

MARITIME REPORTER AND ENGINEERING NEWS



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4TH INTERNATIONAL EXPOSITION

NOVEMBER 1985 DOUBLE ISSUE

Canada

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* 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.	* 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.
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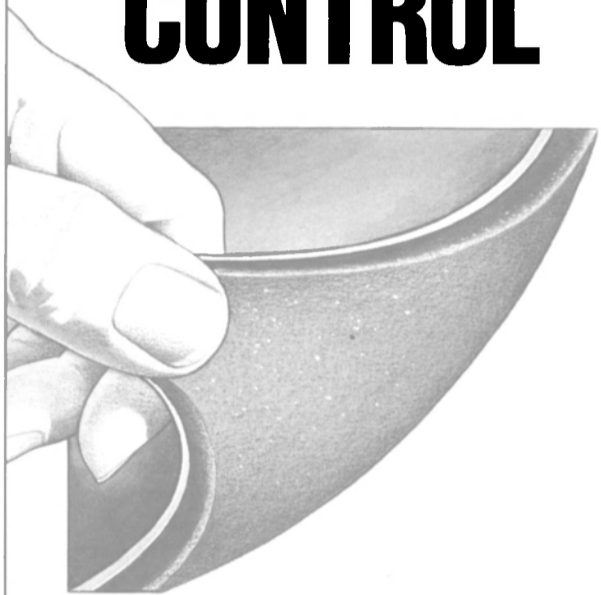
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ON THE COVER

*SNAME Annual
Meeting Preview*
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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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Editorial and Executive Offices
118 East 25th Street, New York, NY 10010
(212) 477-6700 • ITT Telex: 424768 MARINTI

Publishers: **JOHN E. O'MALLEY**
CHARLES P. O'MALLEY
Editorial Director: **CHARLES P. O'MALLEY**
Editor: **ROBERT WARE**
Senior Editor: **THOMAS H. PHILLIPS**
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Circulation Manager: **M. SOTTILE**

Advertising Circulation and Sales Offices
118 East 25th Street, New York, NY 10010
Telephone (212) 477-6700

REPRESENTATIVES

U.S.A. **ROBERT HAWLEY**
Houston, Texas **GARY LINDENBERGER**
MIKE SULLIVAN
11777 Katy Freeway, Suite 155
Houston, TX 77079
Telephone (713) 870-0470
Italy **MR. VITTORIO F. NEGRONE**
Ediconsult Internazionale
Piazza Fontane Marose, 3-16123 Genova, Italy
Telephone: (010) 543.659-268.334-268.513
Telex: 211197 EDINT I
Scandinavia **MR. STEPHAN R G ORN**
AB Stephan R. G. Orn
Box 184, S-271 00 Ystad, Sweden
Telephone 0411-184 00
Telex: 33335 Orn S
West Germany **MR. WOLF O. STORCK**
Schiffahrtswerbung Karl-Otto Storck
Stahlwiete 7, 2000 Hamburg 50,
Federal Republic of Germany
Telephone 040/850 0071
United Kingdom **MR. MICHAEL J. DAMSELL**
Euromedia, Ltd.
P.O. Box 122, Haywards Heath
West Sussex RH16 1YF, England
Telephone: 0444-416845
France **MR. ROBERT BROEKMAN**
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Telex: MOCNDM K23231
Japan **MR. TOSHIO EGUSA**
Publinetwork, Inc.
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ALL MATERIAL FOR EDITORIAL CONSIDERATION SHOULD BE ADDRESSED TO ROBERT WARE, EDITOR.

BP NAP Marine Lubricants Relocates In New Jersey

BP North America Petroleum, Inc. (BP NAP) 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. Menell**, manager, marine engineering-USA; and **Al M. Keller**, manager, marine lubricants-Eastern Region.

BP NAP 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.

BP NAP 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 ½ of an inch for tighter, 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,

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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 posthu-

mously 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.

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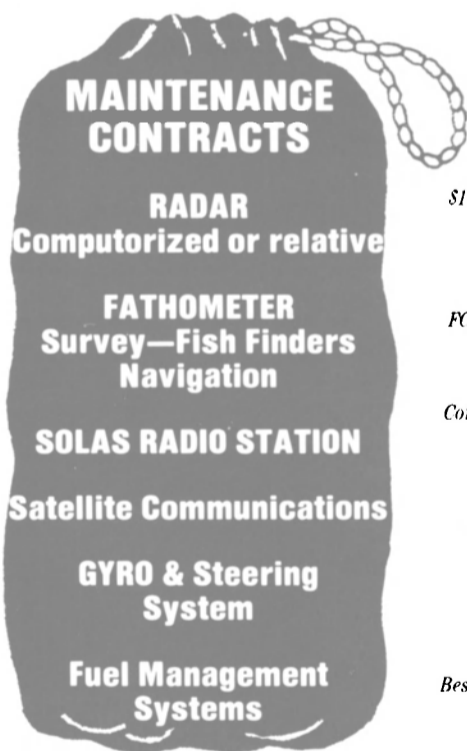
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Circle 197 on Reader Service Card

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 Position-

ing 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,

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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 pres-

sure 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 Bath 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.

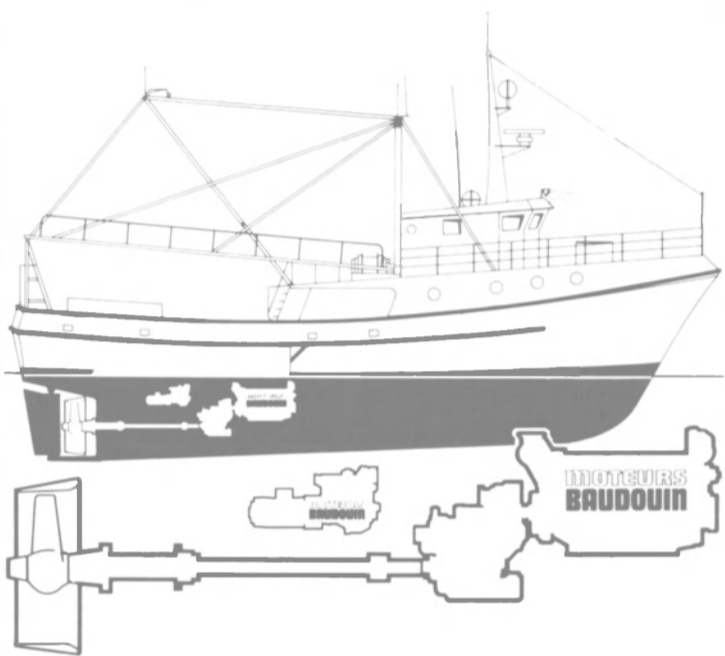
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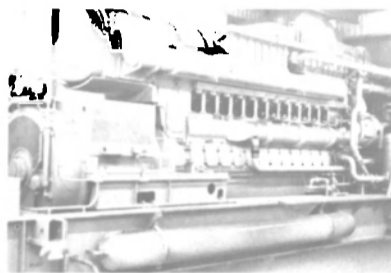
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**Marketec Expands
Service/Equipment Lines
—Literature Available**



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 cranes is inadequate. They will be equipped with three 40-ton cranes, which when combined will be able to lift up to 75 tons.

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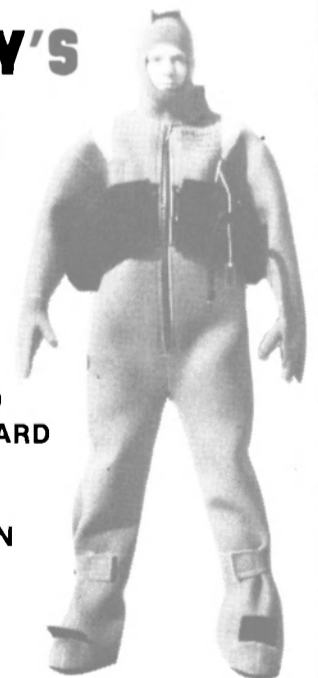
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Circle 184 on Reader Service Card

**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 propor-

tional 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.

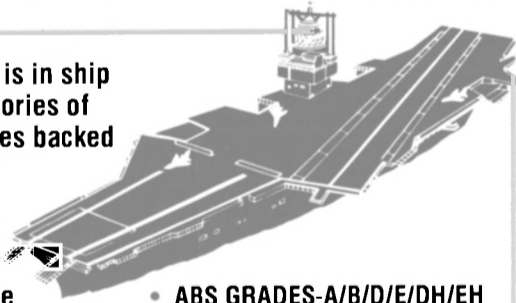
In addition to cost savings enjoyed by the shipping lines, there is the added benefit of being able to offer a direct-call type of service to Canadian shippers without having the time and expense of diverting a vessel into New Westminster or Vancouver, plus the simplification of receiving and distributing 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,

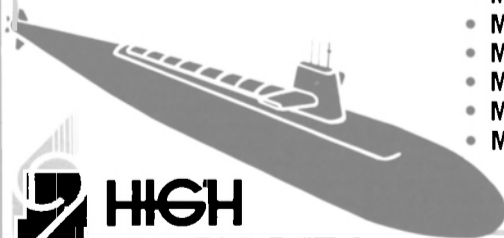
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Circle 311 on Reader Service Card



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.

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,



W.E. Thomas

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,

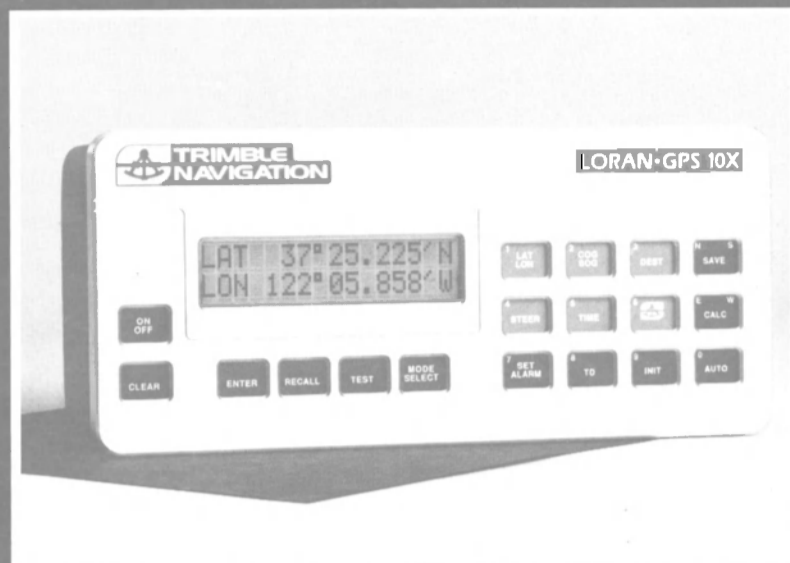
Circle 16 on Reader Service Card

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.

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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,"

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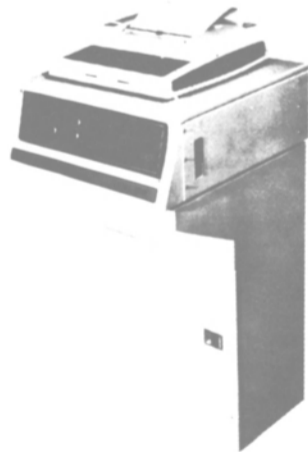


Ship's Bell Logger

The NEW HENSCHEL MODEL 2550 BELL LOGGER employs an 8-bit microprocessor to provide the most advanced, easily-programmable bell logger available today. It has many features never offered before.

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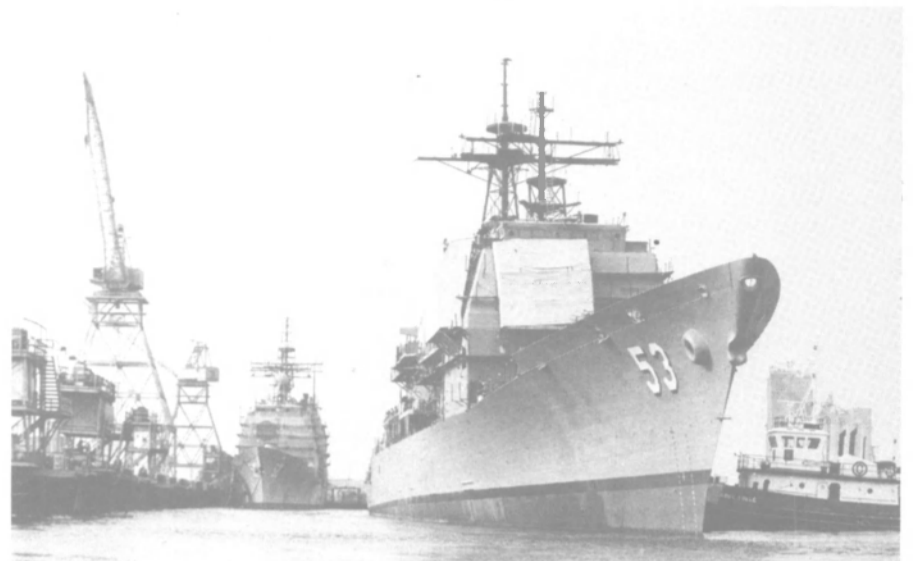
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The Aegis guided-missile cruiser Mobile Bay (CG-53) docked adjacent to the Bunker Hill (CG-52), the first U.S. Navy combat ship to be equipped with a vertical launching missile delivery system.

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 symmetrically 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 anti-air, 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 delivered 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 year, 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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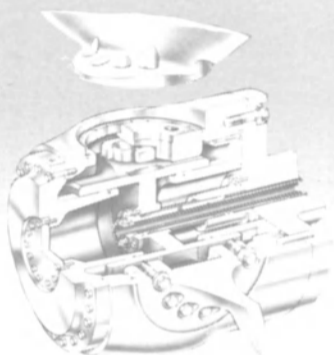


Kelly Appointed VP, Norton, Lilly & Co.

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.

