans chose for their Norcontrol DieselSim engine-room training facility.

Norcontrol Engine-Room Simulator For Singapore Nearing Completion

Norcontrol Simulation AS of Horten, Norway, is nearing completion of an engine-room training simulator due for delivery to the Singapore Polytechnic this fall.

Norcontrol introduced it's first DieselSim training simulator for diesel engine rooms in 1978. Since then, 18 engine-room training simulators have been delivered around the world, making Norcontrol a market-leader with this type of simulator. Close cooperation with the operators of their delivered simulators has provided Norcontrol with valuable information to continue development and improvement of the product.

The simulator for Singapore is one of the most sophisticated engine-room simulators produced to date. It has standard engine control room systems to normal production standards, combined with dynamic simulation models giving very authentic reproduction of the required characteristics. An ND-100 computer communicates with the various panels and consoles by distributed microprocessors. The basic DieselSim simulator has been extended to provide increased training capacity by including a color display system, large-scale mimic diagram, extended main switchboard, separate boiler control console and a watch-calling system.

A color display system with eight terminals enables more students to individually study the changing situation. One terminal can be connected to a large-scale projector, enabling the entire class to watch a simulation exercise. The display system can also be used with other Norcontrol simulation programs. For example, to show oil production processes or liquid cargo handling and control.

A large mimic panel, 6 meters in length, in the engine room partly replaces the previous machinery panels, enabling students to quickly become familiar with the propulsion plant being simulated.

The new main switchboard has been extended to seven sections for: distribution, emergency generator, shaft generator, turbogenerator, synchronizing/shore connections, diesel generator 1 and diesel generator 2. An isolation system enables students to isolate various subsystems for independent simulation, simultaneously.

A separate console in the engine control room provides simulation of a steam supply system. This was developed from research into computerized boiler control and steam plant performance monitoring.

An important feature of the DieselSim simulator is the presetting of selected faults. The instructor can program the simulator to demonstrate a number of different fault-situations. The students can then run exercises with or without the instructor present. The event log, alarm log and backtrack snapshots enable the exercises to be evaluated with the instructor at a later stage.

The provision of a watch-calling system adds realism and allows students to participate in learning about watch responsibilities. It also enables more students to play an active part in the exercises.

For further literature containing full information,

Circle 19 on Reader Service Card

Fiori Named Director Of Special Services At American President

Dodd Fiori, formerly director of equipment management for American President Lines, Oakland, Calif., has been named director of special services for the Pacific Basin shipping firm. In this capacity, Mr. **Fiori** is responsible for corporate activities related to perishable commodities and government services according to **T.J. Rhein,** senior vice president, marketing and logistics.

Mr. **Fiori,** who joined APL in February 1984 as manager, terminal and cargo operations, has 16 years' experience in marketing and operations-related aspects of intermodal transportation.

At present, APL operates 17 containerships and five multipurpose vessels in the Pacific and Indian Oceans and the Arabian Gulf region. The company maintains an extensive network of double-stacked container trains which criss-cross North America. The entire system accommodates both dry and refrigerated cargo.

Waterway Operator Survey Launched

The Waterway Transportation Information Service is conducting a comprehensive survey of inland waterway operators. The purpose of the survey is to gather basic economic and operating data about the U.S. inland waterways industry. The data will be used by barge company executives and other industry leaders to develop an accurate and current picture of the industry's size, structure, and operations.

The Waterway Transportation Information Service is operated by the Transportation Center at The University of Tennessee, Knoxville, and the National Waterways Foundation at Arlington, Va., under the sponsorship of the Maritime Administration, U.S. Department of Transportation. Summary statistics from the survey will be made available by the information service early in 1986.

In the survey, operators are being asked to provide data about their corporate structure, firm size, employment, assets, expenses, equipment, and traffic. Operators who have not received a survey package may request one by writing to Waterway Transportation Information Service, Transportation Center, The University of Tennessee, Knoxville, Tenn. 37996-0700, or by calling **Cheryl Johnson** or **Michael Bronzizi** at (615) 974-5255.

Newport News/Intelmach Introduce The IM (Intelligent Machine) Series

Artificial Intelligence, voice technology, and interactive video are now uniquely joined in a new family of affordable microcomputer-based authoring and application delivery systems called the IM (Intelligent Machine) Series.

Jointly offered by Newport News Shipbuilding, a Tenneco subsidiary, and Intelmach Corporation, the IM systems are ideal for developing and delivering training, consultation, diagnostic, and information kiosk applications. This sophisticated combination of hardware and software turns an IBM PC, PC/XT, PC/AT, and compatible microcomputers into an intelligent workstation.

The IM Series consists of three upwardly compatible models, each containing an expert system shell. The IM-1000 features voice output, high-resolution graphics and animation. IM-2000 includes these features and adds interactive videodisc technology. The most powerful system, IM-3000, has all the IM-1000 and IM-2000 capabilities as well as voice recognition and voice authoring.

Versions cost less than $10,000 for the basic system models.

For further information,

Circle 54 on Reader Service Card

12 Oil Firms Form Quality Assurance Company

Twelve oil companies operating in the North Sea have formed a joint venture company to assure a uniform standard for quality systems and production appraisal of vendor companies, according to the Scottish Development Agency.

Quality Assurance Service Company Ltd. (QUASCO) began operating in September to examine prospective suppliers' production capabilities, organizational resources and the degree of compliance with quality assurance systems in the British Standard BS 5750.

The founding companies are Shell, Esso, BP, Britoil, British Gas, Mobil, Phillips, Texaco, Conoco, Occidental and Monsanto. The company was formed to streamline the efficiency of existing quality control systems and has the backing of government and trade associations.

NRL Names Bradley New Superintendent, Acoustics Division

Dr. **David Leslie Bradley** recently became the new superintendent of the Acoustics Division of the Naval Research Laboratory (NRL) of Washington, D.C. NRL's Acoustics Division participates in the Navy's Undersea Warfare Program.

Dr. **Bradley** began working for the Federal Government in 1960 at the Naval Ordnance Laboratory (now the Naval Surface Weapons Center) in White Oak, Md. Since then, he has been employed at the Naval Ocean Research and Development Activity and at the Office of the Chief of Naval Operations (OP-NAV). From 1982 until he received his NRL appointment, he headed the Geophysical Sciences Division at the Office of Naval Research.

Dr. **Bradley** holds a B.S. degree in physics from Michigan Technological University, a M.S. degree from Michigan State University, and a Ph.D. in applied physics (underwater acoustics) from Catholic University. A member of the Acoustical Society of America and the D.C. Chapter of the Acoustical Society of America, Dr. **Bradley** has written approximately 50 articles for publications.

New Portable Transmitter Provides Emergency Shutdown Control —Literature Available

John B. Smyth, vice president, Ederer Unitec Division of Ederer Incorporated (Ederer and Washington cranes), recently unveiled a new product said to provide improved safety, reduced potential of environmental damage, increased productivity and reduced maintenance and repair costs.

This small portable transmitter, operating on a UHF radio frequency encoded with a highly secure digital signal, is capable of stopping and starting various types of equipment, valves, conveyors, pumps, automated chemical processing lines, robots, electrical apparatus as well as opening and closing gates and operating signals.

According to a company spokesman, this system can improve the operating safety of chemical plants, oil and gas transferring from shore to ship and ship to shore, bulk material handling in port grain elevators and ship loaders by allowing the remote, and therefore faster and safer, shutdown of various pumping, conveying and/or processing machinery when an unsafe or emergency condition occurs.

The transmitter is contained in a high impact ABS and nylon composite case 3.5 inches by 7 inches by 1.75 inches, and weighs approximately two pounds including its rechargeable nicad battery. The receiver is approximately 4.5 inches by 8 inches by 10 inches and weighs only 10 pounds and can be installed most often in one hour.

For further literature containing full information,

Circle 48 on Reader Service Card

Duramax Introduces Two New Styles Of Tow-Knees —Literature Available

The Johnson Rubber Company, Duramax Marine Division, has introduced two new styles of impact absorbing tow-knee pusher plates. The firm, which currently markets a standard single pad tow-knee, now offers new double and precurved styles.

New Duramax double tow-knees feature two thick nitrile rubber pads securely vulcanized to either steel or aluminum plate, providing double the protection of a single tow-knee. These plates which measure 20 inches wide by 36 inches long are available in steel thicknesses of ¼-, ½- or ¾-inch.

New Duramax precurved style tow-knees provide excellent front-side protection for workboats as well as excellent corner protection. The 2-inch-thick rubber pad of the new precurved style is also securely vulcanized to either a steel or aluminum 10-inch-wide plate. As with the double tow-knees, the new precurved style is offered in three different plate thicknesses.

Single tow-knee steel or aluminum plates measure 36 inches long and are offered in 10-inch or 13½-inch widths. Again plate thickness varies from ¼-inch to ¾-inch.

For free literature on the new tow-knee pusher plates from Johnson Rubber's Duramax Marine Division,

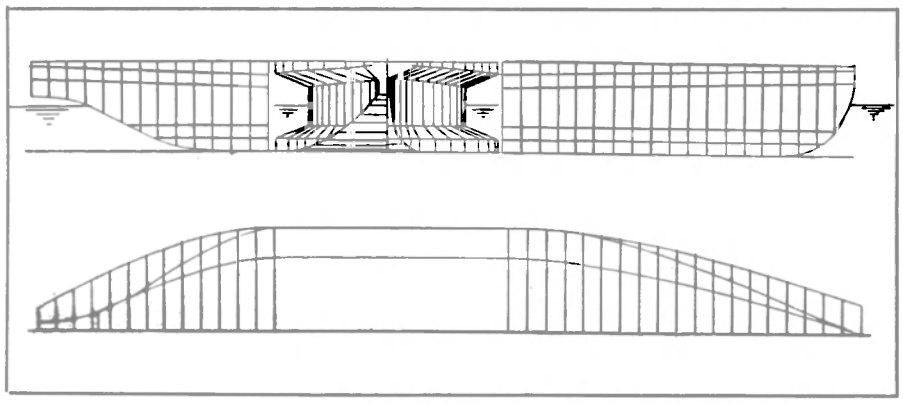
Circle 23 on Reader Service Card

New Mono-Hull Form Provides Ultra-Stable Drilling Platform

A new mono-hull form having motion characteristics almost equivalent to many semi-submersibles in operational sea states has been developed and marketed by Waller Marine, Inc., a Houston-based marine design and construction organization. The concept, originally conceived and patented by **F. Y. Michael**, utilizes a combination of small water plane with heavy damping to achieve desirable motion characteristics that will allow a drillship, drilling tender, or offshore storage and production vessel to operate in sea states up to Beaufort Scale 6.

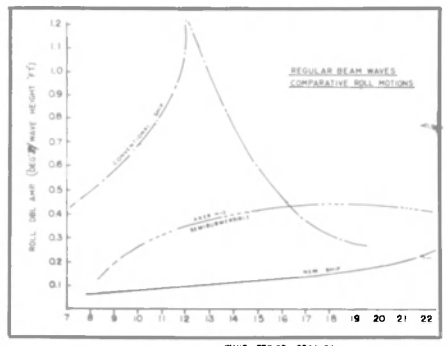
The hull shape can be likened to a traditional vessel with upper and lower sponsons attached along its entire length. This produces a vessel having high displacement with corresponding high deadweight, low waterplane area, and large deck area—elements that the designer strives to obtain with conventional semi-submersible design. Structurally, the hull can be simplified by using straight-line framing and developable surfaces, complementing low fabrication cost techniques.

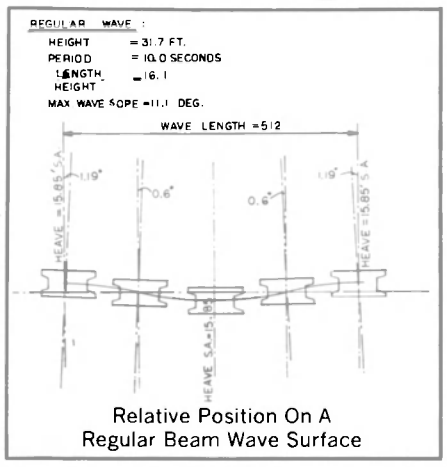
The superior motion characteristics of this hull are derived from a combination of low initial GM and small water plane area, with added mass produced by the entrained water about the lower hull appendage. The result is a large increase in the natural period of the vessel in all degress of freedom, particularly in roll and heave, that produces a significant shift in the regular wave response curves toward higher motion periods. Together with extreme hull damping, this provides for reduced motion at normal periods of encounter along with reduced amplitude.



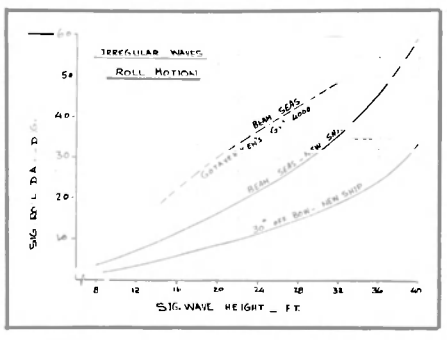
Lines Plan

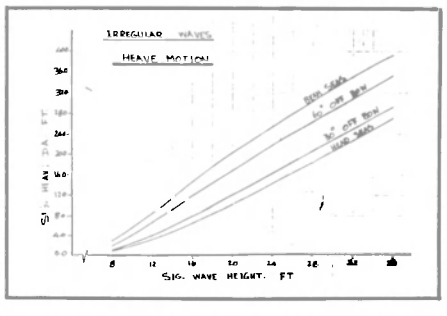
The natural period of roll for a drillship, for example, has been extended 27.5 seconds—a condition that cannot be achieved by a drillship having a conventional hull form. Stability has not been neglected, as the small waterplane is large enough to allow reasonable weight movements on board without adverse heel, and the upper hull shape regains buoyancy and righting moments at larger angles of heel.

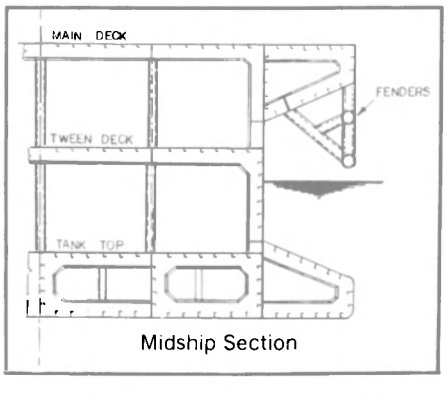




Relative Position On A Regular Beam Wave Surface







Midship Section

Ideal applications for the new hull form would be in stationary offshore use as a drillship or drilling tender. Comparison of conventional drillship and semi-submersible motion with this heavily dampened hull concept provides an indication of its superior capabilities in heavy seas. Additional applications might be for oil storage vessels or as an early production/storage platform.

The accompanying curves show the motions in various sea states in comparison with a typical semi-submersible drilling vessel. A factor apparent from the curves is that the shorter, quicker motions are filtered out by the new hull form design. Therefore the new ship will offer a safer, easier footing for the men working on deck.

Comparisons between the statical stability righting arm curves of the new ship and a similarly sized drillship are shown in the accompanying figure. The new hull demonstrated much more overall righting energy (area under the curve) than a conventional ship. The righting arm curve for the new hull shows a small steady rise from zero to 17 degrees, which is the angle at which the upper side hull touches the water surface. Inclinations past the 17-degree mark show a very large righting arm with a correspondingly large area under the curve. Due to the large area under the righting arm curve and the superior small roll motions in waves, it might be concluded that the resistance against intact capsizing of the new hull form is significantly greater than that of a conventional ship. It is concluded that with the appropriate and reasonable internal subdivision, the new hull form is unsinkable.

The possibility of a high-impact wave slamming on the under side of the upper hull extension was recognized, resulting in damage to the shell plating and internal structures.

Based upon the motion analysis, roll in a 30-foot significant wave height sea condition was predicted to be about 3.25 degrees double amplitude for a beam heading. This compares with a 4.6-degree double amplitude roll for the GVA 4000 semi-submersible. The associated heave response for the same beam wave is 33 feet.

The relative position of the hull on extreme regular beam waves is shown in the accompanying diagram to demonstrate the theoretical clearance of wave and upper hull structure. It is appreciated that some slamming will occur in irregular waves, particularly when the phase angles are different. Due to the hull's capability to resist roll, however, damaging impact is minimized.

The cost differential between an equivalent drillship and semi-submersible drilling vessel promoted the idea of combining the main advantages of both to formulate a new class of mobile offshore drilling unit—a mono-hull having motion characteristics that approach those of a semi-submersible while retaining the lower cost advantage of a drillship. The concept does not anticipate that the new hull design will replace properly utilized semi-submersible drilling units, as they possess unique qualities for long-term drilling operations in extremely harsh environments. However, the outlined advantages of this new ship design should make it suitable for certain areas that are presently considered semi-submersible territory, thus bringing to the offshore industry a significant cost-saving device.

Summary

A new mono-hull form has been specifically developed in an attempt to combine certain advantages of the semi-submersible and conventional ship-shape drilling vessels into a vessel of unique design. The new hull form represents a well-balanced, workable design specifically suited to ships where seakeeping, environmental operability, and overall cost-effectiveness are the primary design requirements.