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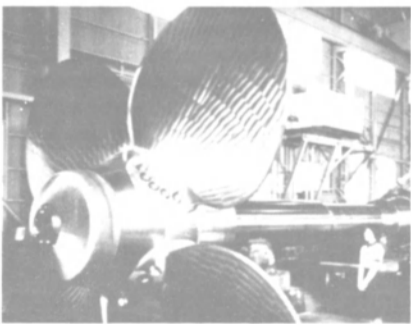
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Circle 198 on Reader Service Card



Penn Ship Delivers USNS Denebola To The Navy Three Weeks Early

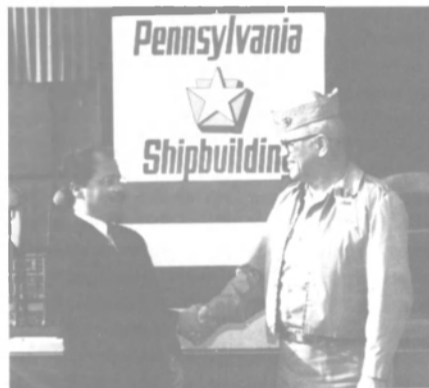
Ron Stevens, president of Pennsylvania Shipbuilding Company, recently announced that the USNS Denebola was officially delivered to the U.S. Navy on October 10, 21 days ahead of schedule.

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 deck-plates 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



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.

will be operated by the Military Sealift Command and based in Bayonne, N.J.

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.

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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.

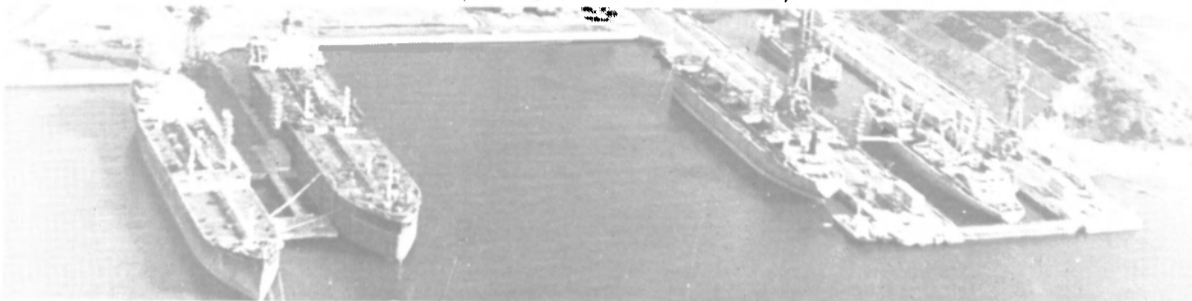
Bailey Controls is a division of Babcock & Wilcox, and a leading worldwide supplier of instrumentation, controls, and computer systems for power generation, process automation and energy management in the petrochemical, electric utility and process industries. Babcock & Wilcox is a major operating unit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

For free literature containing full information on Bailey Controls,

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Company/Contact Person	Address	Tel. No.	Telex No.
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Oceandata Ltd. (Mr. M. Macleod)	Lowndes House, 19 City Road, London EC1Y 1AA	01-588 5657	8956803 ODATA G
Tradewin Marine Services, Ltd. (Mr. C. W. Yuen)	1605, Wah Kwong Regent Centre 88, Queen's Rd., C., Hongkong	(5) 255-223	60077 TMSER HX
Nippon Marine Service Co., Ltd. (Capt. T. Watanabe - President)	7th Flr., Kyodo Bldg., 5-5, Uchikanda 2-chome, Chiyoda-ku, Tokyo 101, Japan	(03) 256-5644-8	222-5 252 NIMAS J

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Circle 253 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 11 1/4°, 22 1/2°, 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,

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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.

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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.

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Blast n'Vac equipment is currently being used in the Statue of Liberty Renovation.

Circle 194 on Reader Service Card



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 (re-designed 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

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

chocks, eleven 48-inch kevels and six 42-inch kevels welded to the deck.

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.

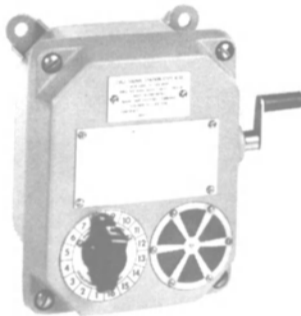
Two Carlisle & Finch 1,000-watt xenon searchlights are located atop the pilothouse. One Kahlenberg Q4 airhorn is provided. Two Sperry 340 radars, two Raytheon Ray-78 VHF radios, one Motorola Triton 20 single sideband radio, two ELAC LAZ 43 depth sounders with Paragon digital display, one Rivertronics 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)

Hose-McCann Telephone Co., Inc., originators and pioneers of Sound Powered telephones for marine use, has expanded their product line to include a wide variety of U.S. Navy Electrical and Mechanical products. An assortment of these products are shown here. All Hose-McCann Navy Products are manufactured, tested, and qualified in accordance with the latest Military specifications.

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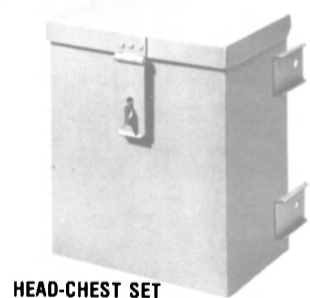


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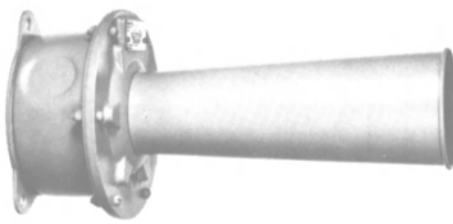
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Phone: 01-584-5000

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.



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BACKED WITH TOTAL SERVICES — QUALITY ASSURANCE — EXPERIENCE — EASE OF AVAILABILITY — PROVEN PERFORMANCE

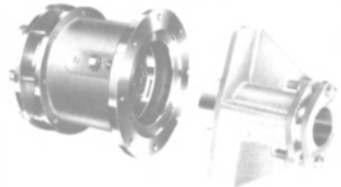
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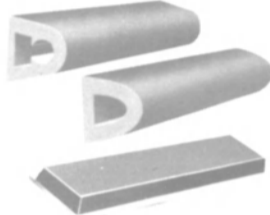
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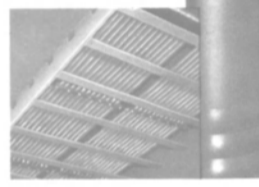
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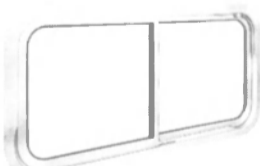
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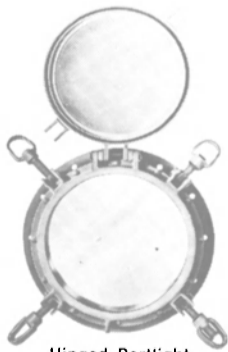
Crank-Operated Window



Window Wiper and Fixed Window



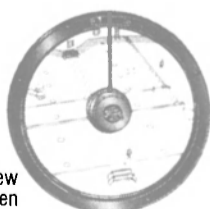
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Catalog showing complete line of marine products furnished upon request.

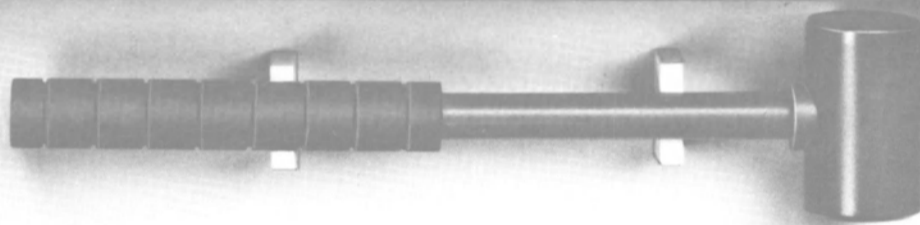
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Circle 226 on Reader Service Card

**IN CASE OF NATIONAL EMERGENCY,
BREAK GLASS.**



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.



BATH IRON WORKS CORPORATION
A Congoleum Company, Bath, Maine 04530

Circle 140 on Reader Service Card

© 1985 Bath Iron Works.

**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.

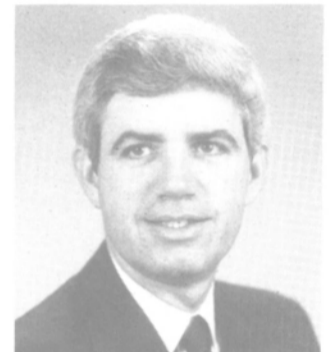
The brochure is well-illustrated

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.

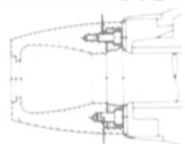
Products available at the various ports are clearly identified by appropriate coding and include chemicals, welding and refrigerant products, packing, jointings and mechanical seals.

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

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**MORGRIP
BOLTS
FOR MODERN
MARINE ASSEMBLIES**

MORGRIP BOLT



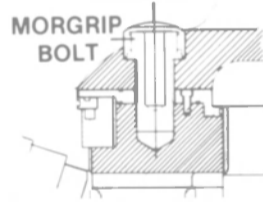
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**MORGRIP® HYDRAULICALLY
STRAINED BOLTS PROVIDE:**

- Sliding fit installation and removal without damage for fitted applications.
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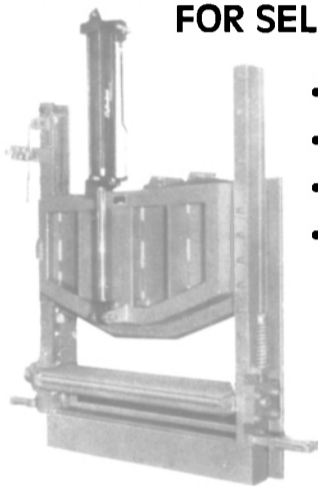
For any marine bolt application requiring pure axial, pure radial, or any combination of axial and radial strains.



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Each door has its own individual electro-hydraulic system. Malfunction due to damage of one door does not effect others in vessel.

Complies fully with U.S.C.G. requirements for Subpart 163.001 Class II and Class III Sliding W.T. Doors, and Solas 1974. Also furnished to requirements of A.B.S., C.S.I., N.M.D., Lloyds and other regulatory bodies throughout the world.

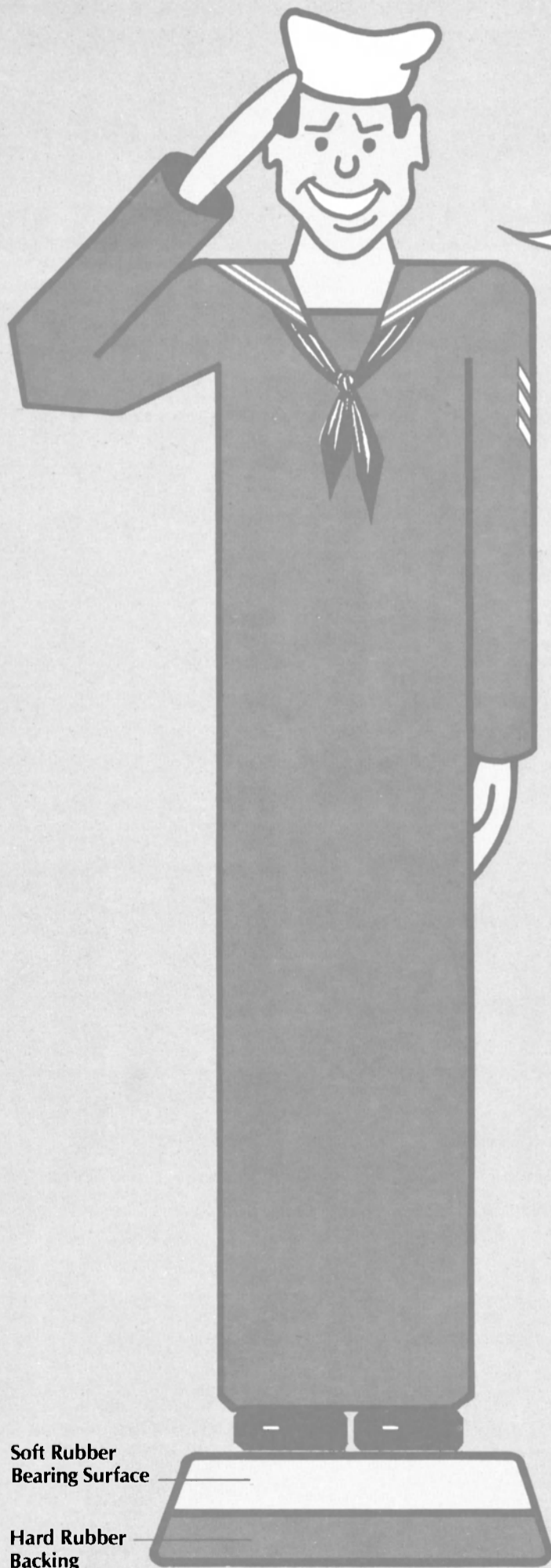
- SLIDING W.T. DOORS also for Drill Rigs, Tankers and Special Ships
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Circle 215 on Reader Service Card



'ALL-RUBBER STAVE REPORTING FOR DUTY, SIR!

Yes, the American Metal Bearing all-rubber stave has officially qualified to Mil-B-17901B Class III specification for service in the U.S. Navy! It has been approved to substitute for traditional brass-backed staves for stern and strut-tube bearing assemblies.

The AMB all-rubber stave really is an old salt, having served on commercial ships for over 40 years. Now, it's passed the Navy's tests after being installed on more than two dozen U.S.N. vessels in the last three years.

Why switch to AMB all-rubber staves? There are at least four reasons:

1. **Superior Performance**—AMB's all-rubber stave has a hard rubber backing which will not separate from the softer-rubber bearing surface. The low-friction nitrile rubber surface is tough but resilient, deforming slightly to accept abrasive particles, minimizing wear on bearings and shafts.
2. **Easier Installation**—The hard rubber backing conforms to irregularities more easily than brass. This enables AMB staves to be installed with minimal hand-fitting.
3. **Lighter Weight**—Rubber is much lighter than brass, so AMB staves weigh approximately two-thirds less than comparable brass-backed staves. This makes them easier to ship, store, and handle.
4. **Cost Savings**—AMB's superior quality rubber compounds are less expensive than brass. So, AMB staves often cost considerably less. They save additionally by lasting longer, not degenerating through galvanic or electrolytic action. And, being lighter, they are less expensive to ship.

These advantages are critically important—whether you are building or overhauling naval or commercial ships. AMB all-rubber staves are available in either dovetail or contour designs. Standard sizes are supplied off the shelf. Custom staves can be designed and built to your requirements.

Call American Metal Bearing today to end your bearing stave problems. You'll be talking to a firm that has been in the marine bearing business since 1921, a firm you can depend on.



Buy American!

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(714) 892-5527 • (213) 598-2417 • Telex 655-362

RUBBER STAVE CROSS SECTION

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 Divi-

sion, 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, time 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

TOMORROW'S SHIPBUILDING TECHNOLOGY TODAY

Shipyards of the future will probably utilize shiplift and land transfer systems, such as this one at Todd's Los Angeles Division, rather than floating dry docks or shipways.

This high technology facility, permits the performance of construction or repair work on five ships simultaneously. Additionally, computer aided design and computer aided manufacturing (CAD/CAM), as well as on-line robotic welding are an integral part of Todd's shipbuilding expertise. Indeed, today Todd is a cost-efficient, high technology company uniquely qualified to meet future naval and maritime needs.

Todd is committed to providing the best service possible to the U. S. Navy, as well as our commercial customers, and is unquestionably a "Yes, we can do it!" company.



Todd Shipyards Corporation

One State Street Plaza, New York, N.Y. 10004
Telephone: (212) 668-4700 Cable: "Robin" New York
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MARINEPAK

FULLY FACTORY ASSEMBLED YORK MARINEPAKS SAVE SPACE AND INSTALLATION COSTS

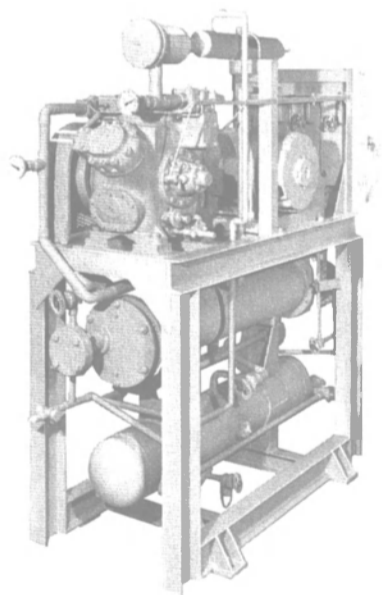
York Marine engineers are continuously developing new ideas in marine air conditioning and refrigeration and the excellent research and test facilities at York accomplish the conversion of these ideas into products that have established the standard of quality in the entire marine industry.

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.

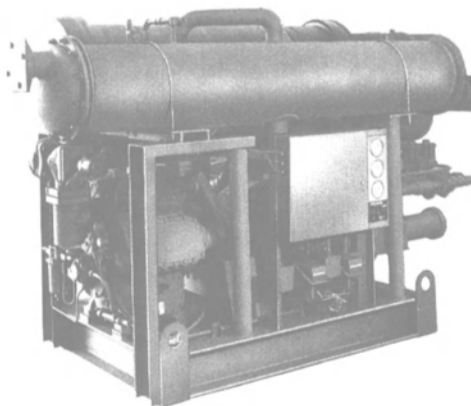
CUSTOM-TAILORED TO EACH NEED

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.

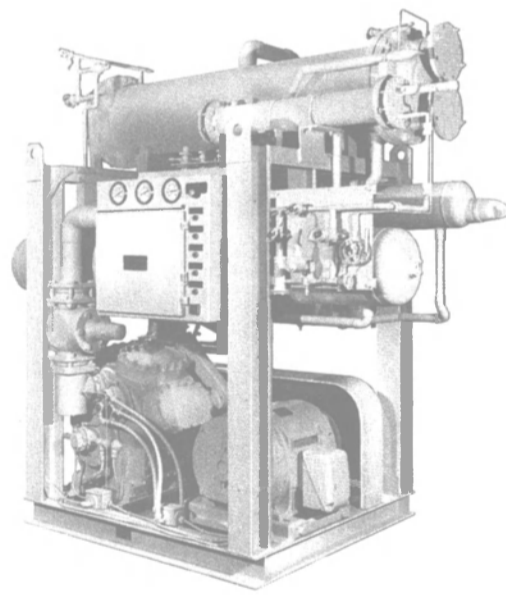
More than 1,000 YORK MARINEPAKS Installed for use
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Blue Streak Industries Delivers First Lift Boat With 110-Foot 'Legs'

Blue Streak Industries, Inc. of Pearlinton, 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.

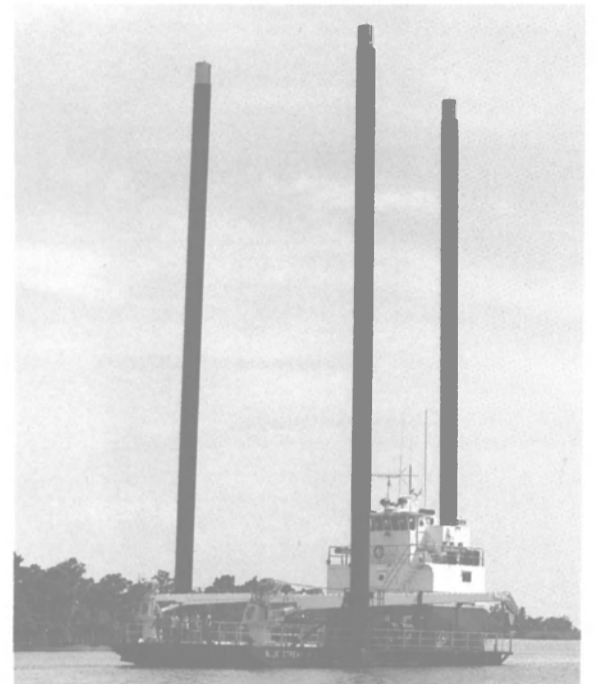
"This boat is a welcome addition to our fleet," said Mr. **Good**, "because it fills the gap between our 100 and 130 class lift boats. To my knowledge, it will be the only jack-up in the Gulf of Mexico with 110-foot legs."

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.

*THE FIRST NAME IN TOWING
ON THE TEXAS GULF COAST*



Suderman and Young tug Gretchen

Suderman and Young has set the standard for reliable harbor and coastwise towing services on the Texas Gulf Coast since 1895. You can count on our fleet of tugs manned by skilled crews and equipped with the latest in towing, communication and navigation aids.

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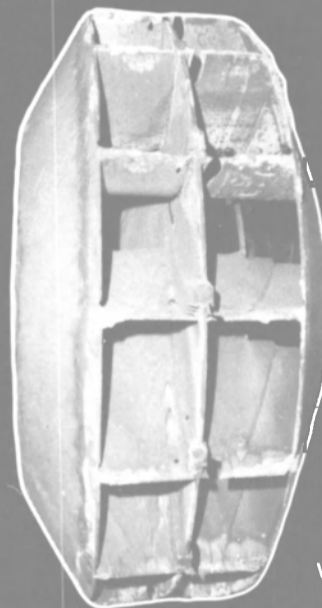
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FAN PROBLEMS?



- Vibration
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- Bearing problems
- Erosion
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No matter what the problem, Robinson has probably solved it before. We're the fan repair and rebuild experts. Tell us your fan problem...We'll tell you what we would do about it.

Fan repair is cost effective:

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- Robinson re-uses original components when possible.
- Robinson incorporates unique design features for improved efficiency.

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Telex 866-311

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Lakeland, FL 33803
Phone 813/644-2121

Circle 335 on Reader Service Card



If you think you are 100% protected against corrosion you might be some 33 $\frac{1}{3}$ % 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.

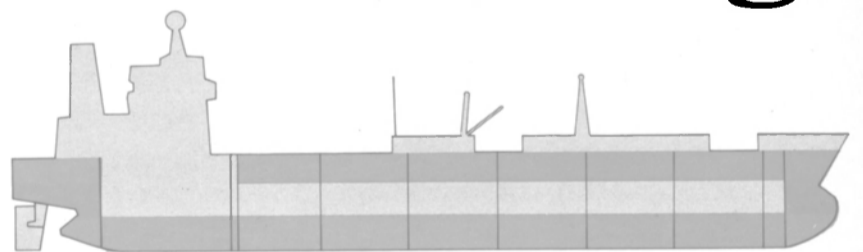
Ballast tanks are subjected to extreme conditions during ship operation and can contribute significantly to high maintenance costs and ships' offhire time. A fact which shipowners are now becoming painfully aware of.

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 larg-

er); 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

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

A NEW GENERATION OF DIESEL ENGINES RUNNING ON HEAVY FUEL

BERGEN DIESEL, type B, designed for propulsion and power generation duties in the marine market.

We have given full emphasis to the need for low operation costs and at the same time the demand for lowest possible capital cost.

The design criteria has been:

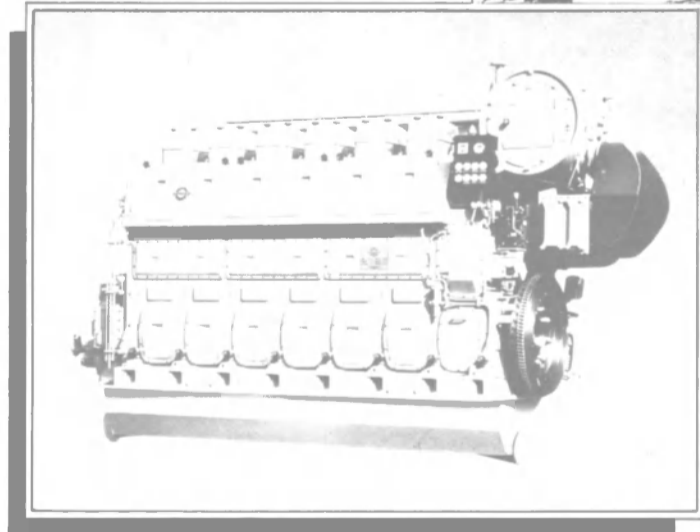
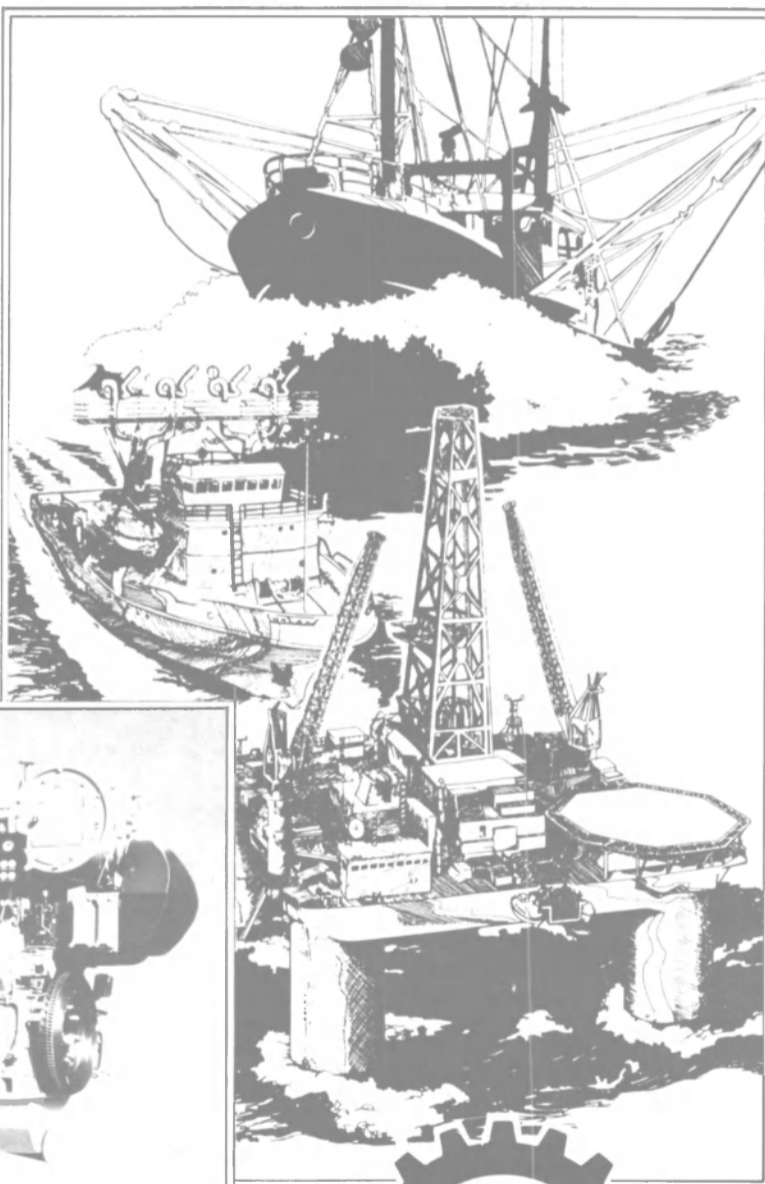
High reliability and long overhaul intervals on lower quality heavy fuels.

Good access to and easy servicing of engine components.

Low fuel consumption.

Low wear figures.

Bergen Diesel has more than 5000 heavy fuel burning engine cylinders in service and currently deliver engines for unrestricted operation on 700 cSt at 50° C viscosity fuel.



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BERGEN
DIESEL

Circle 145 on Reader Service Card

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 Horn- ing's Mills, Ontario.