The basic advantages of the new

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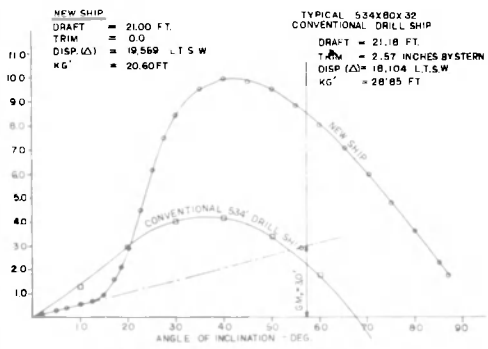


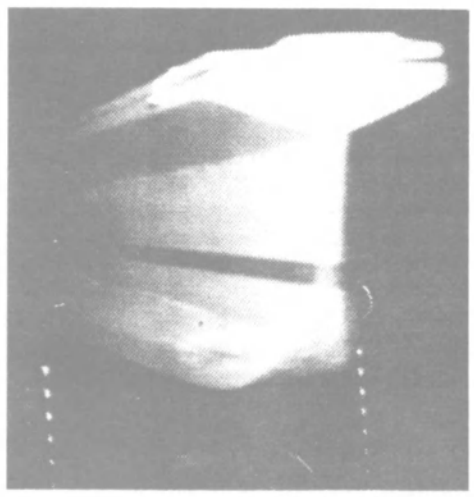
Statical Stability Curves

New Mono Hull Form

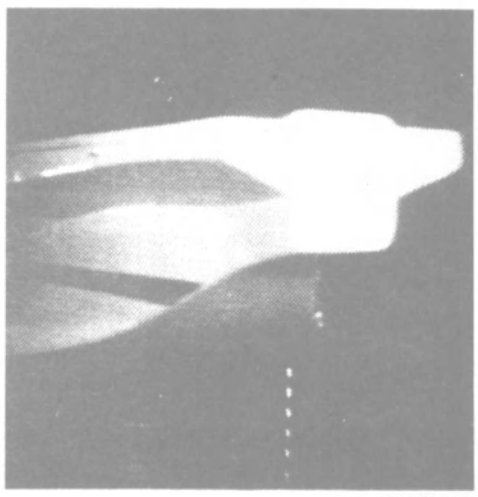
(continued)

vessel form when applied to a drillship application can be summarized as follows:

- Excellent motion characteristics that approach those of a comparable semi-submersible.
- Economical advantages in hull fabrication due to the use of straight-line framing and developable surfaces for a single hull.
- High payload to displacement ratio when compared with a semi-submersible. The variable load (drilling supplies) of this ship is 9,000 short tons, while a comparable semi-submersible would have 4,000 short tons.
- Large usable deck area in comparison with a conventional drillship is a direct result of the hull configuration having a beam of 96 feet, compared with a drillship with a beam of 70-75 feet. This beam increase accommodates drilling equipment and provides ample space for storage and working purposes.
- Safety: substantially improved intact stability characteristics at large angles when compared with a conventional drillship, thus incorporating a major advantage of a semi-submersible.
- The hull configuration provides good structural integrity when compared with a semi-submersible.



Oblique View on Bow of a Scale Model



Oblique View on Stern of a Scale Model

For further information and a complete copy of Waller Marine's report on the mono-hull form,

Circle 21 on Reader Service Card

Waukesha Publication Promotes Operation And Maintenance Of Engines

New developments in engine control technology are explored in a special 12-page issue of the *Waukesha Maintainer*, a publication from Waukesha Engine that promotes proper operation and maintenance of all makes of gasoline, diesel and natural gas engines.

Articles in the publication explain the use of electronic controls in regulating air/fuel mixtures and in generation of power by internal combustion engines. Proper procedures for maintaining solid state ignition systems are also discussed.

An additional article traces the evolution of engine control and describes the latest developments in electronic control technology and where it is likely to lead in the future.

For a copy of the *Waukesha Maintainer*,

Circle 71 on Reader Service Card

← Circle 156 on Reader Service Card

MSI Offers 21 MarineSafety Training Courses For 1986 —Free Catalog Available

MarineSafety International (MSI), located in the Marine Air Terminal at LaGuardia Airport in New York City, recently issued a catalog of 1986 simulator training courses for deck and engineering officers. Twenty-one simulator-based training courses in five categories are listed and summarized as follows.

A. Using the Full-Mission Ship Simulator:

1. "Shiphandling and Maneuvering in Restricted Waters," for masters, pilots, chief mates and deck officers. Optional areas of emphasis: shiphandling, bridge team management, watchkeeping, shiphandling for pilots and docking. Two to four persons—three to five days.

2. "Valdez and Prince William Sound," U.S. Coast Guard accredited course for geographic familiarization and VLCC shiphandling. Five-day course includes USCG radar endorsement if desired. Two to four persons—three to five days.

3. "Approaches, Moorings and Breakaways at Single Point Moorings and Storage Vessels," for masters, chief mates and other deck officers. Various size vessels can be maneuvered and moored in the Loop, Hondo, and similar areas. Two to three persons for three days; four persons for five days.

4. "Shiphandling and Piloting in the St. Lawrence Seaway," uses two types of seaway vessels—120 miles of difficult sections of the Seaway. Four persons for five days. Four levels of courses based on trainees' past experience. Two to four persons—three to five days.

5. "Canal Shiphandling and Piloting in Panama and similar areas," for apprentice to experienced levels. Lock approaches with oblique and parallel walls—shiphandling in narrow channels with passing ships. Two to four persons—three to five days.

6. "Refresher Course—Tug-Towboat Handling," maneuvering a barge in a river or harbor with twin-screw tug in notch, on hip or with tow—emphasis on handling emergencies. One to six persons (min. class)—two and a half days.

7. "Shiphandling for MPS Missions," for deck officers assigned to Military Prepositioned Ships (MPS) or similar MSC operations. Includes approaching and station-keeping on a fleet oiler during UNREP, making and leaving anchorages at low speed with restricted water and current, and four point mooring operations. Three to five officers—three days.

B. Using a combination of the Full-Mission and Restricted Visibility Bridge (RVB) Simulators:

1. "Advanced Shiphandling for Naval Officers," special courses for aviation and surface warfare officers—includes close-in shiphandling, underway replenishment and docking. Two to 10 officers—three to five days.

2. "Risk Reduction," shiphandling and maneuvering using both the ship and restricted visibility bridge simulators with concentration on past accident situations. Four to eight persons—five days.

3. "New Masters' Course," for chief officers taking their first ship as master or for experienced masters who have been on extended leave. The three- to five-day ship maneuvering course provides USCG equivalency for raise in grade (proposed USCG rules allow for such simulator courses as acceptable to the Commandant), USCG radar renewal, ROR refresher and Seaspeak instruction groups of six to 12 officers, as few as one from a company.

4. "Refresher Course—Close-in Shiphandling Emergencies," an intensive short course for masters and chief mates emphasizing reactions to unexpected and vessel-threatening situations—selected vessels and geographic areas—two to six persons (min. class)—two and a half days.

5. "Refresher Course—Close-in Shiphandling for Pilots," short course emphasizing unexpected situations—selected ship types and geographic areas. Can also be used for evaluation of apprentice pilots and senior pilots—two to six per-

(continued)

MSI '86 Courses

(continued)

sons (min. class)—two and a half days.

C. Using the Interactive RVB Simulators:

1. "Radar-ARPA," five-day course for masters and chief officers ranging from a refresher on rapid radar plotting and parallel indexing to maneuvering a vessel in fog or rain squalls in restricted waters with traffic congestion. Includes coverage of the weaknesses of various systems. This course includes USCG radar endorsement if desired and stated in advance—meets forthcoming USCG and IMO requirements for ARPA license endorsement—two to eight persons—five days.

2. "Advanced Radar-ARPA Refresher," this short course is intended for officers who are experienced in the use of ARPA systems. Simulator exercises are more complicated and emphasis is on extreme situations. Two to six persons—three days.

3. "Radar Observer Endorsement Renewal," one day renewal course including practical and written test—radar plotting practice and maneuvering decision-making on interactive ship's bridges. Meets IMO, USCG, Canadian, Liberian and other national standards. One to eight persons—one day.

D. Using the LNG Cargo Handling Simulator:

1. "LNG Cargo Handling Familiarization"—for ship's officers, terminal personnel and Coast Guard inspectors—uses LNG cargo handling simulator. Six to 10 persons—five days.

2. "Advanced LNG Cargo Handling," for ship's officers who will be responsible for gas handling. Uses LNG cargo handling simulator. Six to eight persons for 10 days.

E. Using the full-environment Engine Room Simulator:

1. "Steam Turbine Power Plant Familiarization," provides masters and chief mates with appreciation of engine or power failures and consequences. Uses full engine room simulator. Four to eight persons for three days. Can be integrated with shiphandling courses.

2. "Emergency Decision-Making for Engineers," troubleshooting and handling emergencies for experienced engineers. Uses full engine room simulator (diesel or steam) and individual computerized troubleshooting practice—also includes round-table discussions on advanced topics with experts. Six to eight persons for 10 days.

3. "Recognizing and Responding to Emergencies for Second and Third Assistants," watchstanding and handling emergencies in the full engine room simulator (diesel or steam)—maximizes hands-on experience. Limited to four persons—five days.

4. "Refresher course—Engine Room Emergencies," decision-making practice for chief and first assistant engineers. Uses full engine room simulator (diesel or steam). Two to six experienced engineers (min. class)—two and a half days.

For more information and a copy of the 1986 catalog from Marine-Safety International,

Circle 15 on Reader Service Card

Hall Appointed Sales Engineer At INDEECO

Margaret Hall has been promoted to sales engineer for INDEECO (Industrial Engineering & Equipment Company) of St. Louis. She joined the company last year as a sales correspondent after attending the University of Missouri at Rolla.

In her new position, **Mrs. Hall** will service accounts in the industrial products area, specifically, air process heating, strip heating, and compressor heating applications. She will be headquartered at INDEECO's corporate office in St. Louis, where she will report to **Patrick Bradley**, industrial products manager.

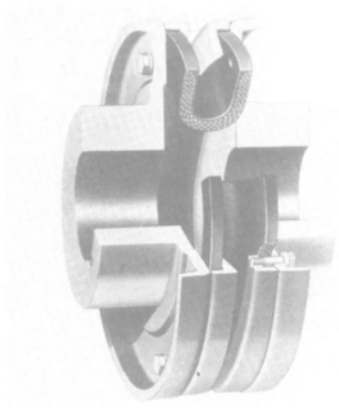
Cairns Named Operations General Manager For Cross And Southern Ocean

Ian Cairns has been appointed general manager of operations for Cross Marine, Inc. and Southern Ocean Corporation of Belle Chasse, La. The latter company will own and operate a 500-ton-capacity derrick barge, the Southern Hercules, now being outfitted by Boland Marine and Manufacturing, Inc. of New Orleans.

The barge will be used for multiple assignments including oilfield construction, maintenance, repair, and salvage. It will also be employed for river and harbor work such as stevedoring and shipyard loadouts. Where practical, it will operate in conjunction with Cross Marine's self-elevating workboats that can be fitted to accommodate up to 40-person work crews.

According to Mr. **Cairns,** this combination will enable the two companies to offer services usually reserved for large derrick barges but at a substantial reduction in cost.

No Lubrication Required For Falk 'Torus' Couplings—Literature Available



The Falk Corporation of Milwaukee, Wis., reports that its Torus Type WA couplings with all-steel hubs never need lubrication. And no maintenance except for routine inspections. The couplings also feature high torsional flexibility and easy installation.

Falk's unique design—utilizing a non-lubricated, soft and resilient element of U-shaped multi-ply nylon and rubber—provides the torsional flexibility to absorb reasonable amounts of shock loads, vibration, misalignment and end float. The larger the coupling, the greater the number of plies that are used. The tough, rubber-nylon element is not affected by dust, dirt or ambient temperatures from −40°F to +150°F (−40°C to +66°C).

Hubs are available in a wide choice of popular bores (⅛-inch to 8 inches), or bored for taper bushings. Long steel hubs are offered for mill motors, other tapered shafts, and for overhung hubs.

Torus couplings are stocked in 15 different sizes to match light to severe duty applications, and are rated for 540 to 141,800 lb./in. torque and .86 to 225.0 hp per 100 rpm. Falk also offers fluid, "Steelflex" and gear-type couplings.

The Falk Corporation, Milwaukee-based subsidiary of Sundstrand Corporation, is a major manufacturer of industrial power machinery, including gear drives, couplings and backstops.

For further literature containing full information on Falk couplings,

Circle 43 on Reader Service Card

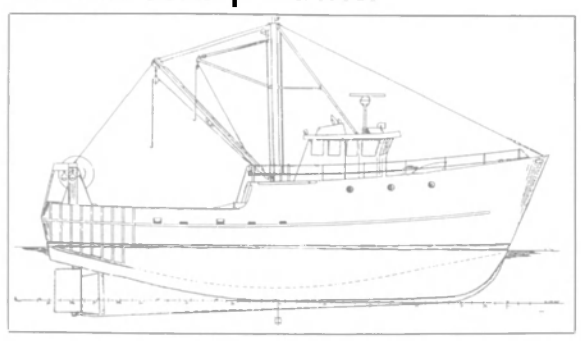
Raytheon Awarded $4.4-Million Navy Contract For Radar System

Raytheon Company, Equipment Division, Wayland, Mass., is being awarded a $4,427,620 modification to a previously awarded cost-plus-award-fee contract for incremental funding for the relocatable over-the-horizon radar system for use.

The work, which will be performed in Wayland, is expected to be completed May 20, 1988.

Contract funds would not have expired at the end of the current fiscal year. There were 20 bids solicited for the project and three offers received. As this award provides incremental funding under an existing contract, no negotiations were required. The contracting activity is the Space and Naval Warfare Systems Command, Washington, D.C. (N00039-84-C-0049).

Eastern Marine Contracted To Build Scallop Trawler



Eastern Marine, Inc., the diversified Florida-based shipbuilding firm, recently signed a contract with James A. Odlin, Cape Elizabeth, Maine, to build an 88-foot steel scallop trawler vessel.

This latest addition, which will join Odlin's fleet in early 1986, has been designed by John W. Gilbert Associates, Boston, Mass. The principal characteristics of the Odlin trawler are an 88-foot overall length, 23-foot breadth, and a 13-foot depth. In addition, the vessel will have a 10,900-gallon fuel capacity, 1,860-gallon freshwater capacity, a 300-gallon hydraulic capacity, and an iced fish hold capacity of 5,300 cubic feet. The vessel will have accommodations for seven.

The single main engine will be a Caterpillar, model 3412, rated 620 bhp at 1,800 rpm driving a Columbian 65-inch diameter, four-bladed propeller through a Caterpillar 7231, 6:1 reverse reduction gear. The generating power will be furnished by two John Deere/Northern Lights, 30-kw generator sets, model M4219-D.

When completed, the Eastern Marine-built trawler will operate within the harsh and demanding waters of the Northern Atlantic.

Eastern Marine, located in Panama City, Fla., is engaged in the design and construction of commercial fisheries vessels, cruise ships, ferries, inland and offshore tugs, towboats and barges, offshore support vessels, U.S. Military, and governmental agencies specialized ships and barges.

TeleSystems' Compact Communications Unit Approved —Literature Available

COMSAT TeleSystems, Inc. announced that its recently introduced transportable communications system, the TCS-9000, has received an unqualified Type Approval from the International Maritime Satellite Organization (INMARSAT).

Following the successful completion of a series of rigorous tests established by INMARSAT, the TCS-9000 was granted approval by the organization under certificate number I-29. An unqualified approval signifies that the TCS-9000 meets the latest technological specifications prescribed for earth stations that use the INMARSAT satellite network. All earth stations must receive INMARSAT Type Approval before they can be used over the network.

TeleSystems' TCS-9000 is said to be the world's first truly transportable earth station. According to the manufacturer, the system is small (110 pounds) and rugged enough to be carried as luggage, with full capabilities to provide long-distance telephone, telex, and data communications from anywhere in the world.

Located in Northern Virginia, COMSAT TeleSystems, Inc. designs, manufactures, markets and provides worldwide support for satellite-based mobile communications and advanced signal processing equipment and systems.

For further information on the TeleSystems TCS-9000 or other company products and services,

Circle 53 on Reader Service Card

Drew AMERGIZE® Tested And Chosen For All Ships In Major Fleet

Drew Ameroid Marine, Boonton, N.J. recently reported that a major shipping company concluded a six-month evaluation of Drew Ameroid Marine's AMERGIZE™ deposit modifier/combustion improver aboard one of their motor vessels with positive results. As a result of the evaluation, they have decided to utilize AMERGIZE® on all ships in their fleet on a regular basis.

The motor vessel was powered by a single Pielstick engine, Model 12PC 2-2V. The fuel normally used has a viscosity specification of 120 cst at 50°C.

Prior to the use of AMERGIZE, mechanical cleaning of the valves and valve cages was required to remove hard deposits. During the course of the evaluation, valves were removed on a scheduled basis in order to inspect the amount of deposits on the valves and valve cages. They report that while utilizing AMERGIZE they found only a light coating, which was easily removed.

After a full operational cycle, there was a definite improvement in the physical appearance of the valves and a savings in the amount of work needed to clean them.

For additional information about AMERGIZE and this trial,

Circle 33 on Reader Service Card

International Trade Fair, SMM '86, To Be Held In Hamburg—Sept. 23-27

The latest worldwide developments in the fields of ship and marine technology will be on display at the International Trade Fair—Ship, Machinery, Marine Technology, SMM '86, to be held at the Hamburg Exhibition Center, September 23-27, 1986.

The fair, which will be taking place for the 12th time next year, is one of the biggest events of its kind in the world. Among the exhibitors at the biennial event will be virtually all of Europe's leading shipbuilding nations, as well as the shipbuilding industries of the U.S., Japan and Korea along with their suppliers. In all, over 500 direct exhibitors from 25 countries will be presenting their latest developments.

Falk Fluid Couplings Provide 'Soft-Touch' —Literature Available

Falk-Sime fluid couplings now available from The Falk Corporation of Milwaukee, Wis., are designed to provide softer starts, smoother acceleration and more controlled torque than conventional couplings.

Falk reports that the special fluid design absorbs the shock of sudden stops and starts from both the driving motors and the driven machine. It said that the new Falk-Sime couplings permit matching the torque of the motor to the demands of the driven equipment, thus saving equipment from breakdowns and costly replacement.

Other benefits claimed for the fluid coupling include the ability to balance uneven motor loading by simply adjusting the amount of fluid, to dampen harsh vibrations, and to boost starting torque of a standard NEMA B motor by as much as 200 percent.

Falk-Sime fluid couplings are available to handle loads from 1.00 hp to 800.0 hp. There's a choice of non-delay fill and delay fill types, with options for hollow shaft/sheave output, and sheave input/hollow shaft output designs.