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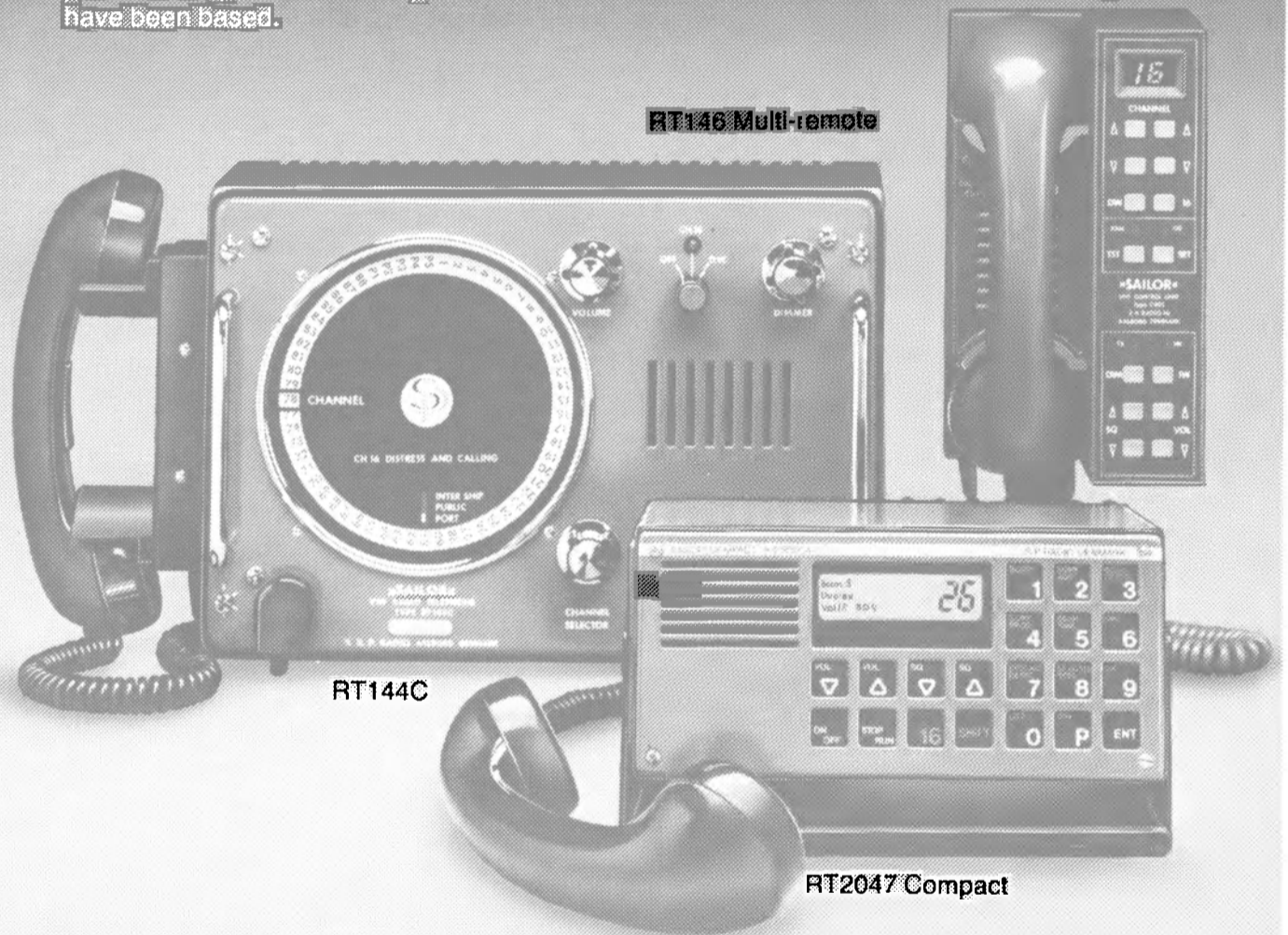
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VHF RADIOTELEPHONES

All over the world SAILOR is known as a leading brand of VHF equipment. More than 100,000 RT144C units have already been installed. This reliable toiler, which is constantly being improved, has provided the experience on which the two latest SAILOR VHF radiotelephones have been based.



All Three Types Feature:

- 25 W power
- Dual Watch
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- Quick channel 16
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RT144C has Semiduplex/Simplex and can be equipped with seicall, whereas RT146 and RT2047 have full Duplex and seicall as a standard. RT146 is a VHF set with an almost unlimited number of operation points/operation units.

RT2047 contains transmitter, receiver and duplexfilter in the compact cabinet (height: 98 mm, width: 216 mm, depth: 262 mm, weight: 5.5 kg). Advanced scanning facilities with 5 operator-programmed scanning programmes. The operating panel is provided with membrane switches. Cut-outs in the front serve as a finger-guide. Easy installation, high reliability, and world-wide service are common to all three types.

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Circle 247 on Reader Service Card

"SAILOR"

November, 1985

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 in-

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 long-time IMODCO employee with over

Raytheon Introduces Lorán-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.

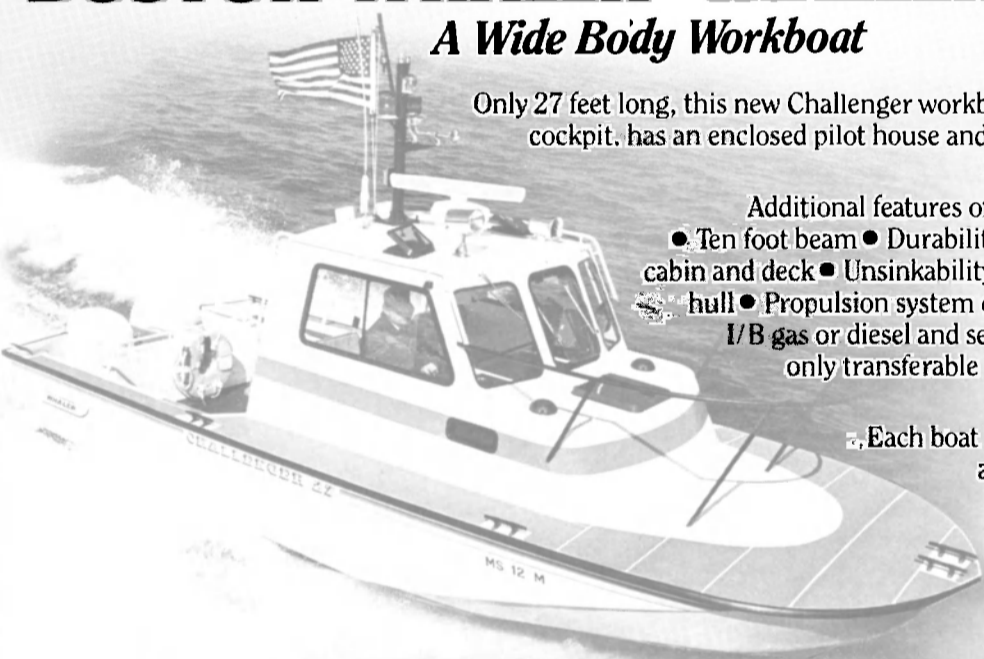
The first section describes the six mechanical-hydraulic governors offered by Woodward for steam turbine applications—TG-13, TG-17, UG, PG-PL, PGG and PGD. Each description is accompanied by a black and white photograph of the equipment.

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

BOSTON WHALER® CHALLENGER 27

A Wide Body Workboat



Only 27 feet long, this new Challenger workboat offers an unusually large cockpit, has an enclosed pilot house and a lockable cabin with bunks and head provisions.

Additional features of this multi-use boat include:

- Ten foot beam • Durability of an all welded aluminum cabin and deck • Unsinkability built into a heavy fiberglass hull • Propulsion system choices including outboards, I/B gas or diesel and seadrives. • And the industry's only transferable 10 year warranty on hull and aluminum workmanship.

Each boat is built to your specifications and particular application. To learn more about this unique Whaler® workboat, call or write the Commercial Products Division.

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BOSTON WHALER

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THE DIFFERENCE BETWEEN LIFE AND DEATH

In the harsh reality of an emergency at sea, time-after-time those who had the foresight to have an Imperial Survival Suit onboard and put it on, lived. Even when freezing waters killed their unprepared shipmates, Imperial kept them afloat, warm, safe and alive for hours, even days. In one documented case, four men survived nine hours in 35 F water with 100 m.p.h. winds and 25 hours on a frozen beach. Over 300 people have cheated death by wearing Imperial Survival Suits.

IMPERIAL, THE WORLD'S BEST SELLING SURVIVAL SUIT IS BUILT BETTER... OVER 80,000 IN USE!

- Waterproof Face Seal & Adjustable Spray Shield protects & warms
- High-Rider Ring for comfortable floating
- Sealed Waterproof Zippers & salt corrosion-resistant Beryllium pulls
- One-Piece Sealed Construction: attached hood, boots and gloves

Without a Survival Suit cold water kills quickly. The human body loses heat 23 times faster in water. Even with a flotation device, your chances of surviving a short time without adequate insulation are remote. If the initial shock doesn't kill you, the effects of hypothermia can cause death in minutes. In fact, according to the U.S. Coast Guard, "History has shown most victims of accidents in cold water, even when buoyed by life preservers, have died before they were rescued."

Meets Rigid Standards: Every Suit tested with Underwriters Laboratory supervision.

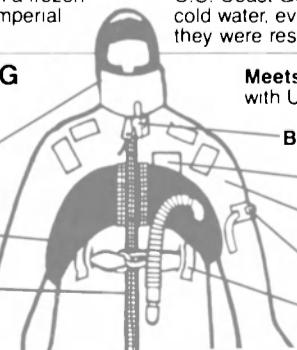
Built-in Whistle aids rescue

Light Pocket holds U.S.C.G. approved PFD light

Built-in Buoyancy supports indefinitely even if completely flooded

Buddyline helps crew stay together

Lifting Harness is tested for 1000 pounds



The Radar


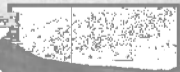


• Four new 7600/8600 models • Instantaneous, brilliant, steady presentation of all information on a high-resolution daylight-quality 16 in. display • True target trails for rapid orientation • Unique Centered Display mode maintains own ship in a fixed position on the display, but provides true trails 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.



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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. May-**

field 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

Swagelok® TUBE FITTINGS

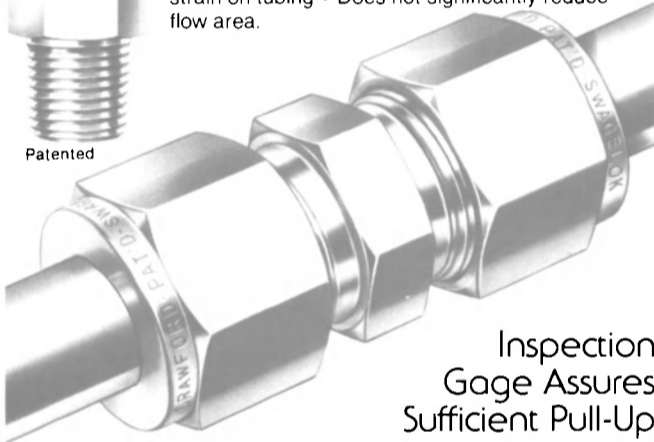
*...a tradition of
Excellence*



Patented

Unique Swaging Action

- Provides a seal between ferrule and body at a point different from where the heavy work is performed
- Supports tube ahead of seal to resist vibration
- Does not create torque or leave residual strain on tubing
- Does not significantly reduce flow area.



Inspection
Gage Assures
Sufficient Pull-Up



- Useful for both the installer and inspector
- If the gage will not fully enter the gap between the nut and body shoulder, fitting pull-up is sufficient
- If the gage enters the gap, you'll know pull-up is incomplete.

Effective Metal-to-Metal Seal



Patented

- Interaction of precision parts — body, front ferrule, back ferrule and nut — produces a leak-free seal with simple 1-1/4 turn pull-up
- Works on thick or thin wall tubing
- Seals repeatedly under make-and-break conditions
- Seals consistently over a wide range of pressures, temperatures and temperature cycling.

Only SWAGELOK Tube Fittings offer gageability of straight fittings, and forged shaped elbows and tees in stainless steel and steel. Gages are available for 1/8" through 1" sizes. Torque-free swaging action, effective sealing and gageability are just three of the many elements of excellence for which SWAGELOK Tube Fittings are known and respected... a tradition of Excellence.

Swagelok® TUBE FITTINGS

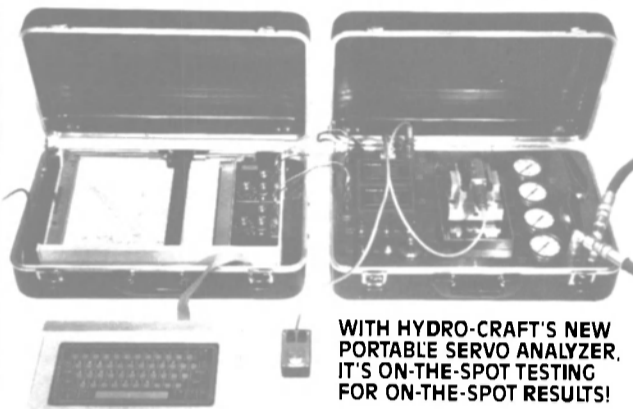


CRAWFORD FITTING COMPANY
29500 Solon Road, Solon, Ohio 44139
Crawford Fittings (Canada), Ltd., Ontario

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Circle 102 on Reader Service Card

NEW SERVO VALVE ON-THE-SPOT TESTER



WITH HYDRO-CRAFT'S NEW
PORTABLE SERVO ANALYZER,
IT'S ON-THE-SPOT TESTING
FOR ON-THE-SPOT RESULTS!

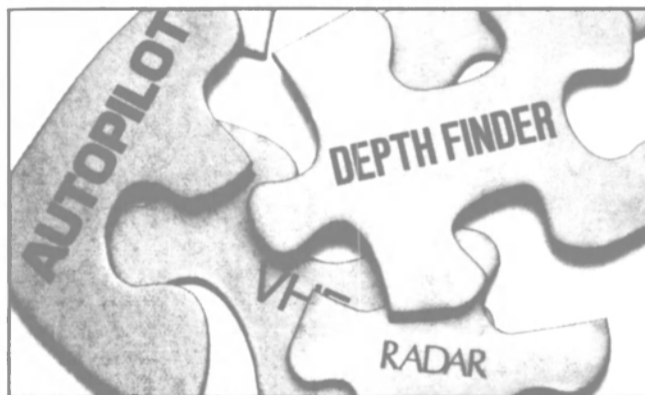
Don't let faulty hydraulics rob you of production time. Hydro-Craft's portable Servo Analyzer effectively tests potentially serious servo valve malfunctions — on the spot. Eliminate the waiting and guesswork from your production schedule. Get the testing results you need quickly and accurately. This rugged and light-weight system can easily be hand carried to any trouble spot for rapid and successful servo valve testing.

CONTACT US TODAY FOR FURTHER INFORMATION AND LET OUR NEW SERVO ANALYZER SYSTEM HELP TO REDUCE COSTLY DOWN-TIME!



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PUZZLED?

How does it all fit together? The National Marine Electronics Association can help. The NMEA is a non-profit trade association of manufacturers and dealers, dedicated to improving the quality of products, standards and service in the marine electronics industry. Contact any NMEA member. You'll get expert guidance in piecing together a total marine electronics package that fits your needs. Call or write for a free booklet and list of NMEA members.



National Marine Electronics Association
P.O. Box 57, Oronoco, Minnesota 55960
Telephone 507-367-2568

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.

Pyrotexax 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 Pyrotexax 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.

Pyrotexax 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,

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SPECIAL DELIVERY



When our South American customers needed a flexible alternative to the rigidity of liner scheduling ... The Solution was Simple — SIGNET
Provide efficient, low cost transport with flexible load and discharge periods.



SIGNET MARINE

Ocean Transportation Services
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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®.

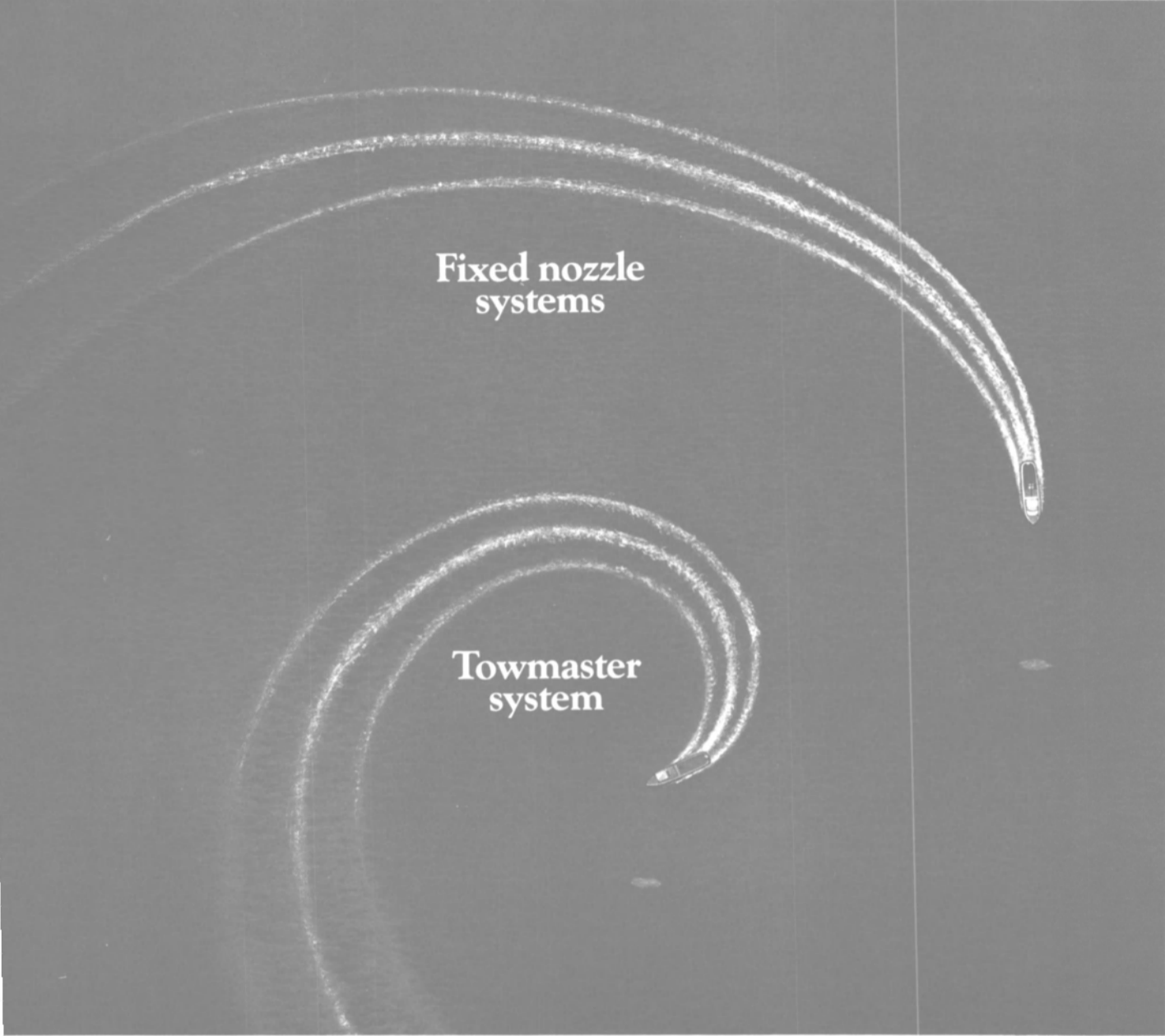
Vikubo ship cushions are built from a combination of polyethylene foam of 49 kg/m³ (3.06 lbs/ft³) core, covered with a polyurethane elastomer coating. Running the length of the axis is a heavy polyurethane elastomer pipe for passing the "hanging up" chain through or a protected tensed chain between two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

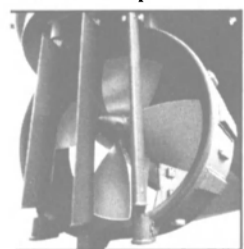
For a free copy of the brochure on Vikubo foam-filled floating fenders,

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

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

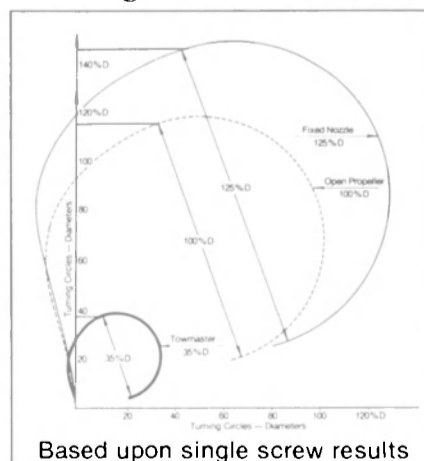


The Towmaster can give you this kind of performance because of its unique cascade-rudder design. Each rudder, by itself, produces a higher lift-to-drag ratio than conventional centerline rudders.

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

Based upon single screw results

Turning diameter test results



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

Circle 154 on Reader Service Card

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

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

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Grand Rapids, MI 49507
Phone (616) 452-6941
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General P.X. Kelley, Commandant of the U.S. Marine Corps



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'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,

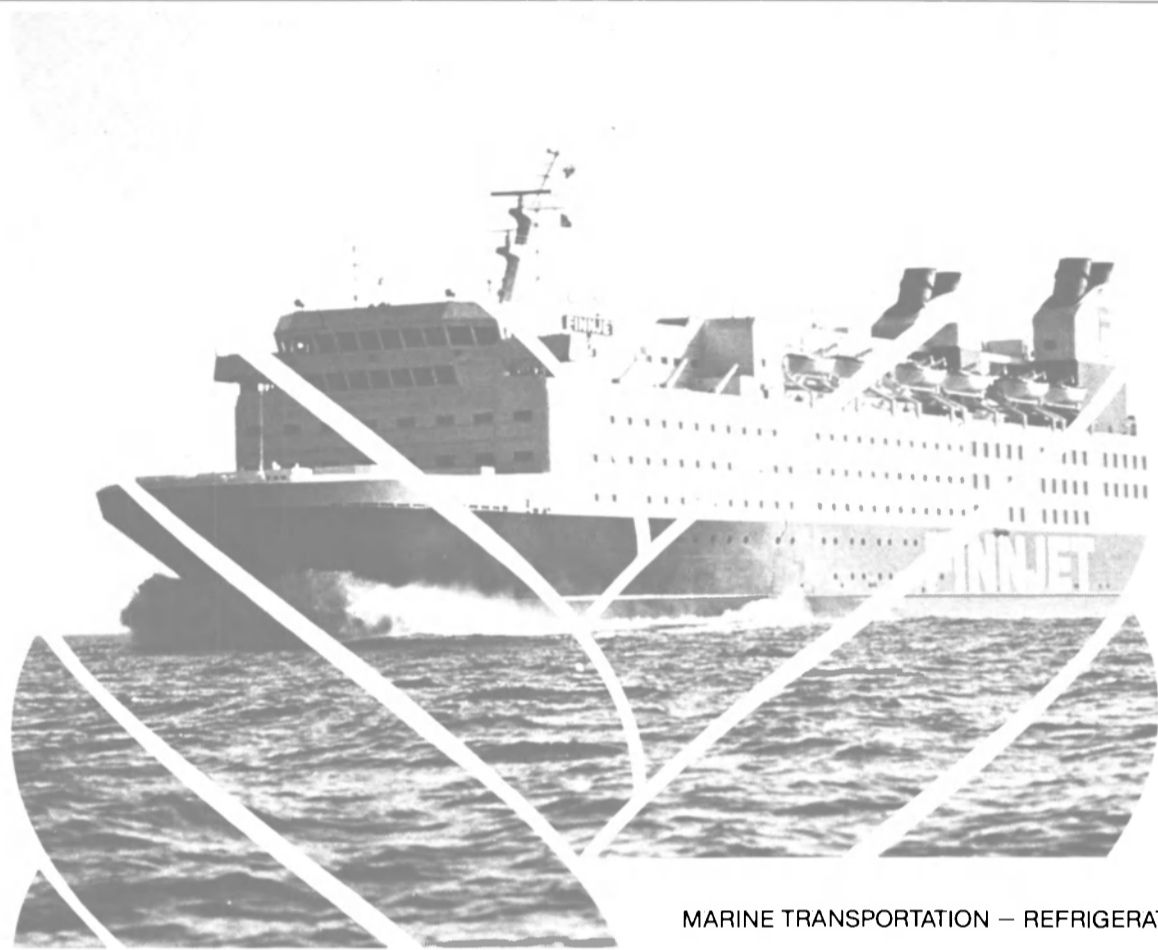
Circle 31 on Reader Service Card

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,

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MARINE TRANSPORTATION — REFRIGERATION

Simply the best.

The new screw compressor for air-conditioning installations in ships.

STAL-MINI from STAL means screw compressors with maximum reliability for the world's shipping lines. Compressors which provide efficient refrigeration under a wide range of climatic conditions.

During the last 20 years — ever since screw compressors began to be used for marine refrigeration installations (where we have long been world leaders) — technical development has made continuous progress. Our new screw compressors now operate effectively even in

We assume full responsibility

Our job is to ensure that your entire installation gives trouble-free operation. We have an organization that provides all the support you need. From planning to maintenance and service. With STAL as your supplier, you have at your disposal a full range of knowhow and technical resources.

the lower capacity range for air-conditioning installations. At the same time, they offer the same high efficiency, low maintenance costs and long life as our well-known large compressors.

The secret behind the high reliability and low life cycle costs of STAL-MINI is just inside the casing. STAL-MINI has only four moving parts, as against 100 or so in a reciprocating compressor.



Change to more reliable airconditioning

A worn reciprocating compressor which often causes expensive operating disturbances is a drain on your economy and a burden for the crew. Save money and improve crew efficiency. Change to STAL-MINI and your investment will soon pay off!

The screw compressor is a rotating machine with accurately balanced rotors. Consequently, vibration is virtually eliminated. In addition, the new robust design has no sensitive operating valves and is much more resistant to liquid carryover. The strength of STAL-MINI lies in its simplicity. That is why STAL-MINI is simply the best.

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STAL
REFRIGERATION

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

Maritime Reporter/Engineering News

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 deep-well 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.

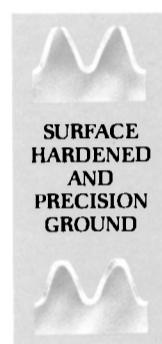
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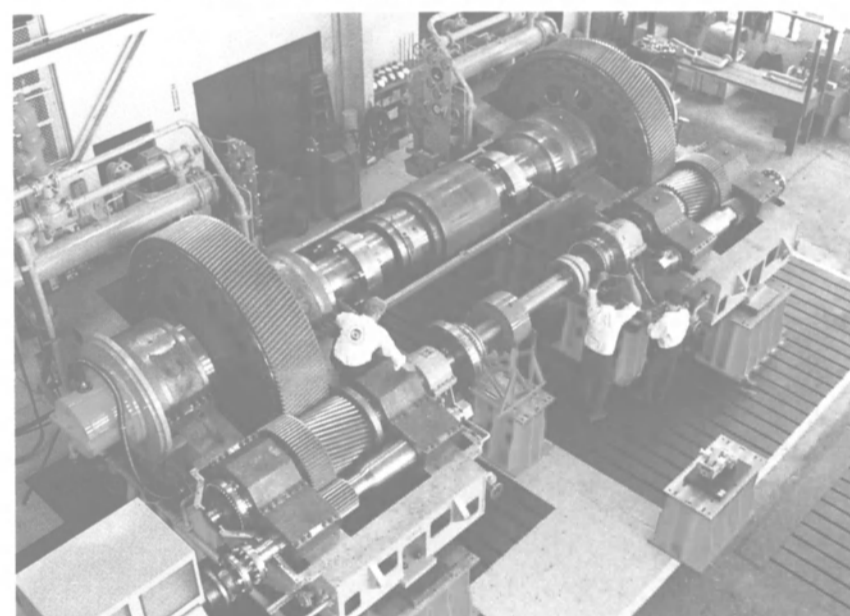


T-AO 187
T-AO 188
T-AO 189
T-AO 190

Technically Unprecedented

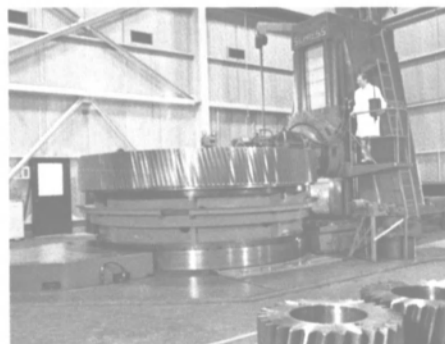
The full load back-to-back test of the TAO Main Reduction Gear simulating actual shipboard speed, torque and mounting has been successfully completed with power levels up to 18,700 HP.

Not only is this the first large carburized and hardened and precision ground gear in the U.S. Navy, but this teststand and facility represent another first in testing and research capability at a land based test site.

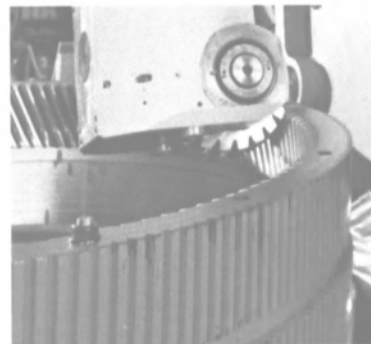


■ Exposed "power loop" showing huge torque applicator between single helical bull gears.

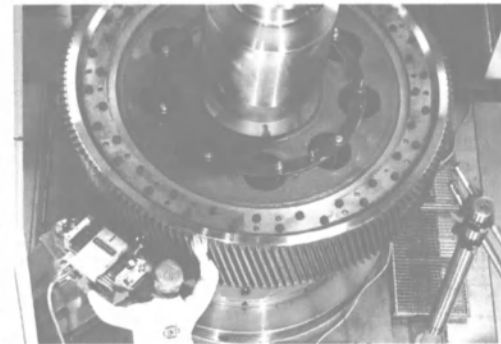
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MARITIME REPORTER AND ENGINEERING NEWS



Special Pull-Out Section

93RD SNAME ANNUAL

NOVEMBER 1985

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- Incandescent Ceiling Fixtures
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- Convenience Outlets

See us at SNAME Booth #307

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- J-Line Plugs and Receptacles
- Mipco Reefer Power Plugs and Receptacles
- Navigation Lights
- Helipad Deck Lights

③ Hazardous Location Products:

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When your ships are equipped with ordinary HF or VHF radio, you are at the mercy of weather, sun and personnel—or lack of it—at shore stations. You can wait hours or even days to establish contact. With SATCOM you can get through with all the speed of a trunk telephone call. Anywhere in the world. Any time. In any sea and weather conditions. And your ships have the same ability to contact you.