The Falk Corporation, subsidiary of Sundstrand Corporation, manufactures an extensive line of enclosed and open gear drives, backstops, fluid and shaft couplings, fluid power and variable speed drives.

For further information and a free brochure from The Falk Corporation,

Circle 27 on Reader Service Card

Ellenbroek Named Marketing Services Manager/Coordinator For Hempel's U.S. Operations

G.P. Mitchell, executive vice president of Hempel's Industrial Coatings Inc., recently announced the appointment of **Joop Ellenbroek** as marketing services manager and multinational sales coordinator for Hempel's United States Operations. Mr. **Ellenbroek** will also serve as secretary of Hempel's executive committee.

Mr. **Ellenbroek** has been with Hempel's for more than seven years, serving in various positions in Denmark and Saudi Arabia, where he was manager of technical services. He will be headquartered at Hempel's offices at 6868 North Loop East, Suite 304, Houston, Texas 77028.

VIEWNAV® Offshore Platform Monitoring System Installed In North Sea And Off California

Navigation Sciences' VIEWNAV® Electronic Chart Offshore Platform Monitoring System is being used increasingly to alert oil-rig platform operators of potential collision danger and to help warn ships of potential collision and anchoring damage to pipelines. The VIEWNAV system is being installed by British Petroleum in the North Sea Ula Field in the next several months and by other major companies off the California coast.

The VIEWNAV system is said to be ideal for these critical monitoring operations because of the flexibility and ease of programming the digitized electronic color charts to meet specific requirements of site configurations, and because of the proven reliability of equipment used.

True-motion ARPA (Automatic Radar Plotting Aid) images are superimposed over rig and pipeline configurations in exact locations and scale. Up to 40 targets—ships, boats, even low-flying aircraft—are simultaneously identified, tracked and classified. Audible and visual alarms for intrusion into user-designated "protected" zones provide potential anchoring or collision alerts, even during periods of unattended operation.

Selectable ranges from one to 48-NM square allow observation of entire tactical situations or close-up pictures. Range, bearing, course, speed, time-to-closest-point-of-approach, and target status are shown on-screen. The extensive interactive database stores, revises, updates, and displays target data, names, locations, work records, schedules, etc.

Color coding helps speed target identification, with yellow indicating potential anchorage and collision warning; red—collision danger; green—authorized vessel; dark blue—aircraft; light blue—stationary target; and white—status to be assigned. Target symbol status is continuously updated.

The VIEWNAV Electronic Chart Offshore Platform Monitoring System consists of a Control Console; 14, 20, or 25-inch Full-color Video Display Unit; Main Equipment Cabinet; and interfacing ARPA. The VIEWNAV system uses proprietary software plus proven computer technology (10-Mbyte Winchester hard disk and 1-Mbyte floppy disk) to provide off-the-shelf reliability.

For full information about custom programming configurations and data displays, and for a free brochure of the VIEWNAV platform system,

Circle 68 on Reader Service Card

MSC Awards $22.3-Million Contract To Trailer Marine

The Navy's Military Sealift Command (MSC) has awarded an indefinite quantity, fixed price contract—with an adjustment for fuel costs—totaling approximately $22,300,000 to Trailer Marine Transport Corp. of Jacksonville, Fla., for the carriage of U.S. military-sponsored cargo between the Military Ocean Terminal, Bayonne, N.J., and the Naval Supply Center, Norfolk, Va., and Praia da Vittoria, Azores.

The award calls for the provision of breakbulk and container service on U.S.-flag ships at intervals not to exceed 25 days between deliveries. The contract period is two years beginning October 1, 1985.

Trailer Marine Transport Corp. was determined to be low offeror following competitive procurement. Sixty-five companies were solicited, and nine responded.

MSC is responsible for providing the necessary sealift to rapidly deploy military forces overseas and sustain them for as long as operational requirements dictate. The Command also operates auxiliary ships that deliver supplies to Navy combatant ships while underway, oceanographic and survey ships, and tankers and dry cargo ships that deliver Defense Department cargo worldwide.

Eastern Marine Wins $3.3-Million Contract

Eastern Marine, Panama City, Fla., was recently awarded a $3,311,573 firm-fixed-price contract for the construction of seven YFN covered lighters. The work, which is expected to be completed in September 1987, will be performed in Panama City. The contract funds would not have expired at the end of the current fiscal year. There were 38 bids solicited and seven offers received. The contracting activity is NAVSEA (Naval Sea Systems Command), Washington, D.C. (N00024-85-C-2104).

Hagglund Introduces New Hydraulic Motor —Literature Available

The Marathon from AB Hagglund & Soner is a new low-speed, high-torque hydraulic motor, originally intended for highly demanding industrial applications, which is considered particularly suitable for many heavy-duty situations in the marine and offshore fields, especially where continuous running is required.

The new motor is the result of a development project by the Swedish company, which is already well known in the marine and offshore industries for cranes, brakes, and the Viking range of hydraulic drives.

The Marathon project originated in a market survey that confirmed that many users of heavy-duty continuous drives were attracted by the durability, low-maintenance costs, and compactness, along with outstanding torque and control characteristics that are among the advantages of low-speed, high-torque motors. But they needed units with higher torque capacities than those then available; the Marathon satisfies this need.

For further information on the full range of Marathon heavy-duty hydraulic motors,

Circle 94 on Reader Service Card

Free 8-Page Guide On Marine Ball Valves From Pittsburgh Brass

A new eight-page reference guide from Pittsburgh Brass Manufacturing covers marine ball valves produced to US Navy and Coast Guard specifications. The valves have passed shock and vibration testing, and are available with Sil-Bronze and Navy flanged ends.

Sizes range from ¼-inch to 4-inch and pressures to 700 psig. Materials include a wide range of bronze alloys with trims of various metals, including monel and titanium.

The guide also contains a handy cross reference of marine systems to various types of PBM valves.

For a free copy of this handy reference guide,

Circle 92 on Reader Service Card

PROPULSION UPDATE

KHD And MWM Form New Diesel Engine Group—Literature Available

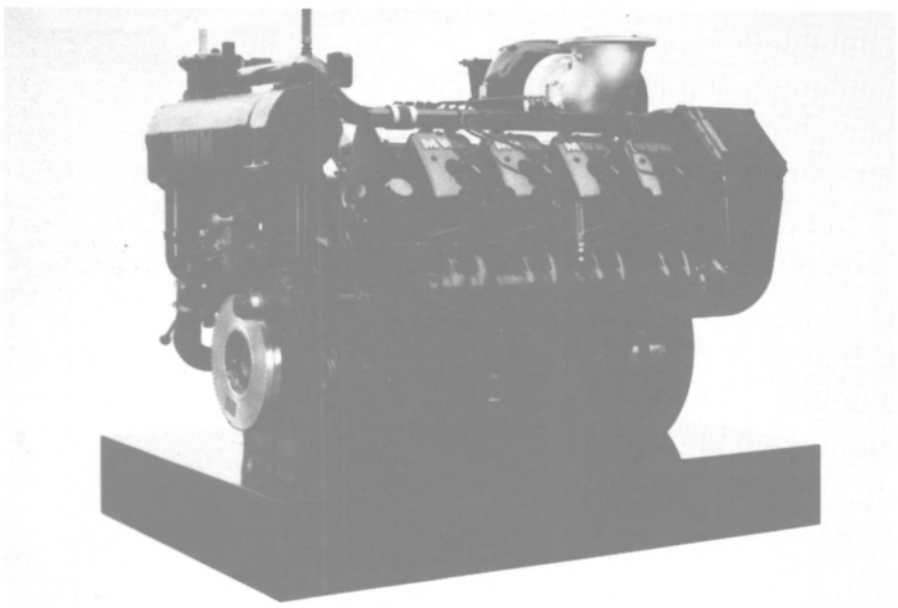
Two major European engine manufacturers, KHD, Klockner-Humboldt-Deutz AG of Cologne, and MWM, Motoren-Werke Mannheim AG of Mannheim, have merged to form Deutz/MWM. The new diesel engine group will offer one of the broadest power ranges of engines in the world.

This merger brings together two leading engine builders with a total of more than 230 years' experience, as well as a combined reputation for quality, durability and service excellence.

The KHD Group engine division will be restructured with all activities concerning the water-cooled engine business being combined at MWM AG in Mannheim. KHD will relocate its medium-sized and big engine activities in development, sales and parts manufacturing to Mannheim in combination with the engine program of MWM. The medium-sized and big engines built in Mannheim and Cologne will be manufactured under the trade name Deutz/MWM.

The formation of Deutz/MWM will offer an expanded range of marine and stationary prime movers, in propulsion and electric power generation, to both North America and the world market.

The North American headquarters of the new company is located in Montreal, Canada, with a division based in Atlanta, Ga.



The Deutz/MWM 604 is a water-cooled diesel engine which is available in a power range from 500 to 2,500 hp, for marine, stationary, genset, highway and rail applications.

For further information and free literature on the new company and the products they offer,

Circle 12 on Reader Service Card

New X-FLO Steam Compressor Fabricated To Withstand Corrosion —Free Literature Available

The Ingersoll-Rand Company, Charlotte, N.C., recently announced the introduction of the X-FLO steam turbo compressor. **Peter Baldwin,** vice president and division general manager, Single Stage Product Division, said the steam model is "identical in its revolutionary aerodynamic design to the new Ingersoll-Rand X-FLO mixed flow air/gas compressor, but it is fabricated specifically to withstand steam's highly corrosive properties."

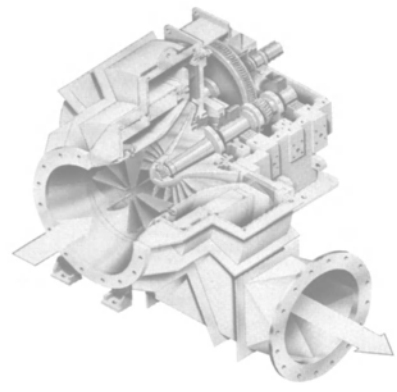
The X-FLO Steam model includes a 316 stainless steel volute with insulation and shrouding to minimize heat loss. Impellers can be made of 17-4 PH stainless steel or titanium. A special labyrinth seal for the injection and/or extraction of buffer steam is also standard.

As with the air/gas X-FLO, the steam model features stainless steel inlet guide vanes and utilizes a horizontally split gearcase for ease of access and inspection.

The X-FLO Steam configuration's performance specifications include 1,000 to 75,000 cfm, Adiabatic heads to 43,000 feet and compression ratios of up to 2:1.

According to the manufacturer, the X-FLO's unique design is ideally suited for higher flow capacities and pressures normally associated with single-stage centrifugal designs. Reportedly, all X-FLO models offer some advantages over conventional centrifugal compressors including: smaller size; easier installation and start-up; substantial energy savings in most cases; and lower installation, operation and maintenance costs.

The X-FLO Steam compressor is especially useful for vapor recompressions processes, where steam is recycled for evaporation, distillation, drying, concentration or crystallization.



Ingersoll-Rand's X-FLO Steam Compressor

For more information and free literature on the new X-FLO Steam Turbo Compressor from Ingersoll-Rand,

Circle 11 on Reader Service Card

APL To Expand Its Port Of Seattle Operations —Move To New Terminal

American President Lines (APL) will expand its Port of Seattle operations following its move to the Port's new Terminal 5 container facility during the first quarter of 1986, according to Port of Seattle Commission president **Jack S. Block.**

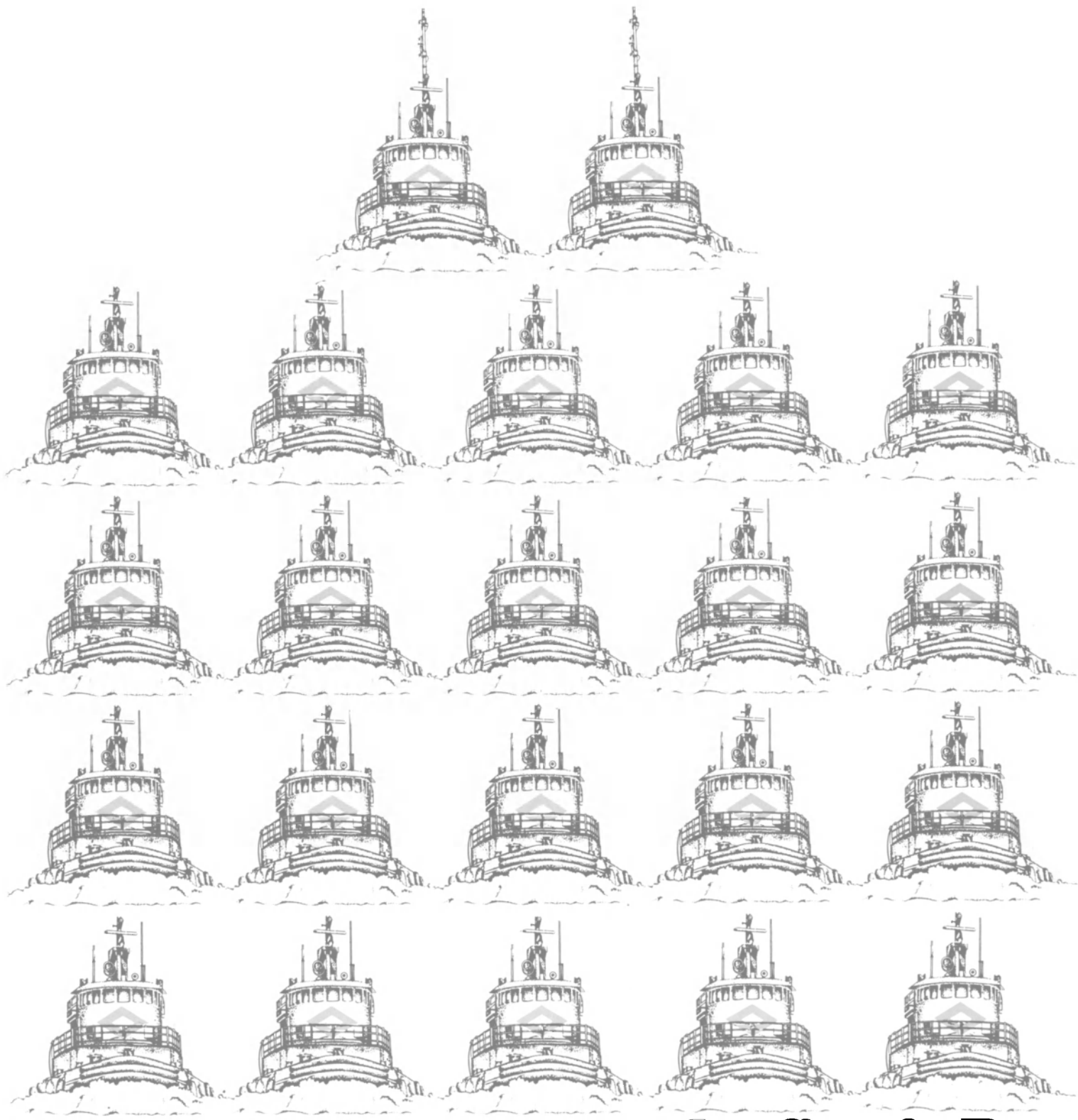
Currently operating from the Port's 47-acre Terminal 46, APL will shift to the new facility, a 77-acre, state-of-the-art container terminal which will undergo a $30-million expansion and upgrade.

In addition to the expanded acreage for APL, the new Terminal 5 will have three full containership berths—up from the current two; four new 100-foot gauge container cranes—up from three 50-foot gauge cranes; an on-dock shed with 80,000 square feet of breakbulk storage space; and a 100,000 square foot container freight station, also right on the terminal.

Terminal 5 will be operated by Eagle Marine Services, a wholly owned APL stevedoring subsidiary.

$4.5-Million Contract Awarded Norfolk Ship

Norfolk Shipbuilding and Drydock Corporation, Norfolk, Va., is being awarded a $4,595,984 firm-fixed-price contract for the docking selected restricted availability of the USS Vulcan (AR-5). Work will be performed in Norfolk, and is expected to be completed in December 1985. Contract funds would not have expired at the end of the current fiscal year. Seven bids were solicited and three offers were received. The Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Va., is the contracting activity (N00024-85-H-8195).



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PROPULSION UPDATE

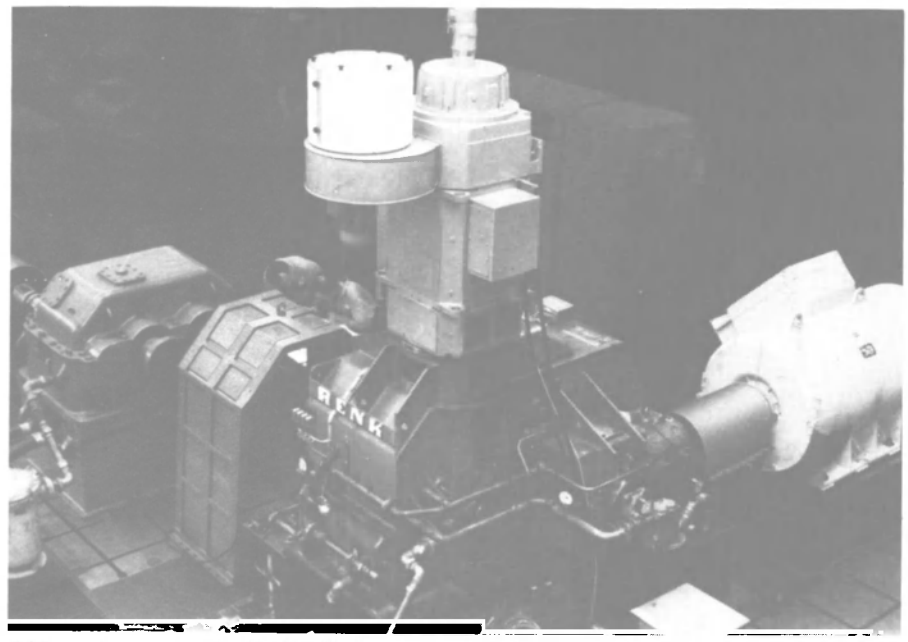
Renk Gear System Provides Constant-Frequency Power Generation From Main Engine

As the second largest consumer of energy aboard ships, the power generation equipment has been the object of many studies aimed at obtaining overall higher efficiency and lower electrical power costs.