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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With ordinary radiotelephony, all the world can listen in on conversations between you and your captains. Secrecy is impossible unless you employ cumbersome and expensive cryptographic techniques. Not so with SATCOM. Satellite transmissions are discreet, allowing you to maintain all the privacy of land lines telephone calls.

Which equipment do you choose?

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 micro-miniaturized 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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*...helping you run your ships the way you want them run
—like a business!*



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 Wed-

nesday, 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, No-

vember 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.

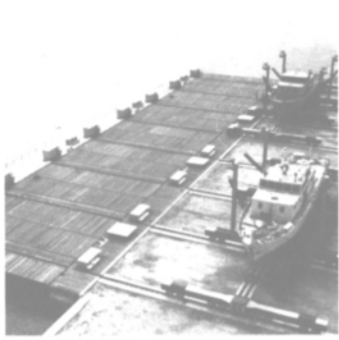
The 93rd Annual Banquet, open to members and guests, will take place on Friday, November 15, in

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

(continued)



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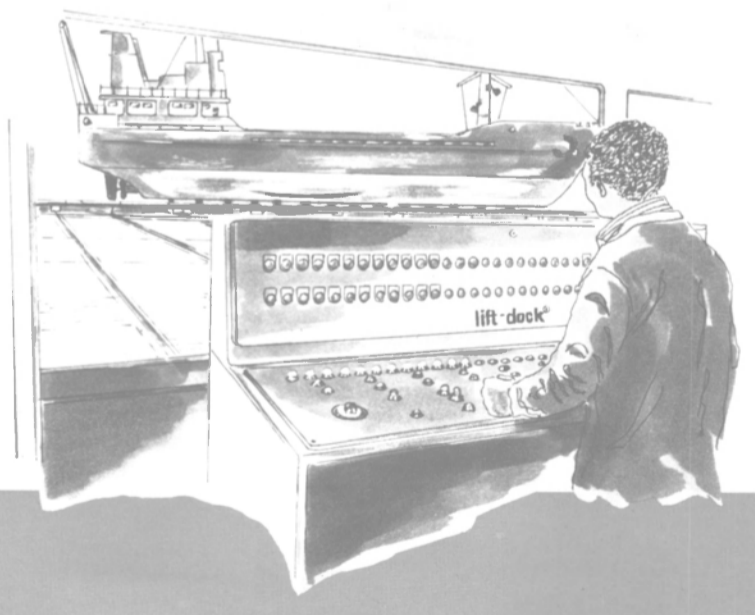
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93rd SNAME Annual Meeting

— 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 Germa-

ny, 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)

VISIT BAY'S BOOTH NO. 905-907 AT THE SNAME INTERNATIONAL MARITIME EXPOSITION



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Nuclear submarine equipped with Maxim desalinator
General Dynamics Photo



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93rd SNAME Annual Meeting

— A Preview

describes 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

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James F. Dunne	Spencer Reitz
Keith P. Farrell	Wm. duBarry Thomas
Jacques B. Hadler	Richard W. Thorp Jr.
	William E. Zimmie

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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, Anastasios 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 Bliet, and Hyunkyung 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-Numer-

ic 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 gener-

ates 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)

Moving petroleum and liquid barges from Cape Charles, VA to St. Petersburg, Hanover Towing's vessel, the "Capt. Warren," has worked seven days per week, averaging nearly 7500 hours per year during the last two years. "In an operation like this, noise is a problem. We feel the Cummins 4B is 2 to 3 times quieter than our previous auxiliary engine", said Bill Murrell, Jr., Vice President—Hanover Towing, Wilmington, NC.

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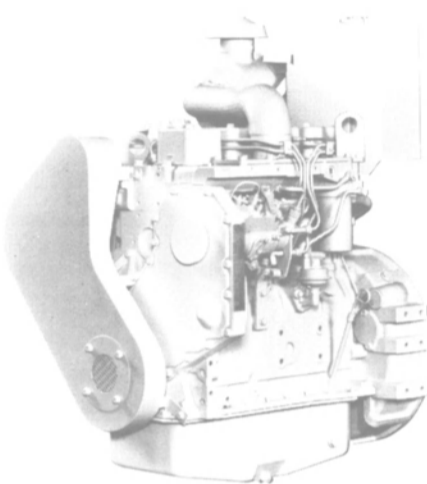
an excellent drive package for on-board auxiliary power applications in the 30-65 kW range. They contain up to 40% fewer parts than comparable com-

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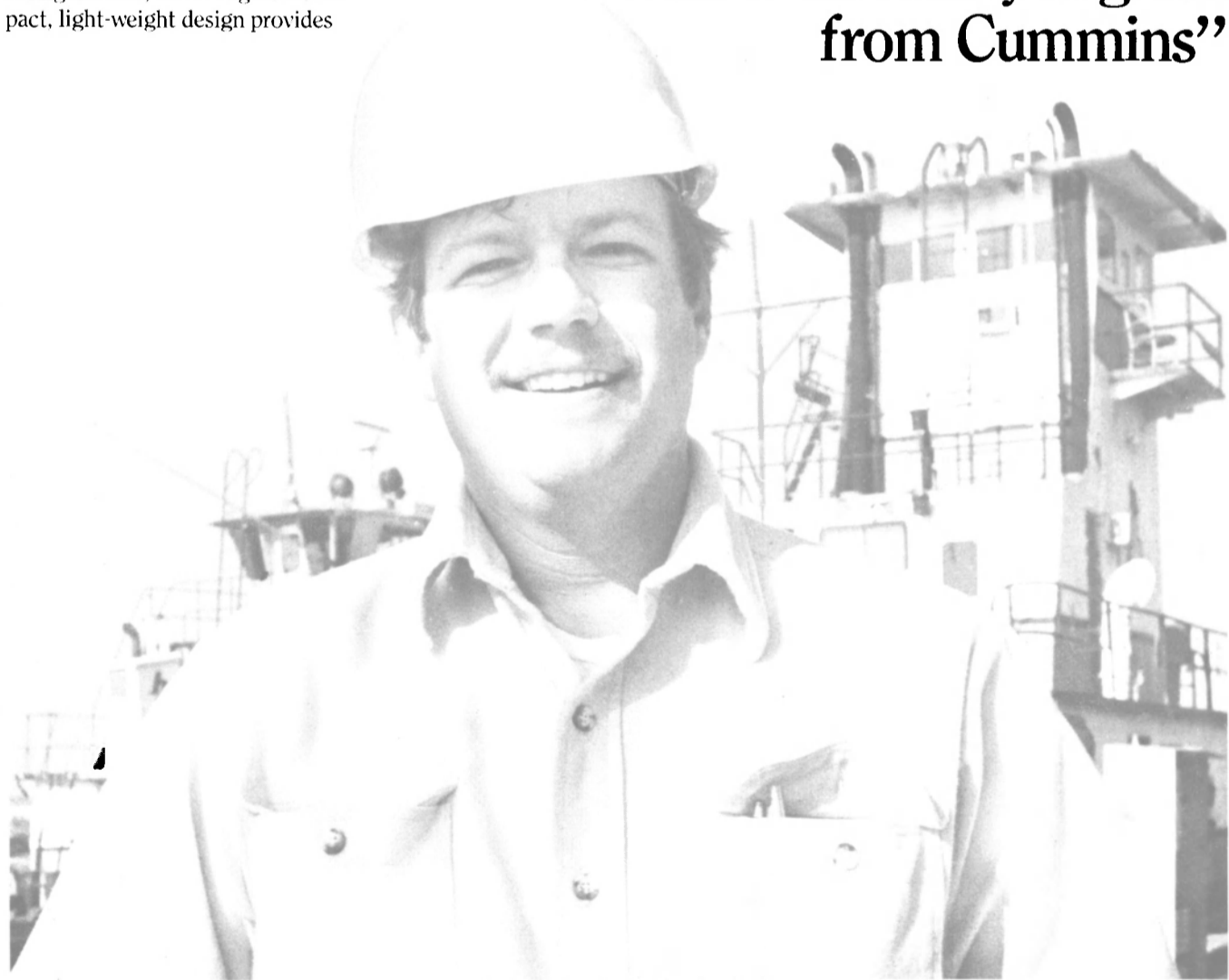
Check into the Cummins B engines for auxiliary power. We think you'll agree they offer the best balance of fuel efficiency, durability, reliability and quiet performance in a compact, lightweight, cost effective package.

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**93rd SNAME
Annual Meeting**

— A Preview

Participating Exhibitors

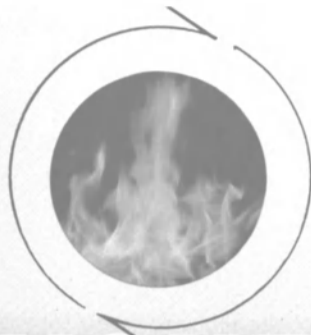
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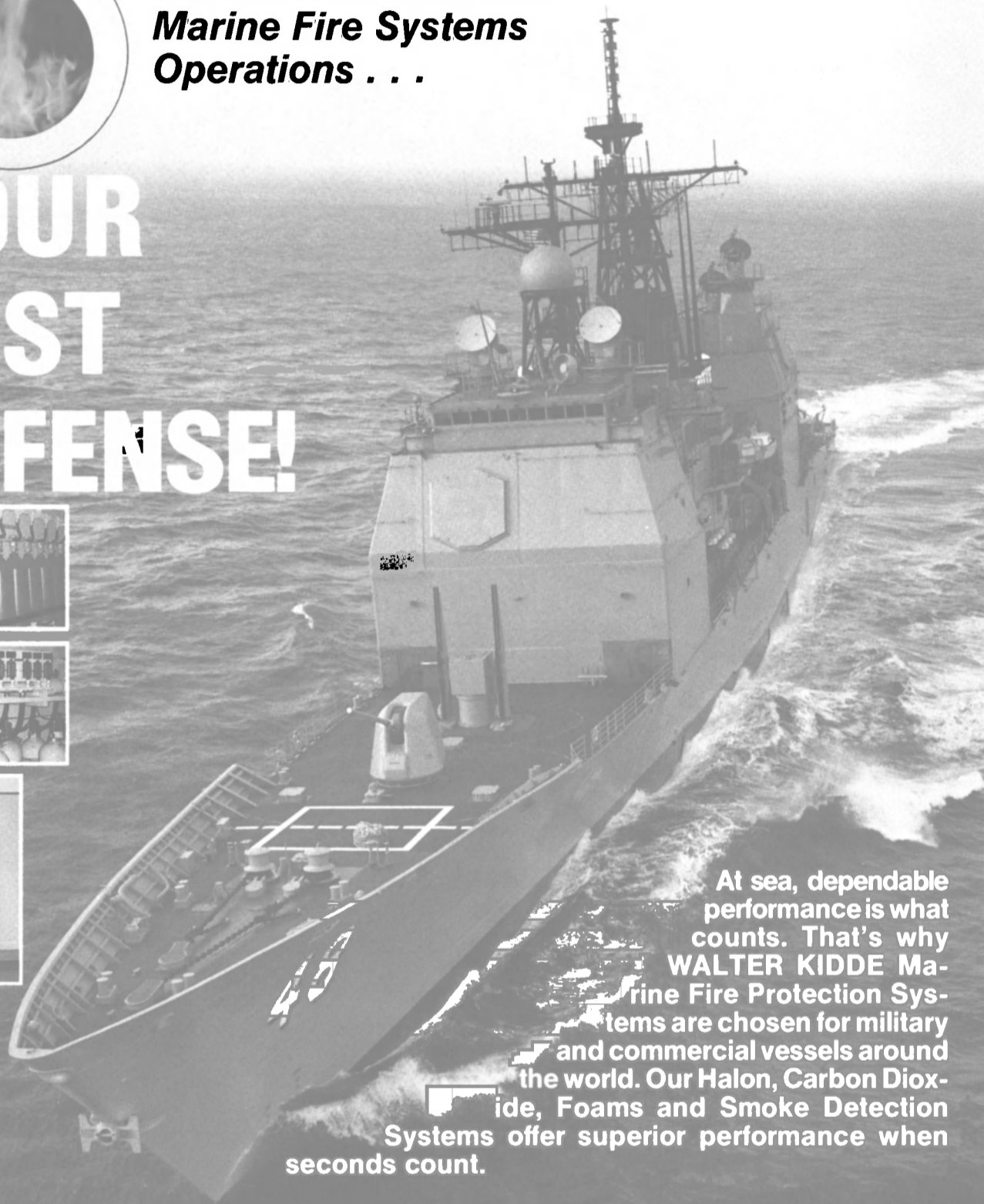
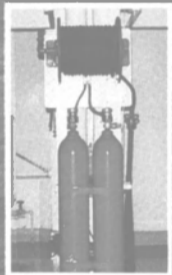
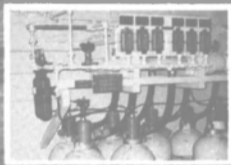
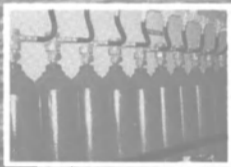
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93rd SNAME Annual Meeting

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Strachen-MacKoe	301
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SKILL

When we overhaul, repair and rebuild, we do it right.

Skills like block welding, line boring, engine overhauling and rebuilding are not learned overnight. They take time, and at National Marine we've been developing these skills for over fifty years.

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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 propagation 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® fresh-water 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

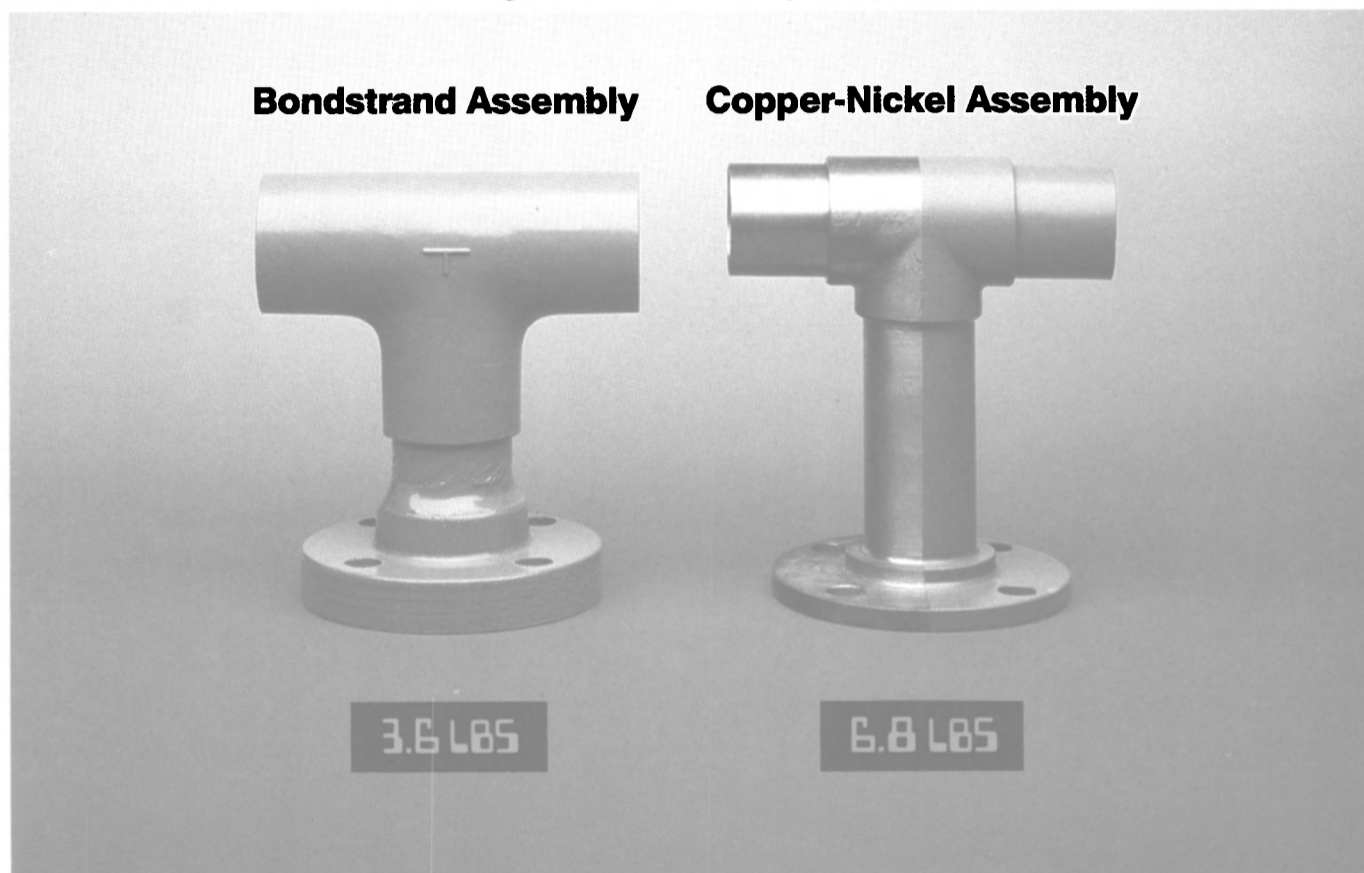
basket, "Y" type, and duplex strainers, as well as check valves and needle valves.

AMERON

Booth No. 408

(continued)

Bondstrand® takes the weight out of Mil Spec pipe. . .



And it gives you high performance for as little as one-third the installed cost

Now Bondstrand 2000USN, manufactured in accordance with MIL-P-24608, meets demanding U.S. Navy requirements for lightweight, corrosion resistant, cost-effective fiberglass pipe systems for nonvital shipboard applications.

Nonmetallic Bondstrand 2000USN pipe, at one-fifth the weight of copper-nickel pipe, is highly corrosion resistant, completely inert to chlorinated water and seawater, and can have an installed cost as little as one-third that of copper-nickel 90/10, Class 200 pipe systems.

With Bondstrand 2000USN, you can achieve significant installation cost benefits when compared with traditional U.S. Navy on-board pipe systems.

Bondstrand 2000USN, rated at 200 psig at 150°F, has been accepted for these shipboard applications on combatant and noncombatant vessels:

- Seawater cooling and flashing lines
- Oily water and wastewater collection
- Chilled water systems
- Distilled water lines
- Main drainage systems
- Low pressure air
- Plumbing vents
- Deck drains
- Secondary drainage
- Potable water systems requiring NSF listed pipe

Bondstrand pipe systems are easy to join, remain unaffected by corrosion and deliver essentially maintenance-free service.

The results, significant reductions in weight, installation and maintenance costs, without sacrificing performance standards.

With over 600 marine pipe installations already relying on Bondstrand pipe, there's plenty of proof that Bondstrand fiberglass pipe systems deliver high performance at low installed cost.

For complete information contact Ameron.

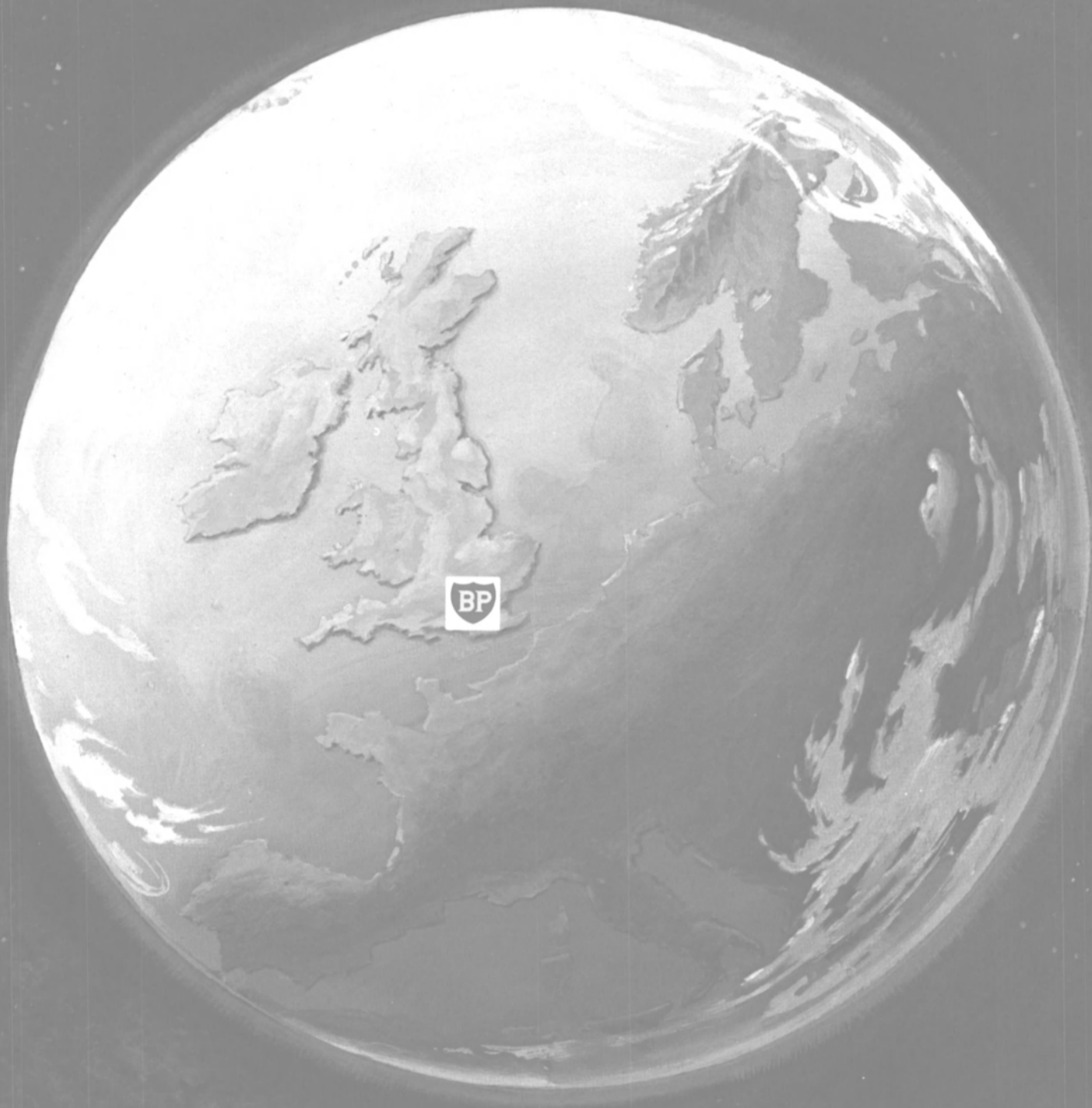
See Bondstrand 2000USN at SNAME — Exhibit Space 412

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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.

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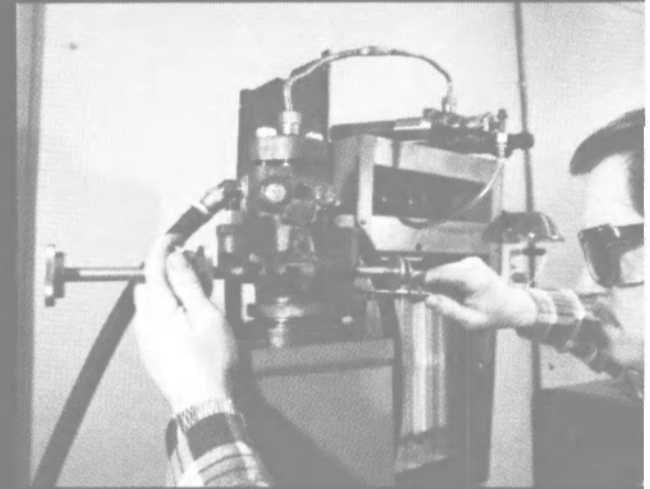
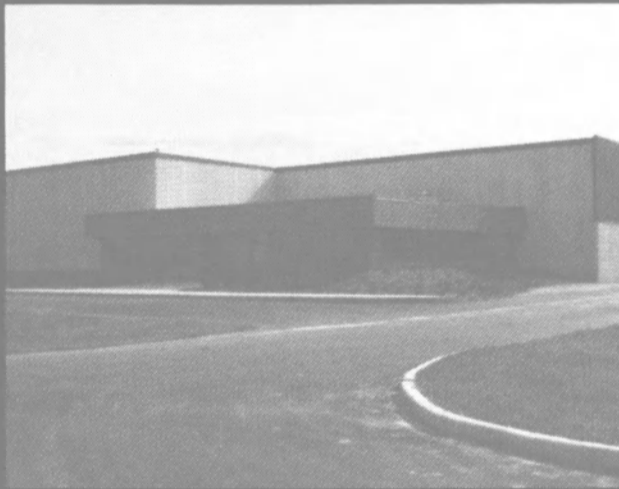
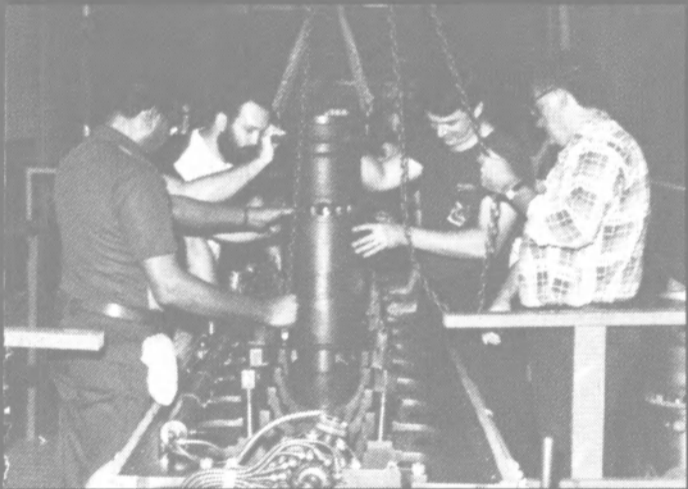
For more information, call 1-800-356-6955. Fairbanks Morse Engine Division, Colt Industries, Beloit, Wisconsin 53511.

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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 combatant and noncombatant 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.

HOWEVER OFTEN YOU MAY SOOTBLOW YOUR BOILER, IT'S NEVER OFTEN ENOUGH

Many different methods are used for removing soot from the heat transfer surfaces of boilers. Steam or air sootblowing and shot cleaning are the most common, although the disadvantages and problems are generally the same, whatever method is used.

PROBLEM 1. The sootblowing equipment consumes a large amount of energy. In steam sootblowing, for instance, between 1% and 8% of the steam generated by the boiler is used for sootblowing (varies with the fuel). So the operating costs are often high.

PROBLEM 2. Conventional sootblowing methods are periodic. The boiler efficiency therefore gradually deteriorates between one sootblowing

occasion and the next, and the heat transfer surfaces are practically never completely clean.

PROBLEM 3. The medium used for cleaning impinges on the heat transfer surfaces from a predetermined direction, so it cannot possibly reach all surfaces of the boiler. Some soot will remain—in corners, pockets and cavities—and will impair the efficiency of the boiler.

PROBLEM 4. Sootblowing causes heavy wear of the tube material, and may result in high maintenance costs and unscheduled stoppages. The sootblowing equipment also demands continuous maintenance.

But the problems open up opportunities...

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 Dun-

ham-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/m³; 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.

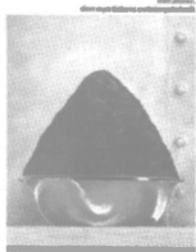
COMBUSTION ENGINEERING

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)

INFRAFONE REMOVES SOOT CONTINUOUSLY FOR CONSTANT BOILER EFFICIENCY

Circle 211 on Reader Service Card



I WANT TO SEE IT BLACK ON WHITE.

Here's your opportunity to convince me that the new infrasound technique is much more effective in keeping the boiler clean, increases its efficiency, lowers the operating and maintenance costs, eliminates wear and has a pay-off time of less than one year. Please send me your brochure.