One solution is driving a generator, at constant speed, off the main propulsion engine that is operated at varying speeds when fitted with a fixed-pitch propeller. Zahnraederfabrik Renk AG of Augsburg, West Germany, has developed a special gear system able to accomplish that result.

The company's RCF (Renk Constant Frequency) unit is a differential epicyclic gear capable of insuring constant-speed drive to the power generator in a fully automatic mode. This gear is usually mounted on the forward end of the engine crankshaft. The RCF allows a flexible layout in five different positions of the generator system, depending on the space available in the engine room. An additional possibility is to install the RCF along the propeller line on the main engine power takeoff side.

The RCF's speed superposition is achieved by hydrostatic or electric control. The basic gear ratio is chosen so as to obtain generator synchronous speed output for a standard frequency generator at 85 percent of the engine rated speed. In this way the hydrostatic or electric controls of the RCF will drive the generator at constant speed while the main engine is operating between 70 and 100 percent of its rated speed. The annulus of the epicyclic gear will remain fixed while the engine is running at 85 percent of its rated speed; in this case the power transmission is merely mechanical.



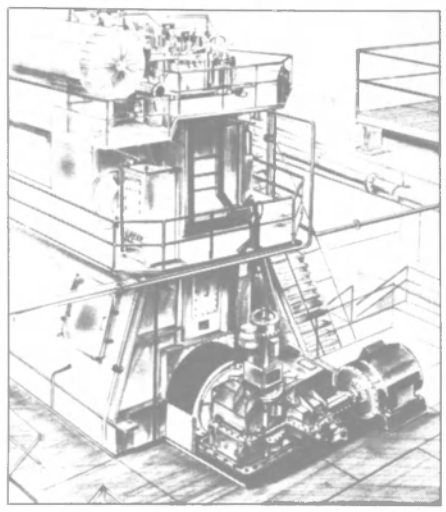
RCF gearbox on test bed in Renk's Augsburg plant. Generator/motor is mounted vertically. All electric components have been supplied by BBC.

If the engine speed drops, one portion of the power output is transmitted to the gear unit via a dc motor. The annulus is driven against the supporting torque by the motor, and the epicyclic gear is superimposed motorwise. The diesel engine associated with the mains and the current converter supplies the power for the dc motor/generator undergoing regulation.

In the event the diesel engine speed rises, the dc motor becomes the generator, and the surplus power transmitted by the gear unit is fed into the mains via the dc motor/generator and the current converter. The annulus is then rotated by the dc motor/generator towards the supporting torque, being simultaneously restrained, and the epicyclic gear is superimposed generatorwise.

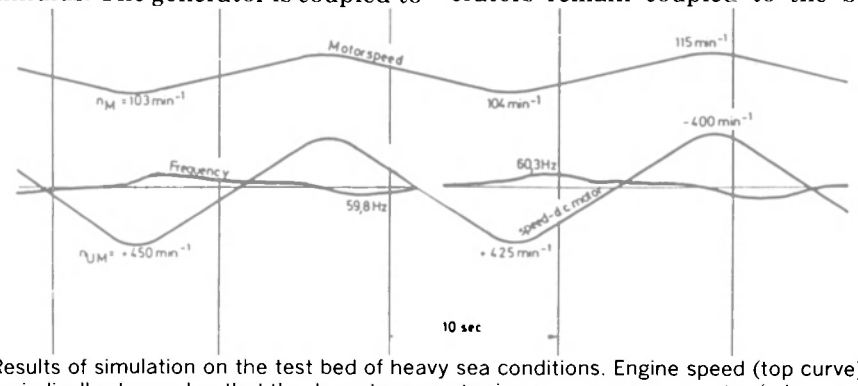
The gear unit is connected to the forward crankshaft end of the diesel engine through a highly flexible coupling that dampens the vibration of the plant.

The dc motor/generator of vertical design is fitted on the gear casing (photo). It features an attached electromagnetic brake that makes it possible to mechanically lock the annulus. The generator is coupled to the gear unit through a bevel gear train at a 90-degree angle to the crankshaft. Between the gear unit and the generator there is an electromagnetic clutch that allows connection and disconnection of the generator during operation. This clutch also provides overload protection.



Drawing of the RCF gearbox connected to the generator at forward end of main engine.

For single generator operation, the auxiliary diesel engine generators are cut out after the load has been taken over by the shaft-driven generator. The regulating system of the dc motor/generator now insures frequency regulation of the shaft-driven generator. In parallel operation, the auxiliary diesel engine generators remain coupled to the bus



Results of simulation on the test bed of heavy sea conditions. Engine speed (top curve) is periodically changed so that the dc motor operates in one case as a generator (minus sense of rotation) and in the other as a motor (plus sense of rotation) in order to provide the required regulation. The motor is alternating continuously its sense of rotation, while the frequency of the generator remains constant.

after the shaft generator has been connected.

By adopting a suitable simulating calculation method, an optimal inter-related behavior of all drive train components is studied, including the propeller, main propulsion engine, gear unit, shaft-driven generator, and the mains supply including diesel-driven generators operating in parallel.

The high efficiency of the gear unit is one of the essential factors for the economy of the plant. The RCF system operates with an efficiency ranging between 93 and 97 percent. The system, which requires a relatively low capital investment, is also advantageous to use because of the potential fuel cost savings.

Renk has sold approximately 30 RCF systems to be powered by M.A.N.-B&W two-stroke engines. This is a joint development of Renk and M.A.N.-B&W. Four 1,100-kw electrically controlled units are now in service on refrigerated containerships with fixed-pitch propellers built at the German shipyard Bremer Vulkan. Two 700-kw hydraulically controlled systems are for 79,900-dwt tankers built at the Uljanik shipyard in Yugoslavia, and one 900-kw unit is on order for Burmeister & Wain, Copenhagen.

The German company's U.S. subsidiary is Renk Corporation of Duncan, S.C.

A complete full color 26-page brochure fully describing in detail the Renk organization and its equipments and services on a worldwide basis is available free of charge. For your copy,

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Vosper Wins Cunard Contract

Shortly after the announcement that British Shipbuilders has agreed in principle to sell Vosper Shiprepairers Limited of Southhampton, U.K., to a management buy-out team, the company announced that it has won a contract to repair a 28,104-dwt container vessel, Act 6, managed by Cunard Line.

Oerlikon Introduces New Line Of Maintenance And Repair Alloys

Oerlikon Welding Industries, Houston, Texas, has announced the introduction of a new line of maintenance and repair electrodes designed to cater to the majority of the needs of fabricators.

The range consists of two electrodes (Super-Tex and Cryo-Tex) for dissimilar metal welding, two electrodes for welding cast iron (Cast-Tex 55, Cast-Tex 99), two electrodes for general purpose and welding of mild and low alloy medium tensile steels (Tex-Cito 7, Tex-Cito 11), an electrode for welding aluminum (Al-Tex 5) and an electrode for all cutting and gouging applications (Cut-Tex).

These consumables, though new to the U.S. market, have been marketed successfully in over 94 countries by associated companies in the worldwide network of Oerlikon Welding companies.

Oerlikon offers a complete range of welding consumables for all processes. For further details of products available from Oerlikon,

Circle 38 on Reader Service Card

Lee Promoted To Sales And Application Engineer For ASEA Hagglunds

Erling O. Lee has been named sales and application engineer for the Houston-based ASEA Hagglunds Inc., the U.S. subsidiary of AB Hagglund & Soner of Sweden. He will work out of the company's sales office in Los Angeles, and was previously marine service engineer.

ASEA Hagglunds designs, manufactures, markets, and services a broad range of products. These include: marine deck cranes with capacities from five to 240 tons; products for the offshore industry, including BOP handling systems, derricks, and skidding systems; hydraulic drive motor systems; and an all-terrain vehicle, the Bearcat 206.

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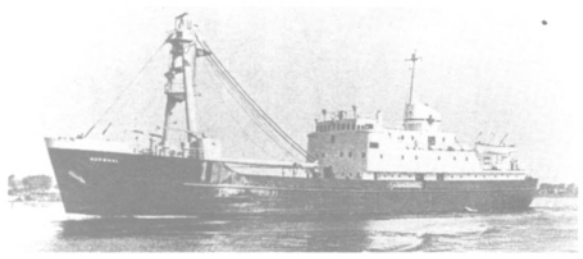
Omnithruster PV700 Unit Being Retrofitted For CCGS 'Narwhal' —Literature Available



The 251-foot CCGS Narwhal will be retrofitted with a 325-hp Omnithruster PV700 unit for use in the Canadian arctic waters.

Omnithruster • Canada has delivered its PV700 unit to Halifax Industries Ltd., Halifax, Nova Scotia, to be retrofitted in the Canadian Coast Service's Navaids Tender Narwhal. The unit is part of a complete propulsion and auxiliary package supplied by GEC Diesels Inc. of Etobicoke, Ontario for the CCGS.

Built in 1963 by Canadian Vickers of Montreal (now Versatile Vickers), the 2,222-ton, ice-strengthened Narwhal will use the Omnithruster unit to disperse ice away from the vessel and its main propellers.

According to the manufacturer, Omnithruster hydrojet maneuvering and propulsion equipment operates efficiently whether the vessel is in ballast or loaded, whether her speed through the water is high or low, and in deep or shallow water. Also, with optional Omniphaser units, the system can be used for ice lubrication by air/water injection around the hull.

At the present, several types of vessels use Omnithruster systems including tugs, barges, fishing boats, icebreakers, cruise ships and tankers.

For further information and free literature on the Omnithruster PV700 or other Omnithruster products,

Circle 60 on Reader Service Card

HydroComp Develops Naval Engineering Software Programs

As the competition increases in the marine design field, more and more engineers, naval architects and design firms are turning to microcomputers to develop a marketing edge. Computer-aided calculations are convenient, consistently accurate and fast. The only problem is finding the right software for each job.

HydroComp, Inc., based in Durham, N.J., is one of the few firms in the country offering software programs designed specifically for naval engineering applications. To meet the demand, Hydrocomp now offers NAVCAD—naval architectural computer-aided design software.

HydroComp's programs take standard engineering calculations and package them into a format that is easy, consistent and extremely fast to use. Programs are designed for use on the IBM PC or compatible systems. To aid infrequent users, the company has built automatic checks into NAVCAD and has included an extensive users' manual.

HydroComp recently rewrote three NAVCAD programs—POWER, PROPS and PROPS PLUS—to make them easier to use.

A speed and powering program called POWER calculates vessel resistance and ehp. HydroComp used three well-known ship resistance regressions: the MARIN Regression for conventional displacement vessels, the Great Lakes Bulk Carrier Regression for very full GLBC-type vessels and a Modified Stavitsky Regression for planing hulls. The resistance calculations may be "optimized" by using a modification which applies model test results of a "family-type" hull to empirically fair the coefficient of residuary resistance. All resistances and appropriate coefficients, and ehps are printed to the screen and/or printer.

Also included in the POWER program is an shp calculation which uses the vessel characteristics and ehp output. Additional propeller data is required. Using appropriate regression equations, propulsive coefficients are determined. Then the program performs an "off-design point" calculation to determine propeller conditions and shaft power. The propeller evaluation is based on polynominalized data for B-Series, Gawn-Burrill or Kaplan/Nozzle propellers.

PROPS is a propeller program HydroComp designed to analyze propulsion systems. This program evaluates a range of design or off-design points, for either free-running or towing conditions for B-Series, Gawn-Burrill or Kaplan/Nozzle configurations. Various propeller characteristics are needed as well as hull and engine data for off-design point evaluation. "Complete system values are determined and printed onto the screen or printer, showing thrusts, torques, horsepowers, propeller coefficients and cavitation data," **Donald MacPherson,** naval architect/marine engineer and vice president of the firm, explained.

Going one step further, PROPS PLUS includes all the calculations in PROPS, plus an optional preliminary calculation to select the diameter, pitch, blade area ratio and reduction gear ratio of an optimal propeller.

"We've redesigned these three programs so that a user can easily step through them without any supporting documentation, Mr. **MacPherson** said.

For further literature containing full information about these as well as additional NAVCAD programs from HydroComp, Inc.,

Circle 35 on Reader Service Card

Nineteen New Members Elected To American Bureau Of Shipping

Nineteen maritime executives from six countries were elected Members of the American Bureau of Shipping (ABS) at the semiannual meeting of the ship classification society held at ABS headquarters in New York City on September 23, 1985. The new Members are:

Klaus Ahlers, chairman, Howaldtswerke-Deutsche Werft AG, Kiel, West Germany.

Ralph Anselmi, president, Tampa Shipyards Inc., Tampa, Fla.

Marshall Ballard, general superintendent, Penrod Drilling Company, Dallas, Texas.

David F. Banks, senior vice president, Chase Manhattan Bank, New York, N.Y.

James M. Barrett, deputy director—International Engineering, AT&T Communications, Morristown, N.J.

Curtis Brand, president, Mobil Shipping & Transportation Co., New York, N.Y.

John C. Couch, president and chief operating officer, Matson Navigation Co., San Francisco, Calif.

Arthur Engel, president and chief executive officer, Southwest Marine, Inc., San Diego, Calif.

Conrad H.C. Everhard, chairman and chief executive officer, Seapac Services Incorporated, New York, N.Y.

Michael J. Finlay, managing director, South African Marine Corporation, Ltd., Cape Town, South Africa.

Christel M. George, assistant secretary, American Bureau of Shipping, New York, N.Y.

Commodore **J. William Kime,** United States Coast Guard, Chief, Office of Merchant Marine Safety, Washington, D.C.

Ambassador **Manoel Pio Correa Jr.,** president director, Ishikawajima do Brasil Estaleiros S.A., Rio de Janeiro, Brazil.

Richard J. Quegan, assistant general manager—fleet planning, Marine Department, Texaco Inc., White Plains, N.Y.

Pedro Sancho, president, Astilleros Espanoles, S.A., Madrid, Spain.

Liselotte von Rantzau-Essberger, Reederei John T. Essberger, Hamburg, West Germany.

Richard H. Vortmann, president and chief operating officer, National Steel and Shipbuilding Company, San Diego, Calif.

Kenneth W. Waldorf, senior vice president, Zapata, Corp., Houston, Texas.

William Y.N. Wei, chairman, China Shipbuilding Corporation, Taipei, Taiwan.

The American Bureau of Shipping is a not-for-profit, nongovernmental international classification society that establishes and administers standards, called Rules, for the design, construction, and periodic survey of merchant ships, mobile offshore drilling units, and other marine structures.

GE Awarded $10.6-Million Order For SLEP Of 'Kitty Hawk'

A $10,600,000 firm-fixed-price order was awarded to the General Electric Company, Medium Steam Turbine Division, Lynn, Mass., under a basic ordering agreement to furnish four high-pressure propulsion turbines, ancillary parts and components, land associated technical data for the Service Life Extension Program (SLEP) of the USS Kitty Hawk (CV-63).

The work will be performed in Lynn, and is expected to be completed in July 1987.

The contracting activity is the Naval Regional Contracting Center, Philadelphia, Pa. (N00140-83-G-0196). The contract funds would not have expired at the end of the current fiscal year.

Vosper Wins Cunard Contract

Shortly after the announcement that British Shipbuilders has agreed in principle to sell Vosper Shiprepairers Limited of Southhampton, U.K., to a management buy-out team, the company announced that it has won a contract to repair a 28,104-dwt container vessel, Act 6, managed by Cunard Line.

Almerico Joins Moss Point As Vice President

Vincent R. Almerico

Vincent R. Almerico Jr. has joined Moss Point Marine, Inc., as vice president, according to **John Dane III**, president of the Escatawpa, Miss., shipbuilding company.

Prior to joining Moss Point Marine, Mr. **Almerico** had been vice president of engineering and maintenance for Zapata Gulf Marine Corp., Houston, Texas. He was responsible for the technical support for the operation of 304 vessels, one of the largest civilian fleets in the world. He also supervised new vessel construction and conversion and modification programs and managed a staff of naval architects, marine engineers and inspectors. While at Zapata Gulf, he also participated in proposals and programs for the U.S. Navy.

Mr. **Dane** said that Mr. **Almerico's** immediate responsibilities will be to manage all aspects of Moss Point Marine's new LCU (landing craft utility) contract with the Navy.

ELECTRONICS UPDATE

Sperry's New Satellite Communicator Granted Unrestricted Type Approval —Literature Available

Sperry Corporation's Aerospace & Marine Group's new Satellite Communicator has been granted unrestricted type approval by INMARSAT, following extensive qualification testing as a Standard A, Class I Ship Earth Station.

The Sperry Satellite Communicator meets the SATCOM requirements of a wide range of vessels from pleasure craft, fishing boats, offshore oil industry support vessels, to oceangoing ships of all types. Features include a new, compact, lightweight antenna, below decks equipment offering sophisticated interface options, operator-friendly operations, and space-saving compactness.

Operator/terminal interface is based on simplicity. A step-by-step menu-driven system guides even the beginner through all operating procedures. Because the operator's console of the Satellite Communicator functions as an easy-to-use word processor, telex messages can be drafted and reviewed easily before transmission.

Optional features include: remote indicators to alert shipboard personnel to incoming traffic and system status; automatic position polling, which allows a shore authority to interrogate the system for an up-to-date position report without operator intervention; dual-voice interface to facsimile equipment, computer modems, remote telephones, and PABX; high-speed data transmission; and control unit work space memory expansion.

Sperry offers an optional ruggedized personal computer with the Satellite Communicator. This permits cost-effective traffic and data transmission at 1200, 2400, or 9600 baud over satellite voice channels, and accommodates more economical electronic mail. The Satellite Communicator assures more efficient and effective fleet management through reliable, instantaneous, and secure communications between ship and shore.

The Aerospace & Marine Group of Sperry Corporation manufactures a full line of high technology marine products including gyrocompasses, autopilots, radar, automatic radar plotting aids (CAS), steering systems, stabilization systems, and navigation aids. Products are distributed and supported through an extensive worldwide network.

For further literature containing full information on Sperry products,

Circle 18 on Reader Service Card

Raytheon Introduces New Commercial 'IMO' Recording Echo Sounder

Raytheon Marine Company has introduced a new commercial chart-recording echo sounder with performance features meeting and exceeding IMO depth indicator requirements for ships traveling in international waters.

The Raytheon RD-500 Echo Sounder records and prints depth in six ranges from zero to 10, 25, 50, 100, 500, and 1,000 feet, meters, or fathoms. Time and event marks can also be printed on the chart. Digital display of depth is provided by three-digit LCD on the front control panel. An audible depth alarm indicator, with buzzer reset, is presettable from one to 999 feet, meters, or fathoms, to warn of shallow conditions.

The chart, LCD, and front panel

controls have adjustable backlighting for comfortable viewing, day or night. The dry, electrosensitive recording paper is 8 inches (204 mm) wide. Remote digital depth displays are available.

Noise cancellation circuitry rejects unwanted random signals by cross-correlation of previous returns. Accuracy is ± 0.2 meters in the shallow ranges (0-100 meters), and ± 1 meter or 2% of the indicated depth, whichever is greater, on the deep ranges.

Raytheon's RD-500 Echo Sounder has an 80-kHz transducer. It is also available without a transducer, for use on ships equipped with Raytheon's DSL-250 MKII and DSL-450 MKII Doppler Speed Logs.

The IMO (International Maritime Organization) Amendments to SOLAS 74 (International Convention for Safety of Life at Sea) adopted in 1981, recommends that on international voyages, ships of 1,600 tons, constructed before May 25, 1980, and ships of 500 tons, constructed on or after May 25, 1980, be fitted with chart-recording echo sounding equipment which meets certain performance standards. In addition to IMO requirements, the RD-500 meets 1982 British DOT Requirements for Marine Navigation Equipment.

Manufacturer's suggested list price for the RD-500 Echo Sounder, including 80-kHz transducer, is $3,995. Raytheon provides a one-year limited parts warranty with one-year free service from any of its U.S. dealers and worldwide service network.

For further information,

Circle 58 on Reader Service Card

Navigation Sciences Offers Viewnav® Master Mariner Brochure

A full-color "Viewnav® Master Mariner Electronic Chart Navigation System" brochure is available from Navigation Sciences, Inc. of Bethesda, Md. The four-page brochure describes and illustrates the Viewnav system used by operators of pilotboats, ferries, tugboats, and others who need an extra edge in accuracy for navigation.

The Viewnav system combines differential Loran-C, with radar, NOS-quality digitized electronic charts, and proprietary software to present "live" displays of surrounding activity. Accuracy is to within 5 yards, using repeatable differential loran fixes. Radar images are superimposed and displayed on the chart water areas to show vessel traffic and other targets. Buoys, navaids, and channels are shown in actual chart colors. True motion displays are selectable in ranges from one to 48 NM, with automatic electronic chart advancement.

The Viewnav Master Mariner Electronic Chart System consists of a control console, 14- and 20-inch full-color display monitor, and main equipment cabinets. Equipped with its own special Loran-C receiver, and radar and gyro interface units, the Viewnav system interfaces with existing equipment including radar, gyrocompass, Doppler speed log, Satnav, and Decca systems.

For a copy of the Viewnav Master Mariner system brochure,

Circle 55 on Reader Service Card

Norcontrol Wins Contracts For Liquid Cargo Control And Monitoring Systems

Norcontrol Automation AS of Norway has been awarded two major contracts valued at NOK 5.5 million (about $687,000) for the supply of monitoring and control systems aboard twin shuttle tankers now being built at the Fredrikstad, Norway, and Dalian, China, Shipyards for Knutsen Shuttle Tank of Haugesund, Norway.

Both vessels are to operate on charter to the Norwegian state oil company, Statoil, for transport of oil between loading buoys in the North Sea Gullfaks Field and various refineries. The Norcontrol systems will enable Knutsen's tankers to computerize their loading/unloading activities, optimize fuel efficiency, and insure continual operational activity.

Norcontrol's experience gained through the first installation of this type, aboard the Norwegian shuttle tanker Jarena, was an important consideration in the award of these contracts, which confirm the company's leading position as supplier of automation systems for advanced shuttle tankers.

Free Full-Color Brochure On Monitoring System Offered By Siemens AG

A free, full-color, eight-page brochure on the SIMOS 32 integrated monitoring system is being offered by Siemens AG of West Germany.

According to the publication, the SIMOS 32 is a new generation monitoring system and is conceived for operation with unattended machinery spaces. Depending on the version, the system is suitable for binary and analog input signals with up to 360 or 500 channels.

The brochure, with the use of a system configuration diagram, color photos and lucid text, points out the special features and advantages offered by the Siemens SIMOS 32.

The eight-page brochure provides text on the special features of the SIMOS 32, the system configuration, the type of alarm cassettes, operation and displays, peripherals, etc.

A special attraction of the Siemens publication is a technical data chart located on the back cover. The chart is broken into 4 categories: basis-components, dimensions, plain text processing and panels.

For a free copy of this useful brochure offered by Siemens AG,

Circle 93 on Reader Service Card

Aeroquip Offers Bulletin On International Fluid Connector Identification

Selecting and installing the right hose or tube assembly requires accurate measurement and identification of ports, threads and connectors, which come in a wide variety of sizes and types.

"How to Identify Fluid Connectors," Aeroquip Bulletin 5963, describes the tools and simple methods used to easily identify end connectors around the world. American, German and French metric, British and Japanese connectors are also included in the convenient pocket size 36-page bulletin.

The bulletin shows how to measure threads and sealing surface angles and to match these measurements with dash and/or thread size charts.

Specifically, some of the connectors included are: American—NPTF, NPSM, ORS® O-Ring Face Seal, SAE 37°; German—DIN 7631/7647 Series, DIN 3852, Form B Series; French—Millemetrique and GAZ Series; British—British Standard Pipe; and Japanese—JIS Tapered PT, JIS Parallel (Metric), and JIS Split Flange.

For further information and a free copy of the bulletin,

Circle 81 on Reader Service Card

Bethlehem-Sparrows Point To Begin Work On Navy Ocean Survey Ships

Bethlehem Steel Corporation's Sparrows Point shipyard near Baltimore has announced that it will begin work soon on the construction of two oceanographic survey ships (T-AGS) for the U.S. Navy. The recently awarded contract has a value of approximately $130 million for both vessels.

The project will start in early 1986 and build up to a work force level of 1,100 by the latter part of the year, continuing at that level through the third quarter of 1987. Currently, there are 1,200 employees at the yard and 1,300 on layoff.

The T-AGS ships were designed by the Sparrows Point yard's engineering department and M. Rosenblatt & Son, Inc., naval architects and marine engineers headquartered in New York City. Each ship will have an overall length of 499 feet, beam of 72 feet, and depth of 51 feet.

Delivery of the first ship will be in 30 months, with the second following four months later.

New Chesterton Cartridge Seal Meets API 610 Specs —Literature Available

The new Chesterton cartridge mounted single seal meets API 610 requirements and provides the hydrocarbon process industry with an off-the-shelf, high-performance seal with capabilities usually found only in custom seals.

The floating throttle bushing has very close clearance over the seal sleeve and provides security when sealing oil, oil distillates, light hydrocarbons or hazardous fluids. The bushing also provides effective control of quench water piped through the gland. The seal is rated for 700 psig (48 BAR), temperature to 550° F (290° C) and a surface speed of 4,000 ft/min (20 m/sec).

The standard construction is 316 stainless steel with special alloys available on request. The cartridge design allows easy, precise installation with gland accurately centered over the pump sleeve by a close fitting lock ring. The stationary seal ring is supported by a graphite cushion to minimize distortion at high pressures. The non-clogging rotary seal ring locates springs and drive lug out of pumped fluid.

Chesterton is offering a free bulletin that gives complete information and a cutaway diagram of the seal. For a copy,

Circle 25 on Reader Service Card

Japan Radio Introduces Two New Products—GSC-80 ODARS And JLR-4000 GPS Navigator

Japan Radio Co., Ltd. (JRC) of Tokyo, Japan, has introduced two new products, the JLR-4000 GPS Navigator, and the GSC-80 ODARS (On-Board Data Automatic Recording System).

The GPS/NAVSTAR (Global Positioning System/NAVigation System with Timing and Ranging) system is a completely new system that will use 18 satellites to pinpoint the three-dimensional position and speed of any object in the air, on the land or on the sea, anyplace in the world in real time with great accuracy. The system, now being developed in the USA, can use seven satellites, now in orbit. This allows the measurement of positions for about three to five hours a day. Twenty-four-hour service will be available throughout the world in about 1987.

According to Japan Radio Co. president **Koji Matsui,** the GPS receiver prototype was completed in June 1982, passing a series of careful tests in Japan. Since then, the design has been refined to make the product more compact and more suitable for users in the general aviation, marine shipping and automobile circles. Evaluation testing proved to be entirely satisfactory.

The GPS navigator is said to be one of the most compact, lightweight navigators in the world. Other features are:

One-Channel Receiving by Unique Time-Sharing—Since the GPS navigator receives radio signals from four satellites to measure a position, four or five receiving channels would normally be required. However, the unique time-sharing system JRC has developed allows the receiver to receive the signals from all four satellites on a single channel for instant position fixing.

Navigator with Various Functions—This GPS receiver determines not only latitude, longitude, elevation, speed and bearing—the basic functions—but it can also indicate such navigational data in memory as destination, bearing and distance to destination, required time to it, off-course alarm, and so forth.

Many Options—Many powerful optional units, such as a color plotter for color track display, a hard-copy printer for printout of various data, and a remote display unit for displaying the navigational data in a remote place can be connected to the GPS navigator.

The JRC ODARS has been developed to meet the recent demand for automated data communications through the INMARSAT system from ship to shore. The ODARS is an automatic data reporting system to collect various types of onboard data and to automatically transmit the newest data to the shipowner's office on shore through the INMARSAT telex link.

The GSC-80 consists of a multi-data interface (MDI) and a telex channel interface (TCI) which are connected to an existing or new INMARSAT ship earth station.

The GSC-80 can provide data transmissions to shore in the following three modes:

(1) Fully automatic data transmission on a time schedule (up to six times per day) without intervention by the operators on the ship and at the shipowner's office.

(2) Semiautomatic data transmission through manual operation of a registered telex terminal at the shipowner's office. (Polling mode to ensure data secrecy.)

(3) Manual data transmission through manual operation of the ODARS onboard.

The onboard data received at the shore office is analyzed and processed to send a relevant sailing plan to the ship.

For further literature containing full information on the JLR-4000 GPS Navigator and the GSC-80 ODARS from Japan Radio,

Circle 70 on Reader Service Card

FOR MORE INFORMATION
ON
EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

CIRCLE THE APPROPRIATE NUMBER ON READER SERVICE CARD OPPOSITE

ADVERTISER	EQUIPMENT /SERVICE	CIRCLE NO.
ADVANCED STRUCTURES	PANELS/DOORS	245/246
ADAMS & PORTER	INSURANCE	164
AMERICAN LIGURIAN CO.	FUEL INJECTION	205
AMERICAN METAL BEARING	RUBBER STAVE	157
AMERICAN PIPING PRODUCTS	LINE BLINDS	117
AMERON	COATINGS	138
ANALYSIS & TECHNOLOGY	FINANCIAL MANAGEMENT	339
AQUAFACTS	PROPELLER POLISHING	150
ASEA STAL	BOILER MAINTENANCE	211
ATKINSON DYNAMICS	COMMUNICATIONS	142
BAILEY	MARINE FURNITURE	281
BATH IRON WORKS	VESSEL CONSTRUCTION/REPAIR	140
BAY SHIPBUILDING	VESSEL CONSTRUCTION	341
BEAVER TOOLS	RIGGER FORMING VISES	232
BIOSPHERICS	OIL-IN-WATER METER	113
BMV MASKIN	DIESEL ENGINES	145
BOILER TUBE CO. OF AMERICA	BOILERS	170
BORG-WARNER	AIR CONDITIONING/REFRIGERATION	342
BOSTON WHALER	WORK BOATS	111
CANADIAN CONSULATE GENERAL	MARINE TECHNOLOGY	101
CANTINI NAVALI	SHIP REPAIR	181
CENTRICO	FUEL PURIFYING	175
CENTURION INDUSTRIES MARINE	MARINE CHAIR	206
CINCINNATI GEAR	MARINE GEARS	301
CMC COMMUNICATIONS	COMMUNICATIONS	114
COLT	DIESEL ENGINES	168
COLUMBIAN BRONZE	PROPELLERS/DUCTED SYSTEMS	284
COMSAT/TELESYSTEMS	COMMUNICATIONS	350
COOLIDGE STONE VICKERS	PROPELLERS	198
CRAWFORD	TUBE FITTINGS	102
CUMMINS ENGINE	ENGINES	249
CUNARD LINE LIMITED	CUNARD LINES	311
CURACAO DRYDOCK	CONVERSIONS/REPAIR	231
CURTIS BAY	TOWING	261
DEL GAVIO	HYDRAULICS	340
DURACOTE	NOISE CONTROL	271
ENGELHARD CORPORATION	CORROSION COATING	295
ENVIROVAC	SEWAGE TREATMENT	200/327
ESGARD	CORROSION COATINGS	152
FLAKT AB	CLIMATE CONTROL	105
R.W. FERNSTRUM	GRID COOLERS	273
FERROUS CORPORATION	FUEL ECONOMY	314
FLEET DATA	DATA SERVICE	105
FORMICA	FIRE RATED LAMINATE	132
FRED DEVINE	TOWING/SALVAGE SERVICE	212
FRITZ CULVER	SEWAGE EJECTORS	174
GIBBS & COX	NAVAL ARCHITECTS	122
GRASSO	REFRIGERATION EQUIPMENT	124
HARDWARE SPECIALTY	FASTENERS	280
HARVEY'S COMMERCIAL MARINE	EXPOSURE SUITS	184
HAYNES	FUEL SYSTEMS	251
HBC BARGE	BARGE BUILDERS	277
HELESHAW	HYDRAULICS	302
HEMPEL'S PAINT	CORROSION PROTECTIVE	324
HENSCHEL	BELL LOGGER	161
HIGH STRENGTH QA STEEL	SHIP STEEL	107
HOSE-MCANN	TELEPHONES	299
HOUSTON SHIP REPAIR	REPAIR/CLEANING	129
HYDRO-CRAFT	SERVO TESTER	165
HYDROCOMP	MARINE SOFTWARE PROGRAMS	196
IMPERIAL MANUFACTURING	SURVIVAL SUITS	121
INGALLS SHIPBUILDING	VESSEL CONSTRUCTION	139
INTERTRADE	FENDERS	188
INVENTIVE MACHINE	BLAST N' VAC	194
JAMESBURY CORPORATION	VALVES	286
JIMS PUMP REPAIR	PUMP REPAIR	130
JOHNSON RUBBER	RUBBER PRODUCTS	241/242/ 243/244
KEARFOTT MARINE	WINDOWS/DOORS	226
KLOCKNER HUMBOLDT DEUTZ	ENGINEERING/PROPULSION	230
KNIGHTS PIPING	PIPING SYSTEMS	173
KRUPP ATLAS	RADAR	169
MARINE MOISTURE CONTROL	LIQUID LEVEL	318
MARINE SAFETY	MARINE SIMULATION	191
MARITIME POWER	MARINE EQUIPMENT	220
MARITIME PROTECTION	INERT GAS SYSTEMS	131
MARKEY MACHINERY	TOWING/TRANSPORTATION	331
MARLO COIL	FANS	291
MARINETTE MARINE	VESSEL CONSTRUCTION	112
MASONITE	JOINER PANELS	110
MCALLISTER	TOWING/TRANSPORTATION	313
MCCAUSEY LUMBER	MARINE LUMBER	253
MECHANICAL RESOURCES	REFRIGERATION EQUIPMENT	344
MICHIGAN WHEEL	NOZZLE/RUDDER SYSTEM	154
MIDLAND-ROSS	MARINE LIGHTING	177
L.Q. MOFFITT	BEARING STAVES	315
MORAN TOWING	TOWING/TRANSPORTATION	176
MOTEURS BAUDOUIN	PROPULSIVE SYSTEMS	118
MURDOCK ENGINEERING	TENSION COMPENSATOR	250
MURRAY TUBE WORKS	BOILERS	170
NASSCO	VESSEL CONSTRUCTION	123
NATIONAL MARINE	OVERHAUL/REBUILD/REPAIR	310
NAV-COM	COMMUNICATIONS	147
NEORION SHIPYARD	VESSEL REPAIR	125
J.O. NEUHAUS	AIR HOISTS	204
NEWPORT NEWS SHIPBUILDING	VESSEL CONSTRUCTION/REPAIR	185
NKS INDUSTRIA PEDADA	CASTING/FORGINGS	323
PARKER HANNIFIN	VALVES	128
W.W. PATTERSON	TENSIONER	192
PEARLSON ENGINEERING	SHIP LIFT SYSTEM	115
PENNSYLVANIA SHIPBUILDING	VESSEL CONSTRUCTION/REPAIR	171
PHILIPPINE SHIPYARD	VESSEL CONSTRUCTION/REPAIR	322
PHOENIX	LIGHTING	172
RACAL MARINE	COMMUNICATIONS	133
RADIO HOLLAND	COMMUNICATION	189
RAYTHEON SERVICE	COMMUNICATION	197
RILEY-BEAIRD	DESALINATORS/SILENCERS	202
ROBINSON FANS	FAN REPAIR	335
S.P. RADIO	COMMUNICATION	247
SAMSUNG SHIPBUILDING	VESSEL CONSTRUCTION/REPAIR	159
SEA-SLIDE	DRAG REDUCING OVERCOAT	141
SEACOAST ELECTRIC	ELECTRICAL EQUIPMENT	116
SENIOR GREEN	BOILERS	170
SHIP ANALYICS	SIMULATORS	224
SIGNET	SHIPPING	210
STACEY/FETTEROLF	LINE BLINDING	186
STAL REFRIGERATION	AIR-CONDITIONING	223
STOCKHAM VALVES & FITTINGS	VALVES & FITTINGS	156
STRIDER-RESOURCE	LIFTING CLAMPS	137
SUDERMAN & YOUNG	TOWING	201
TAMPA SHIPYARDS	VESSEL CONSTRUCTION/REPAIR	345
TELEDYNE HASTINGS-RAYDIST	SHIP TESTING	126
TEXACO	LUBRICANTS	290
THERMAL REDUCTION	ZINK ANODES	127
THOMSON GORDON LIMITED	BEARINGS	216
TOTAL TRANSPORTATION SYSTEMS	LIFT/TRANSFER SYSTEMS	151
TRANSAMERICA DELAVAL	LEVEL EQUIPMENT	347/348/ 349
TRIMBLE NAVIGATION	NAVIGATION	330
UNITED TECHNOLOGIES/CARRIER TRANSICOLD	AIR CONDITIONING	203
VERSATILE PACIFIC	VESSEL CONSTRUCTION/REPAIR	240
VIKING LIFE SAVING	LIFE-SAVING EQUIPMENT	218
J.M. VOITH	MARINE ENGINEERING	119
WALTER KIDDE	FIRE PROTECTION	309
WALZ & KRENZER	DOORS & CONTROLS	215
WARREN PUMPS	PUMPS	109
G.J. WORTELBOER	ANCHORS/WINCHES/CHAINS	321
ZIDELL	BARGES	221

BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 20 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. **If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.**

AIR COMPRESSORS
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Squire-Cogswell Company, 3411 Commercial Ave., Northbrook, IL 60062

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Bailey Refrigeration Co., Inc, 2323 Randolph Avenue, Avenel, NJ 07001
Flakt AB, Box 8862, S-40272, Gothenburg, Sweden
Stal Refrigeration AB, Butangsgatan 16, S 601 87 Norrkoping, Sweden
Carrier Transicold Division, Carrier Corp., P. O. Box 4805, Syracuse, NY 13221

ANCHORS AND CHAIN
Baldt Incorporated, P.O. Box 350, Chester, PA 19016
G.J. Wortelboer Jr. B.V., Eemhavenstraat 4, P.O. Box 5003, 3008 AA Rotterdam, Netherlands

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
Thermal Reduction Company, 1 Pavilion Avenue, Riverside, NJ 08075
Wilson, Walton International, Inc., 66 Hudson St., Hoboken, NJ 07030

BALLASTS
Genstar Stone Products Co., Executive Plaza IV Hunt Valley, MD 21031

BASKET STRAINERS
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

BEARINGS—Rubber, Metallic, Non-Metallic
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, OH 44309
Norton Chemplast, 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, WI 53186

BLASTING—Cleaning—Equipment
Butterworth Inc. (USA), 3721 Lapas Dr., P.O. Box 18312, Houston, TX 77223-9989
Butterworth Systems (UK), 123 Beddington Lane, Croydon CR9 4NX, England
E.I. DuPont De Nemours & Co., Inc., Starblast Division, Room X39186, Wilmington, DE 19898
Inventive Machine Corp., P.O. Box 369, Bolivar, OH 44612
Key Houston Division of Jacksonville Shipyards, 13911 Atlantic Blvd., Jacksonville, FL 32225

BOILERS
Combustion Engineering, Inc., 1000 Prospect Hill Road, Windsor, CT 06095
Industrial Engineering & Equipment Co., 425 Hanley Industrial Ct., St. Louis, MO 63144
Murray Tube Works, P.O. Drawer 517, Lyman, SC 29365
Senior Green Economizers, P.O. Drawer 517, Lyman, SC 29365

BOILER CLEANING
Asea Stal, 50 Chestnut Ridge Rd., Montvail N.J. 07645

BROKERS
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, LA 70153
ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401
Mowbray's Tug & Barge, 21 West St., New York, NY 10006
Western Maritime, 701 B Street, San Diego, CA 92101

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
MacGregor-Navire International, Box 8991, S-402 74 Goteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016

CASTINGS/FORGINGS
NKS Industria Pesada, Grupo Industrial, Reforma 404, 140 Piso, Mexico, D.F. 06600 U.S. REP.—Lexington International Trading, Inc., 551 Fifth Ave., Room 910, New York N.Y. 10017

CHOCKING SYSTEMS
Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, PA 18936

CLOSURES—Marine
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
Military Contract Information Service, Inc. Dist. by Maritime Reporter/Engineering News, 118 East 25 St. N.Y. N.Y. 10010
TIMSCO, 622 Azalea Rd., Mobile, AL 36609
Veson Systems, 29 Broadway, Suite 1002, New York, NY 10006

CONDENSERS
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

CONTROL SYSTEMS—Monitoring
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
ASEA, Inc., 4 New King St., White Plains, NY 10604
Barringer Research, 304 Carlingview Dr., Rexdale, Ontario, Canada M9W 5G2
Biospherics Inc., 4928 Wyaconda Rd., Rockville, MD 20852
Cooper Energy Services, Mount Vernon, OH 43050
Ergon, Inc., P.O. Drawer 1639, Jackson, MS 39205
Failsafe Motor/Generator Protector, Marine Safe Electronics Ltd., 101 Jardin Dr., Unit 24/25, Concord, Ontario, Canada L4K 1B6
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 Safe Electronics, 37 Staffern Drive, Concord, Ontario, Canada, L4K 2X2
Pandel Instruments Inc., 2100 N. Hwy. 360, Grand Praire, TX 75050
Propulsion Systems, Inc., 21213 76 Ave., Kent, WA 98032
Teleflex Inc., 771 First Ave., King of Prussia, PA 19406
Thomas Products Ltd., Flow Switch Div., 987 West St., Southington, CT 06489-1023
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
Valmet Automation A.S., P.O. Box 130, N-3430, Spikkestad, Norway

CRANE BUMPERS
Kastalon Inc., 4101 West 123rd St., Alsip, IL 60658

CRANES—HOISTS—DERRICKS—WHIRLEYS
Allied Marine Crane, P.O. Box 23026, Portland, OR 97233
Appleton Marine, P.O. Box 2339, Appleton, WI 54913
ASEA Hagglunds Inc., P.O. Box 7949, The Woodlands TX 77380
Davit Sales, Inc., P.O. Box 232, Jefferson Valley, NY 10535
HIAB Cranes & Loaders Inc., 258 Quigley Boulevard, New Castle, DE 19720
Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235
J.D. Neuhaus, Hebezeuge, D5810, Witten Heven, West Germany
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202

DECK MACHINERY—Cargo Handling Equipment
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, WA 98134
McElroy Machine & Mfg. Co., Inc., Lorraine Rd., Industrial Seaway, Gulfport, MS 39501
Schoellhorn Albrecht, Div. of St. Louis Ship, 3460 So. Broadway, St. Louis, MO 63118

DECKING—GRATING
Alligned Fiber Composites, Highway 52, South Chatfield, MN 55923
International Grating, 7625 Parkhurst, Houston, TX 77028
Selby, Battersby & Company, 5220 Whiby Ave., Philadelphia, PA 19143

DIESEL ACCESSORIES—CYLINDER LINERS
Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360
Haynes Corporation, P.O. Box 179, Jackson, MI 49204
Illman Jones, 1111 Green Island Rd., American Canyon, CA 94589
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637
Transamerica Delaval Engine & Comp. Div., 550 85th, Oakland, CA

DIESEL ENGINE—Spare Parts & Repair
Alban Engine Power, Inc., 6455 Washington Blvd., Baltimore, MD 21227
Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Caterpiller Tractor Co. 100 N.E. Adams Street, Peoria, IL 61629-2325
Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511
Cummins Engine Co., Inc., Mail Code 40642, Box 3005 Columbus, IN 47202-3005
Goltens, 160 Van Brunt Street, Brooklyn, NY 11231
Granges Repair Service GMBH, Gutenbergring, 64 D-2000 Hamburg-Norderstedt TX:0215553
Schoonmaker Service Parts Co., Inc., P.O. Box 757, Foot of Spring St., Sausalito, CA 94966
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637
Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166
Transamerica Delaval Engine & Comp. Div., 550 85th, Oakland, CA
Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647

ELECTRICAL EQUIPMENT
Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039
Newmar, P.O. Box 1306, Newport Beach, CA 92663
Sigmaform Corporation, P.O. Box 515, Richboro, PA 18954
Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637
Ward Leonard Electric Co., 31 South St., Mt. Vernon, NY 10550
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, OR 97201

ELECTRONIC SYSTEMS
Marine Electric RPD, Inc., 666 Pacific St., Brooklyn, NY 11217 TX: 125327

EMULSIFICATION SYSTEMS
Cleanodan A/S, N. American Agents, American United Marine Corp., 5 Broadway, Route 1, Saugus, MA 01906
Cove Shipping, Inc., Wall Street Plaza, New York, NY 10005
S/S Research & Development Inc., 1050 State St., Perth Amboy, NJ 08862
Todd Marine Systems, 61 Taylor Reed Place, Stamford, CT 06906

ENGINE TEST EQUIPMENT
General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth, MA 02360

EQUIPMENT—Marine
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94083
ASEA Hagglunds Inc., P.O. Box 7949, The Woodlands TX 77380
Band-It Division, Houdaille Industries, Inc., P.O. Box 16307, Denver, CO 80216
Beaver Tool Co., 1525 SE 29th St., Box 94717, Oklahoma City, OK 73143
Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202
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 Co., Executive Plaza IV, Hunt Valley, MD 21031
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, NY 10550
Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302
Nicolai Joffe, P.O. Box 5362, 9171 Wilshire Blvd., Beverly Hills, CA 90210
Raytheon Service Co., 100 Roesler Rd., Suite 103, Glen Burnie, MD
Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749
Viking Life Saving Equipment, 3305 N.W. 37th Street, Miami, FL 33142
Waterman Supply Co., Inc., 2815 E. Anaheim Street, P.O. Box 596, Wilmington, CA 90748

EVAPORATORS
Alfa-Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Aqua-Chem Inc., P.O. Box 421, Milwaukee, WI 53201
Atlas-Danmark Marine & Offshore, Baltorpvej 154, KD-2750 Bllerup, Copenhagen DENMARK
Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

FANS—VENTILATORS—BLOWERS
American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906
Hartzell Fan Company, 901 Downing Street, Piqua, OH 45356
Joy Manufacturing Company, 338 So. Broadway, New Philadelphia, OH 44663
Jon M. Liss Associates, Inc., 411 Borel Ave., P. O. Box 5554, San Mateo, CA 94402

FASTENERS
Hardware Specialty Co., Ships Division, 48-75 36th St., Long Island City, NY 11101
Sales Systems Limited,7006, 700 Florida Ave., Portsmouth, VA 23707

FENDERING SYSTEMS—Dock & Vessel
InterTrade Industries, 15301 Transistor Lane, Huntington Beach, CA 92649
Johnson Rubber Co., Duramax Marine Div., 16025 Johnson St., Middlefield, OH 44062
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, VA 22044

FILTERS
Dahl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307
Parker Filter Division, 16810 Fulton County Road, #2, Metamora, OH 43530

FINANCING—Leasing
Gulf Western Leasing Corp., 1500 City West Blvd., Suite 300, Houston, TX 77047
JMJ Marine Investors, P.O. Box 51509, New Orleans, LA 70151

FIRE PROTECTION, DETECTION & ALARM SYSTEMS
Walter Kidde, Walter Kidde Dr., Wake Forest, NC 27586

FUEL OIL/ADDITIVES—Analysis & Combustion Testing
Ferrous Corporation, 910-108th N.E., P.O. Box 1764, Bellevue, WA 98009
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
McTigue Industries Inc., 1615 9th Ave., Bohemia, NY 11716

FURNITURE
Bailey, Carpenter & Insulation Co., 2323 Randolph Avenue, Avenel, NJ 07001
Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

GALLEY EQUIPMENT
Insinger Machine Co., 6245 State Rd., Philadelphia, PA 19135

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

HATCH & DECK COVERS—Chain Pipe
MacGregor-Navire Internatinal, Box 8991, S-402 74 Goteborg, Sweden
MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016
Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

GAUGES
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062

HEAT EXCHANGERS
Alfa-Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Industrial Engineering & Equipment Co., 425 Hanley Industrial Ct., St. Louis, MO 63144
Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130
Riley-Beaird, P.O. Box 31115, Shreveport, LA 71130

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

HULL CLEANING
Aurand 1270 Ellis Street, 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
Petroferm Marine, Route 2, Box 280, Amelia Island, FL 32034
Phosmarine Equipment, 21 Bd. de Paris, 13002, Marseille, France
Seaward Marine Service, Inc., 201 N. Union Street, Alexandria, VA 22314
Seaward Marine Service, Inc. 5409 Beamon Rd., Norfolk, VA 23513 TX: 710-881-1182
Seaward Marine Service, Inc. 424 West 8th Street, National City, CA 92050
Taylor Diving & Salvage Co. Inc., 701 Engineers Rd., Belle Chasse, LA 70037

HYDRAULICS
Aeroquip Corp., 1130 Maynard Road, Jackson, MI 49202
Bardex Hydranautics, 6338 Lindmar Dr., P.O. Box 1068, Goleta, CA. 93116
Cunningham Marine Hydraulics Co., Inc., 201 Harrison St., Hoboken, NJ 07030; 2030 E. Adams St., Jacksonville, FL 32204, TX: 710-730-5224
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Del Gavio Marine Hydraulics Inc., 207 W. Central Ave., Maywood, NJ 07607
Hydra-Dynamics, Inc., 2141 Greenwood Ave., Wilmette, IL 60091
Parker Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
Washington Chain & Supply, Inc., P.O. Box 3646, Seattle, WA 98124

INERT GAS—Generators—Systems
Maritime Protection A/S, N. American Agents, American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906

INSULATION—Cloth, Fiberglass
Bailey, Carpenter & Insulation Co., 2323 Randolph Avenue, Avenel, NJ 07001
Duracote Corp., 350 North Diamond St., Ravenna, Ohio 44266
Superior Energies, Inc. P.O. Drawer 386, Groves, TX 72619

INSURANCE
Adams & Porter, 510 Bering Dr., Houston, TX 77057-1408
Adams & Porter, 1 World Trade Center, Suite 8433, New York, NY 10048
Wm. Keith Hargrove, Inc., 1300 Post Oak Blvd., Suite 2050, Houston, TX 77056
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
Astech, 3030 S. Red Hill Ave., Santa Ana, CA 92711
Bailey Distributors, Inc., 2323 Randolph Avenue, Avenel, NJ 07001
Masonite Commercial Division, Dover, OH 44622
Megadoor Inc., 441 Lexington Ave., Suite 903, New York, NY 10017
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
Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039
Perko Inc., P.O. Box 6400D, Miami, FL 33164
Phoenix Products Company, Inc., 4769 North 27th Street, Milwaukee, WI 53209

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

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
A-C Brake Co., 308 E. College St., Louisville, KY
CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030
Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202
Jered Brown Brothers Inc., 1300 Coolidge, P.O. Box 2006, Troy, MI 48007

American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94080
Goltens, 160 Van Brunt St., Brooklyn, NY 11231
Rosan, Inc., 2901 West Coast Hwy., Newport Beach, CA 92663

METALS
Bayou Steel Corp., P.O. Box 5000, Laplace, LA 70068

MINING
Rocky Mountain Energy, 10 Longspeake Dr., Box 2000, Broomfield, CO 80020

NAME PLATES—BRONZE—ALUMINUM
Duramax Metals, Inc., 2401 Wesley Street, Portsmouth, VA 23707

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
ACB Industries, 3400 Camp Street Suite 100, New Orleans, LA 70130
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
Aero Nav Laboratories, Inc., 14-29 112 St., College Point, NY 11356
American Hydromath Inc., Box 2450, Danby-Pawlet Road, Pawlet, VT 05761
American Systems Engineering Corp., P.O. Box 4265, Virginia Beach, VA 23454
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 Wesbrook Mall, Vancouver, B.C. Canada V6S 2L2
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
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 Cartner & Co., Inc., 203 So. Union St., Alexandria, VA 22314
Century Engineering, inc., 32 West Rd., Towson, MD 21204
Childs Engineering Corp., Box 333, Medfield, MA 02052
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, MA 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, WA 98148
C.R. Cushing, 18 Vesey St., New York, NY 10007
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
Capt. R.J. Fearson & Associates, P.O. Box 983, Tampa, FL 33601
Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, NY 11050
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 Colmon 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., 40 Exchange Place, New York, NY 10005
Hi-Test Laboratories, Inc., P.O. Box 226, Buckingham C.H., VA 23921
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
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, MD 21227
James S. Krogen & Co., Inc., 3333 Rice St., Miami, FL 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, NY 10048
McLear & Harris, Inc., 28 West 44 Street, New York, NY 10036
Fendall Marbury, 1933 Lincoln Drive, Annapolis, MD 21401
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, OH 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, NY 11746
Marine Technical Associates, Inc., 95 River Rd., Hoboken, NJ 07030
Maritime Design, Inc., 2955 Hartley Rd., Jacksonville, FL 32217
George E. Meese, 194 Acton Rd., Annapolis, MD 21403
R. Carter Morrell, 715 S. Cherokee, Bortlesville, OK 74003
NKF Engineering Assoc., Inc., 8150 Leesburg Pile, Vienna, VA 22202
Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169
Nickum & Spaulding Associates, Inc., 2701 First Ave., Seattle, WA 98121
Northern Marine, P.O. Box 1169, Traverse City, MI 49685
Ocean-Oil Internatinal 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, FL 33156
S.L. Petchul, Inc., 1380 S.W. 57th Avenue, Fort Lauderdale, FL 33317
Q.E.D. Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455
M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105
Sargent & Herkes Inc., 611 Gravier St., New Orleans, LA 70130
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, FL 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 Systems, Inc., 28 Main St., Essex Ct. 06426; 17 Battery Place, N.Y. N.Y. 10004, P.O. Box 205, Solomons, MD 20688
Seaworthy Electrical Systems, 17 Battery Pl. N.Y. N.Y. 10004
George G. Sharp, Inc., 100 Church St., New York, NY 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
Thomas Coudon Associates, 6655 Amberton Drive, Baltimore, MD 21227
Timsco, 622 Azalea Road, Mobile, AL 36609
Tracor Hydronautics, Inc., 7210 Pindell School Rd., Laurel, MD 20707
Thomas B. Wilson, Associates, 1258 North Avalon Blvd., Wilmington, CA 90744

NAVIGATION & COMMUNICATIONS EQUIPMENT
Atkinson Dynamics, Section 6, 10 West Orange Ave., South San Francisco, CA 94080
British Telecom International, The Holborn Centre, 120 Holborn, London EC1N 2TE
CMC Communications Inc., 5479 Jetport Industrial Blvd., Tampa, FL 33614
COMSAT World Systems, 950 L'Enfant Plaza, S.W., Suite 6151 Washington, DC 20024
A/S Elektrisk Bureau, P.O. Box 98, N-1360 Nesbru, Norway
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
General Electric Company, Mobile Communications Division, Lynchburg, VA 24502
Harris Communications (RF Communications), 1680 University Avenue, Rochester, NY 14610
Henschel, 9 Hoyt Drive, Newburyport, MA 01950
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
ITT Mackay, 441 U.S. Highway #1, Elizabeth, NJ 07202
Japan Radio Co., Ltd., Akasaka Twin Tower, 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, Japan U.S. Rep: 405 Park Ave., New York, NY 10022
Kongsberg North America Inc., 400 Oser Ave., Hauppauge, NY 11738
Kongsberg Vopenfabrikk, Norcontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Atlas-Elektronik, 1453 Pinewood St., Rahway, NJ 07065
Micrologic, 20801 Dearborn, Chatsworth, CA 91311
Nav-Com, Inc., 9 Brandywine Drive, Deer Park, NY 11729
Navigation Sciences Inc., 6900 Wisconsin Ave., Bethesda, MD 20815 TX: 705999
Perko Inc. (Lights), P.O. Box 6400D, Miami, FL 33164
Racal Marine Inc., 1 Commerce Blvd., Palm Coast, FL 32037-0029
Radio-Holland USA, Inc., 6033 South Loop East, Houston, TX 77033
Raytheon Marine Co., 676 Island Pond Road, Manchester, NH 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Robertson Autopilot, 400 Oser Ave., Happauge, NY 11738
S.P. Radio A/S, DK 9200 Aalorg, Denmark
Sperry Corporation, Great Neck, NY 11020
Standard Communications, P.O. Box 92151, Los Angeles, CA 90009
Telesystems, 2700 Prosperity Ave., Fairfax, VA 22031 USA
Texas Instruments, Inc., P.O. Box 405, 3438, Lewisville, TX 75067
Tracor Instruments Austin Inc., 6500 Tracor Lane, Austin, TX 78725

OILS—Marine—Additives
Exxon Company, U.S.A., Room 2323 AH, P.O. Box 2180, Houston, TX 77701
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil, New York District Soles 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
Texaco, Inc. (International Marine), 135 East 42nd St., New York, NY 10017

OILY WATER ALARMS/MONITORS
Biospherics, Inc., 4928 Wyaconda Road, Rockville, MD 20852

OIL/WATER SEPARATORS
Alfa Laval, Inc., Dept. MR-2, 2115 Linwood Ave., Fort Lee, NJ 07024
Butterworth Inc. (USA), 3721 Lapas 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
Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127
Hyde Products, Inc., 810 Sharon Dr., Westlake, OH 44148
NALCO Chemical, Co., 2901 Butterfield Road, Oak Brook, IL 60521
Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062
Peck Purifier Sales Co., 3724 Cook Blvd., Chesapeake, VA 23323
Sigma Treatment System, Merry Meadows RD 1 Box 70, Chester Springs, Pa 19425

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
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
DuPont Co. MPS , Room X40750, Wilmington, DE 19898
Esgard, Box 2698, Lafayette, LA 70502
Farboil Company, 8200 Fischer Rd., Baltimore, MD 21222
Hempel Marine Paints, Inc., Foot of Currie Ave., Wallington, NJ 07057; 6868 NorthLoop East, Suite 304, Houston, TX 77028; P.O. Box 10265, New Orleans, LA 70181
International Paint Company, Inc., 2270 Morris Avenue, Union, NJ 07083
Joegle Paint Company, Inc., 1012 Darby Road, Havertown, PA 19083
Jotun Marine Coatings Inc., 175 Penrod Court N&O, Glen Burnie, MD 21061
Magnus Maritec International Inc., 150 Roosevelt Pl., P.O. Box 150, Palisades Park, NJ 07650
Products Research & Chemical Corp., 5454 San Fernando Rd., Glendale, CA 91203
Selby Battersby & Co., 5220 Whitby Ave., Philadelphia, PA 19143

PIPE-HOSE—Cargo Transfer Clamps, Couplings, Coatings
Amermarine International, P.O. Box 9205, Dundalk, MD 21222
Deutsch Metal Components, 14800 S. Figueroa St., Gardena, CA 90248
Hydro-Craft Inc., 1821 Rochester Industrial Dr., Rochester, MI 48063
Knights Piping Inc., 5309 Industrial Road, Pascagoula, MS 39567
Tioga Pipe Supply Co. Inc., 2450 Wheatsheaf La., P.O. Box 5997, Philadelphia, PA 19137

PLASTICS—Marine Applications
Hubeva Marine Plastic, Inc., 390 Hamilton Ave., Brooklyn, NY 11231
Norton Chemplast, 309-150 Dey Rd. Wayne NJ 07470

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Amarillo Gear Co., P.O. Box 1789, Amarillo, Texas 79105
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., 2110-10 Service Rd., Kenner, LA 70062
Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Caterpillar Engine Division, 100 N.E. Adams, Peoria, IL 61629
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, CT 06095
Coolidge-Stone Vickers, Inc., 56 Squirrel Rd., Auburn Hills, MI 48057
Daihatsu Diesel (USA) Inc., 180 Adams Ave., Hauppauge, NY 11788
Deutz Corp., 7585 Ponce de Leon Circle, Atlanta, GA 30340
Elliott Company, 1809 Sheridan Ave., Springfield, OH 45505
George Engine Company, Inc., Lafayette, LA
General Motors, Electro-Motive Division, LaGrange, IL 60525
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231
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
Lips Propellers, 3617 Koppens Way, Chesapeake, VA 23323
M.A.N.-B&W Diesel, 2 Ostervej, DK-4960 Holeby, 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
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Mitsubishi Kakoki Kaisha LTD, Mita Kokusai Bldg. 4-28 Mita 1-chome, Minato-ku Tokyo 108 Japan
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North American Marine Jet P.O Box 1232 Benton, AR 72015
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Tech Development Inc., 6800 Poe Ave., P.O. Box 14557, Dayton, OH 45414
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Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647
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Tubbs Cordage Co., P.O. Box 7986, San Francisco, CA 94120-7986
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Avondale Christens First Of Five Fleet Oilers Building For Navy

Principals in Christening of the Kaiser included (L to R): Capt. **William Pfister,** USN; **F. Joseph Haydel,** vice president and general manager-raw materials, Kaiser Aluminum & Chemical Company; Capt. **Paul D. Hurst,** USN, Supervisor of Shipbuilding-New Orleans; Mrs. **William N. Small,** sponsor; **Albert L. Bossier Jr.,** president of Avondale; flower girl **Staci Ann Bolden;** Hon. **Jennings Randolph,** retired U.S. Senator from West Virginia; Rep. **Lindy Boggs** of Louisiana; Adm. **William N. Small,** USN(Ret.); and Commo. **Harry K. Fiske,** USN, assistant deputy commander-surface ships, Naval Sea Systems Command.

The first in a series of five fleet oilers under construction for the U.S. Navy by Avondale Shipyards, a division of Avondale Industries, Inc., was christened USNS Henry J. Kaiser (T-AO-187) in recent ceremonies at the yard near New Orleans. Named for the late **Henry J. Kaiser,** founder of Kaiser Aluminum and Chemical Corporation and one of America's leading industrialists of this century, the vessel is scheduled for delivery in September 1986.

Mrs. **William Small,** wife of Adm. **William Small,** USN(Ret.), former Vice Chief of Naval Operations, was the ship's sponsor. Principal speaker was Hon. **Jennings Randolph,** retired U.S. Senator from West Virginia. Other speakers included Commo. **Harry K. Fiske,** USN, assistant deputy commander, surface ships, Naval Sea Systems Command; U.S. Representative **Lindy Boggs,** (D-LA); and Adm. **Small.**

The Kaiser and the other four vessels in this new class of fleet oilers are being constructed using state-of-the-art techniques for prefabricated modules. Large modular units are assembled and outfitted with piping, ventilation ducts, electrical wireways, and other equipment in various zones of the shipyard. Then they are moved to the building site and erected. Pre-packaged units of heavy machinery are also assembled ashore and then lifted aboard for installation. As a result of these techniques, the Kaiser was approximately 83 percent complete at launching.

The Kaiser has an overall length of 667½ feet, beam of 97½ feet, and maximum draft of 36 feet. She is powered by twin 10-cylinder, medium-speed Colt/Pielstick PC4.2 diesel engines, and will be capable of a service speed of 20 knots. The twin-screw design of the T-AO-187 class provides improved directional stability, ease of control, and mission reliability under combat conditions.

The new ship has a cargo oil capacity of 183,500 barrels in 18 cargo tanks, and will be capable of simultaneously receiving, storing, and discharging two separate grades of cargo (JP-5 and DFM). All cargo pump and valve operations and the ship's segregated ballast system will be operated from the cargo control center located in the aft superstructure. This control center has an overview of the entire underway replenishment deck. Underway cargo transfer will be accomplished using transfer rigs with hoses suspended by a span wire that is automatically maintained in a constant-tension condition. The T-AO-187 class vessels are also capable of vertical replenishment from a helicopter facility aft of the accommodation house.

Avondale Shipyards division of Avondale Industries is a newly created corporation comprised of former subsidiaries of Ogden Corporation. The subsidiaries were purchased and transformed into a new corporation by employees through an Employee Stock Ownership Plan. The sale was completed in September this year.

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Chesapeake Shipbuilding Inc., 710 Fitzwater St., Salisbury, MD 21801
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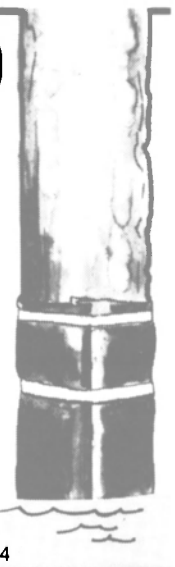

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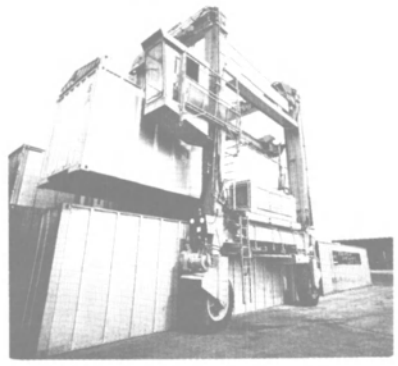

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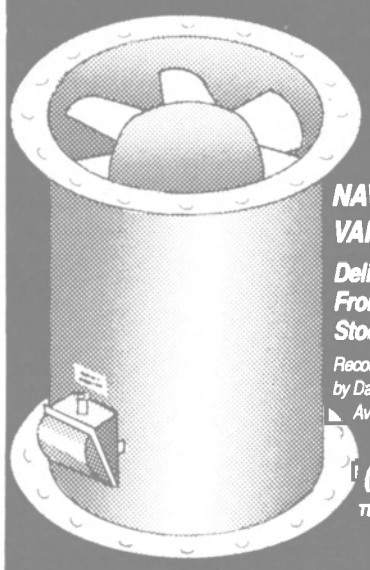

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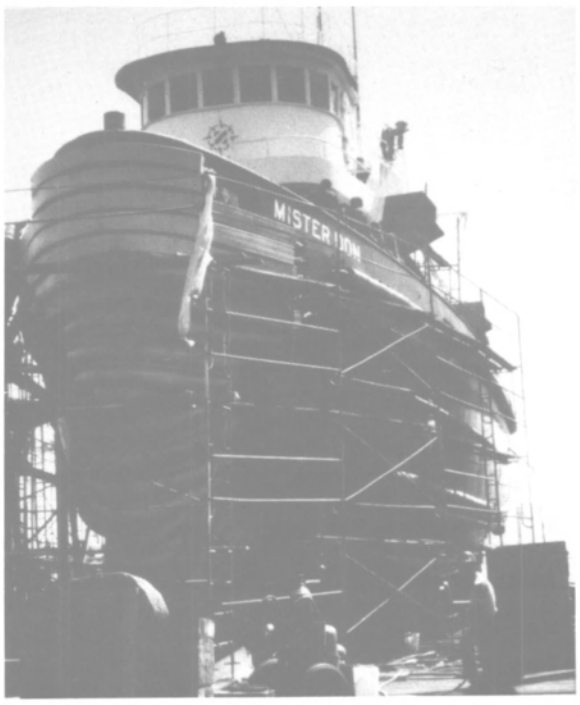
Southwest Marine Completes Successful Conversion Of 5 Zapata Gulf Marine Tugs



One of the five tugs that were drydocked at Southwest Marine to be brought up to U.S. Navy specifications.

Southwest Marine, Inc. recently finished extensive modifications on five tugs for the newly formed Zapata Gulf Marine. The tugs are part of a fleet of 325 vessels formed by the January 1985 merger of Zapata Marine, Jackson Marine and Gulf Fleet. The resulting Corporation of Zapata Gulf Marine has become one of the largest operators of oilfield services and supply vessels.

The tugs will be used for the new U.S. Navy Ship Assist contract awarded to Zapata Gulf Marine. The five tugs, Mister Randy, Mister Mike, Mister Don, Mister Marshal D. and Cheryl Anne, came from as far away as Singapore to their new port of San Diego, where they were drydocked at Southwest Marine to be brought up to U.S. Navy specifications.

The work accomplished included installation of rubber fendering, special firefighting and communications equipment, insulation of propeller guards, underwater hull preservation, and ABS certification.

Uniden® Offers Three New Electronic Aids —Literature Available

Uniden Company, Indianapolis, Ind., now has three new electronic aids available. The MC35 marine power hailer, the MC400 chart recorder and the MC300 digital depth indicator.

The Uniden MC35 marine power hailer is a powerful, 40-watt hailer with a four-station intercom, automatic foghorn with settings for international, inland and Great Lakes operation, a momentary or lock-on siren, a volume control for both foghorn and siren and a hand-held microphone. It also includes an auxiliary input for a tape player, a tuner, jack for external speaker and a terminal strip for connecting up to four speakers.

The MC35 is protected by a corrosion-resistant, high-impact plastic case and has been designed for easy use and durability. Projector horns and remote speakers that are compatible are also offered.

For literature containing further information on the Uniden MC35 power hailer,

Circle 65 on Reader Service Card

The Uniden MC400 chart recorder features convenient front panel keypad controls, an LCD display of surface temperature and water depth at a glance. It ignores annoying echoes that can make chart recordings difficult to interpret. It "knows" that only bubbles and debris rise straight up while fish rise gradually at angles.

The 4-inch chart recorder has six range scales from 0-10 feet up to 0-320 feet making it ideal for shallow water, bay and coastal shelf fishing. It also features an event marker, chart light, 200 KHz transducer, all cabling and a spare paper cassette. It is housed in a weather resistant plastic case, has adjustable mounting brackets, non-corrosive plastic latches, watertight seal gaskets and detachable power and transducer plugs for easy removal and storage.

George Rabatin, national sales manager of marine products, says the MC400 "permits the fisherman to lay the bait virtually right in the fishes mouth."

For further information on the MC400 chart recorder from Uniden,

Circle 71 on Reader Service Card

The Uniden MC300 digital depth indicator is ideal for shallow water navigation and charting. It features a continuous digital readout of water depths from zero to 300 feet and a front panel switch that allows for an audible shallow water alarm at either 5 or 10-foot water depths. The MC300 is compact, 3-⅝ inches wide by 7-¾ inches long by 2-⅝ inches high and will mount almost anywhere. It comes equipped with a 200 KHz transom-mount transducer.

For further information on the MC300 digital depth indicator,

Circle 74 on Reader Service Card

Alaska Diesel Electric's 'Lugger' Engines Chosen For New Tug

Completion of the homemade tug Max Effort fulfills a lifetime of dreams for its owner, who chose Lugger diesels after extensive research of power options.

The recent launching of the 37-foot tug Max Effort near Virginia Beach represented the culmination of 6½ years of effort on the part of the boat's creator, **Ray Emanuelson**, who designed the vessel based on a variety of tugs he saw around the boatyards of Norfolk as a youngster, and constructed it in his garage.

The hull of the Max Effort consists of three layers of 1½- by ¾-inch yellow pine overlaid with four layers of 10-ounce fiberglass. The keel area has an additional four layers of fiberglass.

A pair of Lugger diesels manufactured by Alaska Diesel Electric of Seattle were chosen for the tug, each delivering 80 hp at 2,500 rpm. The four-cycle, direct injection units are based on American-made John Deere blocks. The Lugger diesels have a simple design with many long-life features. All service points are located on one side for easy maintenance. The cast-iron, freshwater cooling system has an extra large expansion tank and liquid cooled exhaust manifolds. Wet cylinder liners provide excellent heat dissipation. They are individually replaceable for easier maintenance and less expensive overhaul.

The Max Effort weighs 14 tons and cruises at approximately 8.5 knots at 1,600 rpm. Maximum speed is above 12 knots at 2,475 rpm.

For further information on Alaska Diesel Electric's Lugger diesels,

Circle 51 on Reader Service Card

Polymer Alloy Extends Icebreaker's Propeller Shaft Bearing Life

Under severe Arctic operating conditions, a relatively new bearing material has outlasted traditional laminated-phenolic propeller shaft bearings by a ratio of about nine to one. The longer-lasting bearing was made from Thordon XL, an alloy of polymer and synthetic rubber, manufactured by Thomson-Gordon Limited of Burlington, Ontario, Canada.

These findings were verified by the U.S. Coast Guard following two seasons of testing aboard the 9,500-ton Polar Sea, one of the service's largest icebreakers, which operates in the Antarctic and East and West Coast Arctic waters. These operations are exceptionally hard on propeller shaft bearings. They required annual replacement because of the pounding they take due to frequent impact with ice. The traditional bearings lacked the impact loading and deflection capabilities required for the job.

On the advice of Lockheed Shipbuilding of Seattle, which had some experience with Thordon bearings, the Coast Guard agreed to a comparison test of the traditional material with the new. In July of 1983, a new laminated phenolic, micarta bearing was installed in the Polar Sea's starboard propeller shaft, while a Thordon XL bearing was fitted in the identical port shaft. Though both shafts were nomically 36 inches OD, careful measurements were taken of each finished bearing ID and of initial bearing/shaft clearances. The Polar Sea then took up her customary schedule of duties.

One year later, clearance readings were taken at Todd's Seattle shipyard by **Terp Christianson**, outside machinist, and witnessed by **L.A. Herbert**, ship superintendent, and CWO **Menge**, USCG inspector. These readings indicated a weardown of 0.026 inch on the port shaft bearing, the one using Thordon XL, and a weardown of 0.234 on the starboard shaft, the laminated phenolic bearing. Wear of the phenolic bearing exceeded wear of the Thordon XL many times, this being validated and documented by Coast Guard records on file at Lockheed Shipbuilding.

The phenolic bearing had to be replaced at this docking, with another phenolic bearing immediately available from stock. A second year of testing was undertaken with the same Thordon XL bearing remaining in the port shaft.

At the beginning of May this year the Polar Sea underwent another drydock bearing inspection at the Todd shipyard. Total weardown of the Thordon XL bearing after two seasons was found to be 0.067 inch, still less than one-third the wear of the phenolic bearing in a single season.

The Polar Sea is scheduled for a major re-fit this month. Depending on Congressional approval and funds being allocated, the icebreaker may receive a full complement of Thordon bearings in all propeller shafts.

Each propeller shaft is fitted with two bearings—one forward and one aft. The forward bearings are 66 inches long, the aft bearings 133.5 inches long. Both are built up from 33-inch-long dovetail staves, freeze-fitted into slots in the bearing carriers. The forward bearing requires 64 staves while the aft bearing requires 128, for a full complement of 192 staves per shaft set. Thomson-Gordon supplied Thordon XL molded staves to fit the carrier and supplied computer-generated final dimensions for the convenience of final machining by the shipyard.

The Thordon material combines the known advantages of rubber bearings with increased rigidity, permitting higher pressures to be carried at lower dry and boundary friction levels. The major reason for its success is a low coefficient of friction—0.188 against machined bronze. It also has a constant, predictable water swell of 1.3 percent of the wall thickness.

Thordon has a low modulus of elasticity, which prevents deformation of the bearing housing under severe operating conditions, and allows the bearing to return to its original configuration once excessive stress is removed. It has the ability to deform but continue to provide a bearing surface, such as when a propeller shaft is bent or otherwise damaged.

Thordon can be run with grease, mineral oil, or water as a lubricant, and it thrives even in polluted or abrasive environments. It is sometimes used to convert from oil-lubricated to water-lubricated bearings, thus eliminating an expensive seal and reducing the possibility of pollution from leaks.

For further information and free literature on Thordon bearing material,

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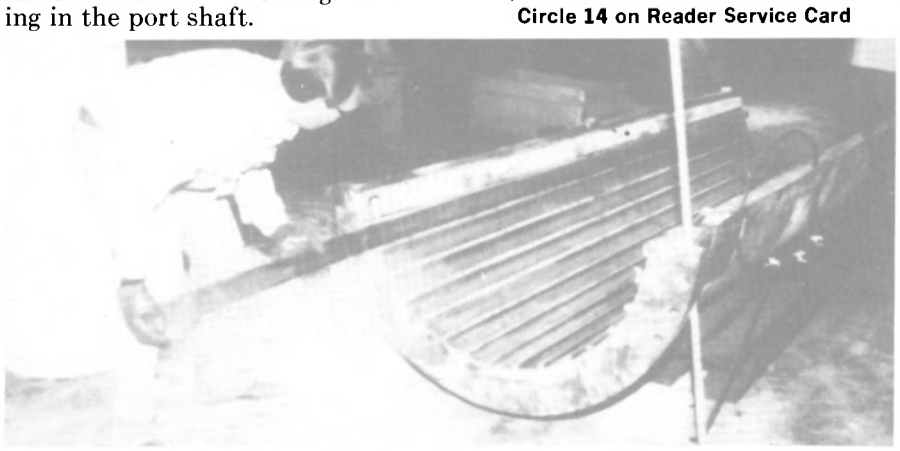

Thordon XL molded staves were freeze-fitted into the Polar Sea's bronze bearing carriers.

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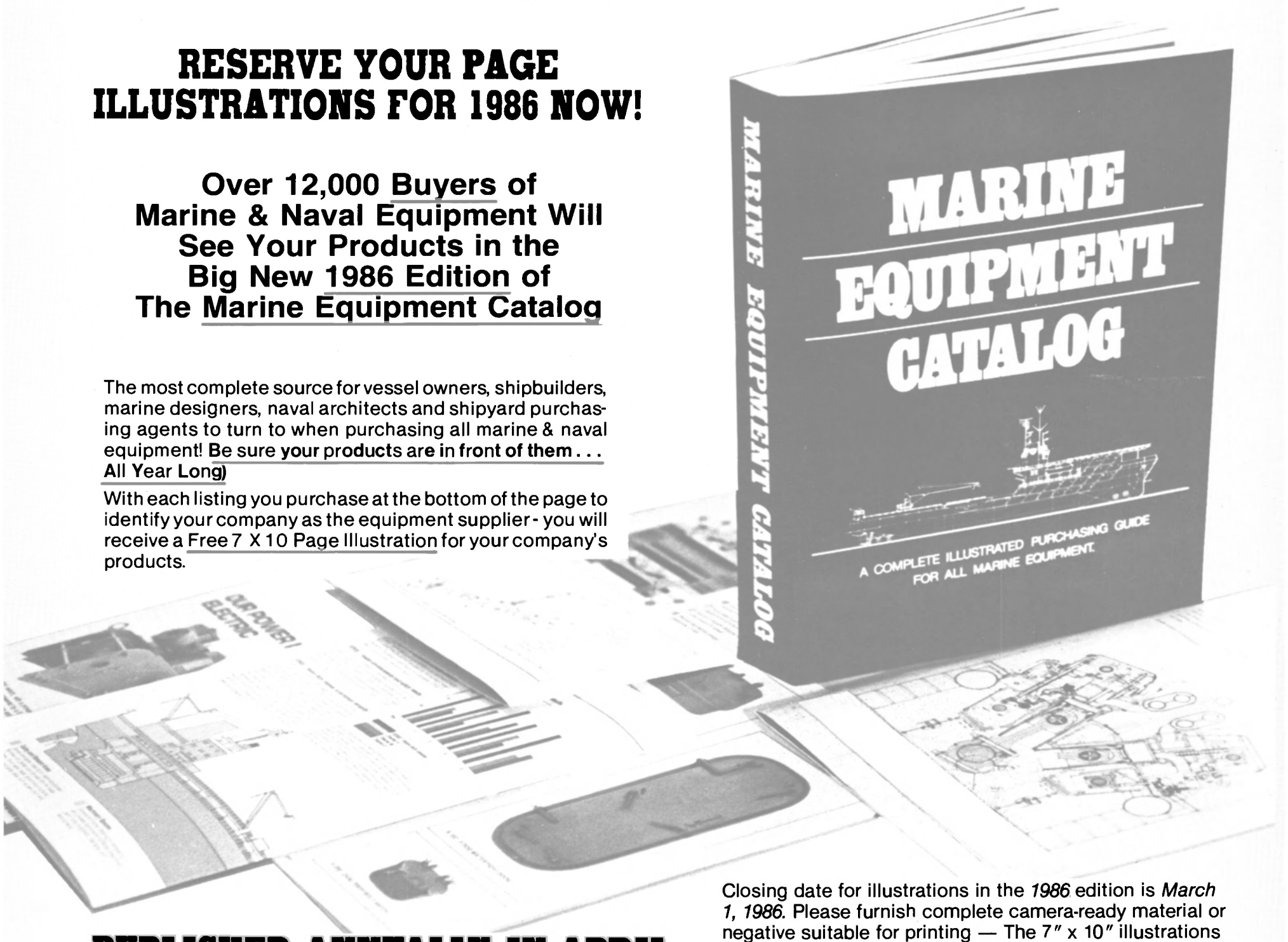

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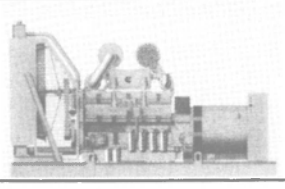

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(1) General Motors 12-278A 1000 HP Diesel Engine complete with Allis Chalmers generator and 1000 HP Motor with reduction gear.

(1) 1000 HP General Motors 12-278A Engine complete with clutch.

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(2) Cylinder Covers for 840x1600 B&W Diesel Engines, excellent condition.

OUR PRICE: $1,800 each

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OUR PRICE: $1,500 each.

Reconditioned 7x12 American Hoist 2-Speed Winches; can be operated by air; 5-ton# low speed; #3-ton# high speed. New Price $15,000 each.

OUR PRICE: $3,300 each

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(100) BRAND NEW ECONOMISER ELEMENTS with 5½" cast iron gill rings and U-bends, manufactured 1982, with ABS Certificates, for Foster Wheeler boilers. Price: $375 ea.

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OUR PRICE: $2,500 each.

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OUR PRICE: $1,800 each.

Ingersoll Rand Model 4x3x13, capacity 300 GPM at 30' head; or 500 GPM at 100' head. New Price: $2,500 each.

OUR PRICE: $500 each.

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OUR PRICE: $1,800.

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(3) Complete Pumps, less motors, Byron Jackson 12GH, 600 gPM at 156' head.
New Price $8,000 each.

OUR PRICE: $2,500 each.

Hundreds of other pumps in stock—call us for your pumps requirement.

Two (2) New 35-ton pedestal type Whirly ship cranes, manufactured by Appleton in 1979; unused with electric hydraulics, 300 HP 440V AC motors, rated 35-tons with 56' boom. All controls and motors ABS and CG approved. New Price: $295,000. OUR Price: $49,000 each, as is, Jacksonville.

NEW AXIAL FLOW FANS with totally enclosed motors & stainless steel Impellers.

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OUR PRICE: $1,500 each.

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OUR PRICE: $2,500 each.

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OUR PRICE: $7,500 each.

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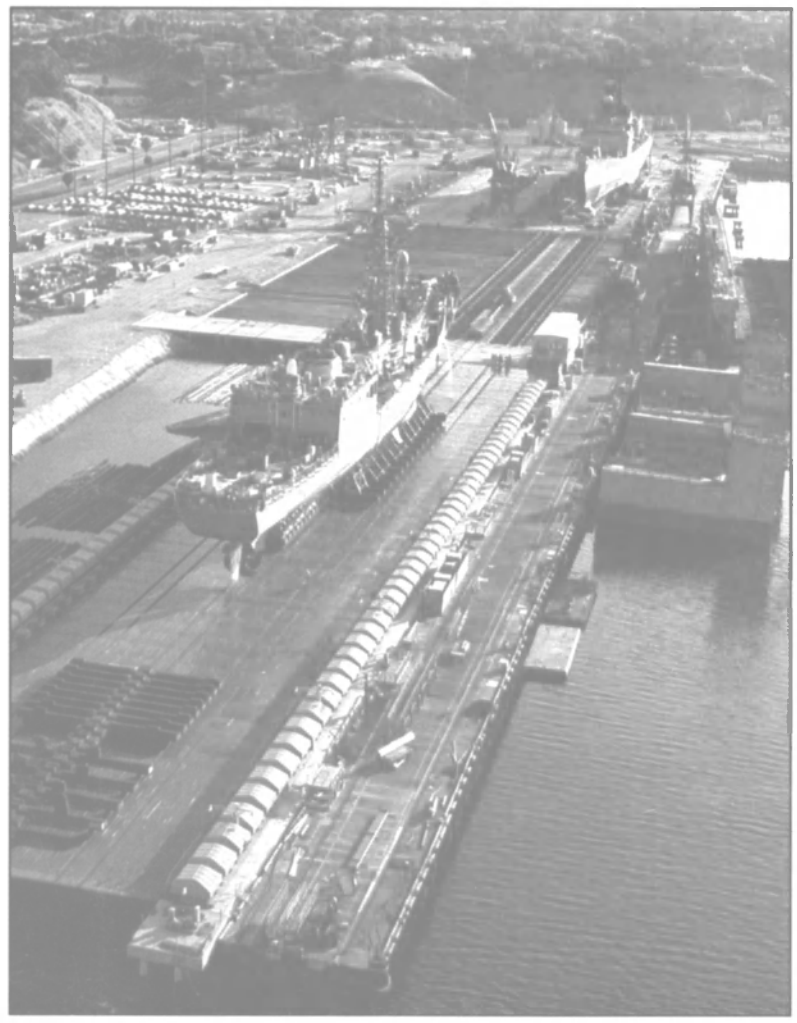
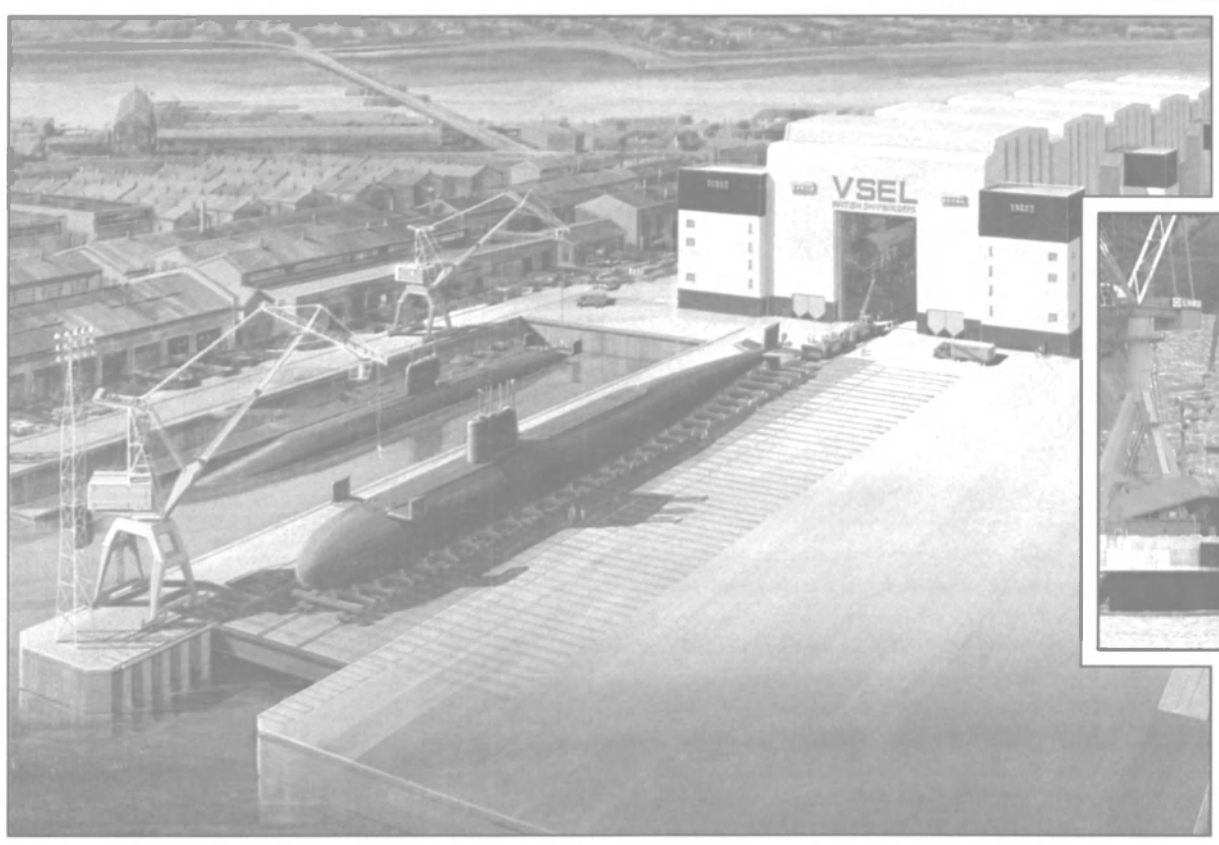


Photo by Joseph Ernest



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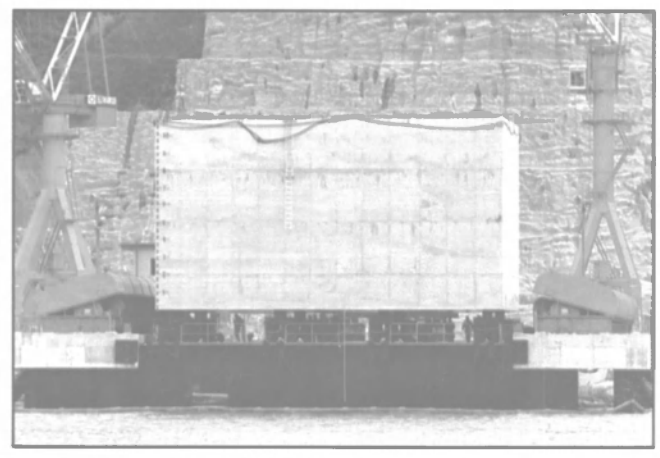

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