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Address _____ Phone _____

INFRASONIK AB

An ASEA STAL company, S-612 20 Finspong, Sweden
Tel: 46-122 19090, Telex: 64045 STAVAL



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

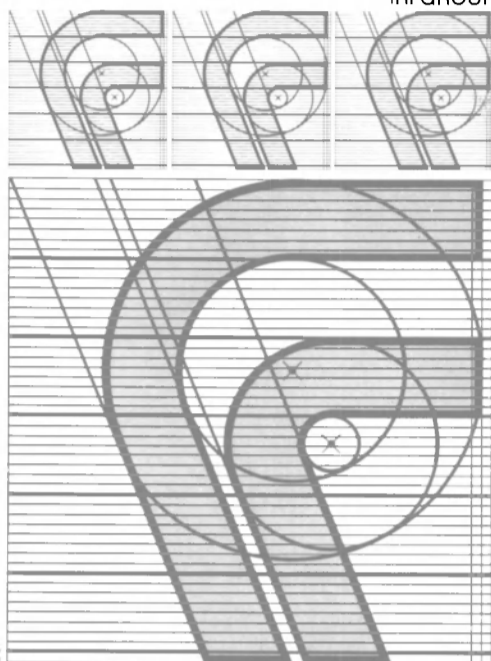
Booth No. 830

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)

Maritime Reporter/Engineering News

IRI GROUP



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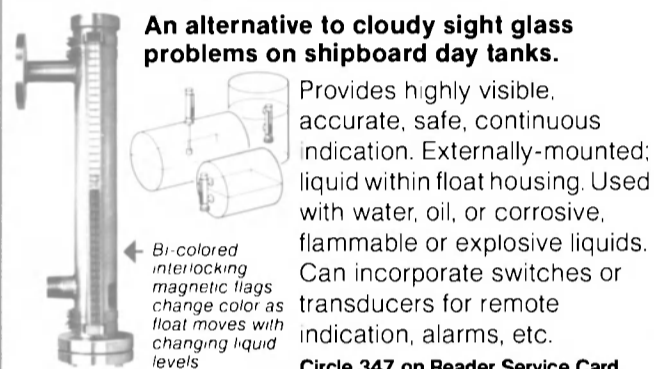
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An alternative to cloudy sight glass problems on shipboard day tanks.



Provides highly visible, accurate, safe, continuous indication. Externally-mounted; liquid within float housing. Used with water, oil, or corrosive, flammable or explosive liquids. Can incorporate switches or transducers for remote indication, alarms, etc.

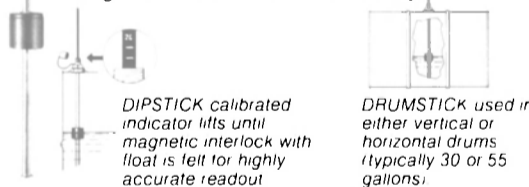
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Non-electric DIPSTICK & DRUMSTICK Level Indicators

For on-the-spot use in storage tanks or drums where power is not available.

Operate manually in chemicals, oils, fuels, etc. Only float and stem in contact with liquid. Choice of materials and mountings. Indicating lengths from 6" to 72". Temperatures to 230°F.; pressures to 750 psi. *Longer units available. consult factory.

Circle 348



DIPSTICK calibrated indicator lifts until magnetic interlock with float is felt for highly accurate readout

DRUMSTICK used in either vertical or horizontal drums (typically 30 or 55 gallons)

Sounding Tape

Portable tank gauging in stationary tanks or barges.

An easy-to-read, fractionally-marked tape reels out of gun into a tank, or hollow nonferrous, tank-mounted tube or pipe. Powered by a 9V battery, unit features a magnetic float which rides with the liquid level and interfaces with a reed switch within the plumb bob to provide physical sounding for accurate (1/8") ullage readout. Coast Guard accepted for restricted or closed loading use. FM-approved for intrinsic safety with hazardous cargoes.

Circle 349

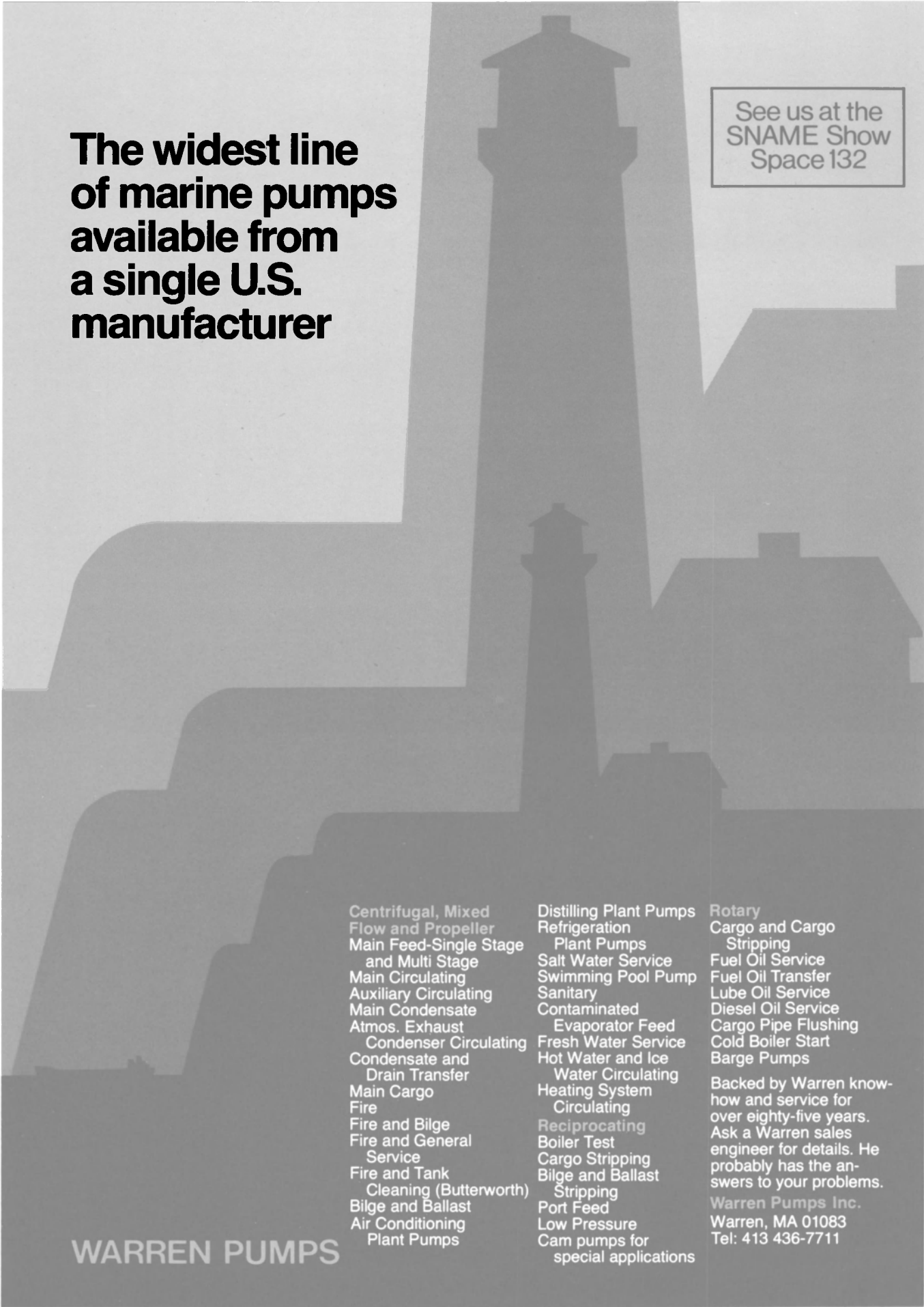
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Service
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Plant Pumps

Distilling Plant Pumps
Refrigeration
Plant Pumps
Salt Water Service
Swimming Pool Pump
Sanitary
Contaminated
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swers to your problems.

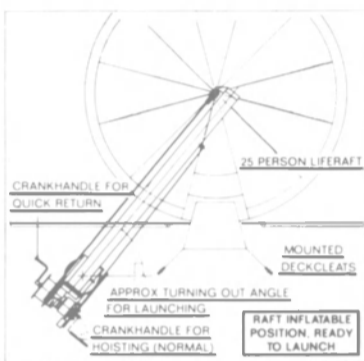
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**93rd SNAME
Annual Meeting**
— A Preview

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.

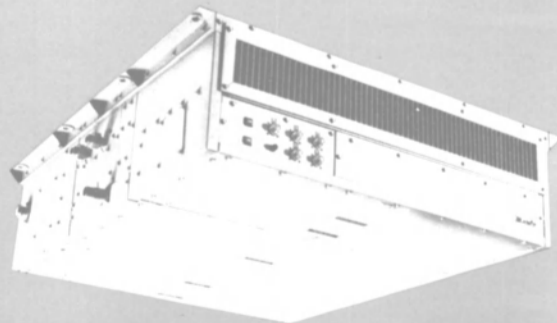
FATHOM OCEANOLOGY

Booth No. 638

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

MARLO NAVY FAN COIL UNIT

SEE THE MARLO NAVY FAN COIL AT BOOTH F6,F7



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**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 photographic 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 Ames-

bury, 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. Litera-

ture 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)

**More than ever,
we're Versatile.**

We have been building and repairing ships on Canada's west coast for nearly 90 years. Until recently, we have been known worldwide as Burrard Yarrows Corporation. Today, we are Versatile Pacific Shipyards Inc., the same company with a new name.

We have the facilities and the skilled people to handle almost any job, large or small. And we have an established reputation for fast, reliable work at reasonable cost.

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Quick delivery... 6 standard models



Model	II-12	II-24	II-36	II-165	II-330	II-500
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InterTrade

MARINE PRODUCTS DIVISION

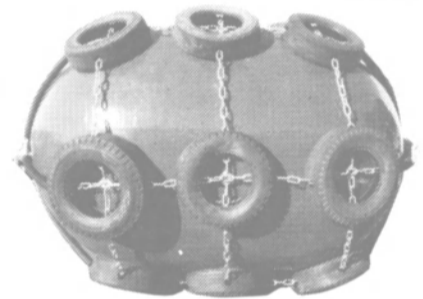
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FROM 2'x4'
TO 8'x22'

**LARGE
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SMALL FENDERS



FROM 5"x24" TO 4'x8"

PRODUCT TYPE

All of these fenders are foam filled. The advantage of foam filled fenders is their high energy absorption performance, with low reaction forces. The strong durable outer skin of each fender is produced of a high abrasion resistant material. This outer skin is further strengthened with fiber applied with a filament winding machine. The result is an outer coating with the ultimate in strength and durability.

NOTE: The InterTrade coating will not mar ship surfaces as rubber does.

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CORPORATE OFFICE:

InterTrade Industries, Ltd.
15301 Transistor Lane
Huntington Beach, Ca 92649, U.S.A.
(714) 894-5566

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**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.

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.

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

(continued)

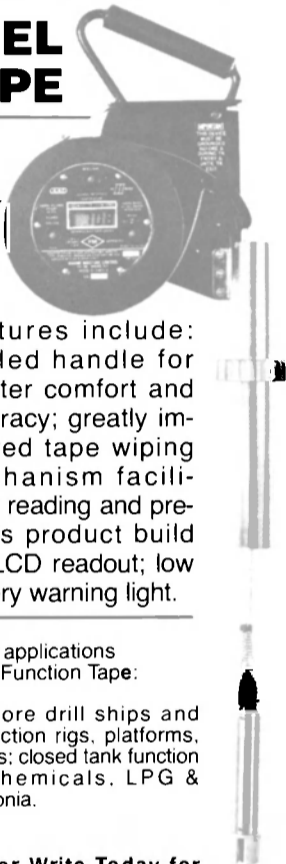
TECHNICAL AND SOCIAL PROGRAMS

THURSDAY, NOVEMBER 14		
	TRIANON	MERCURY
9:00	1. Evaluating Longitudinal Ultimate Strength of Ship Hull Configurations Kutt/Piaszyk/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 Elasto-hydrodynamic 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	

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- Measures ullage, interface and temperature in a single penetration
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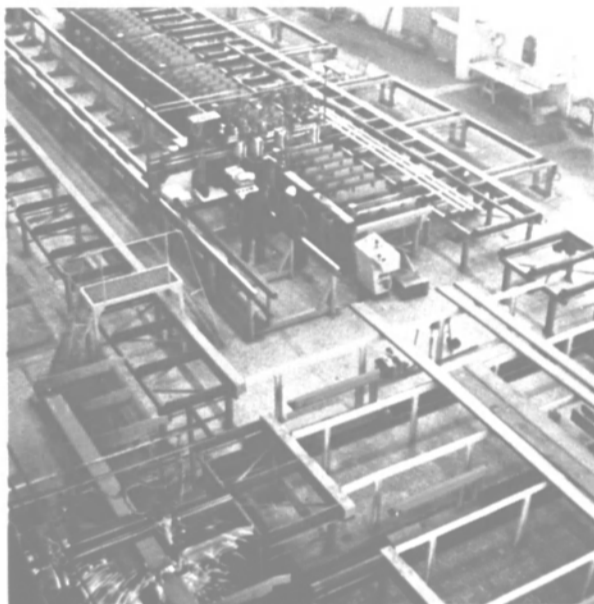
It's no accident that most builders and owners of tugs, crewboats, supply boats, tow and patrol boats and patrol boats specify Columbian Systems astern. They know that we stress optimum engineering for maximum performance and minimum downtime for greatest profit potential.

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Precision Propulsion for the Marine Industry Since 1901
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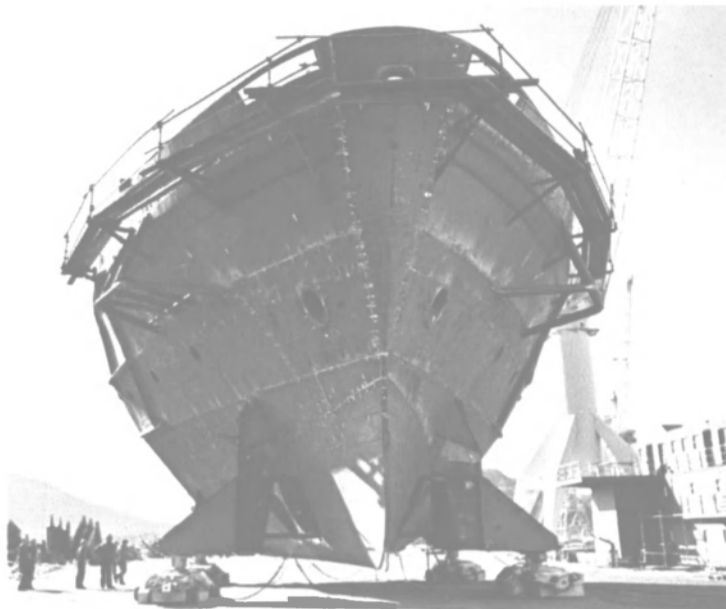
SNAME BOOTHS 331, 333

Circle 284 on Reader Service Card

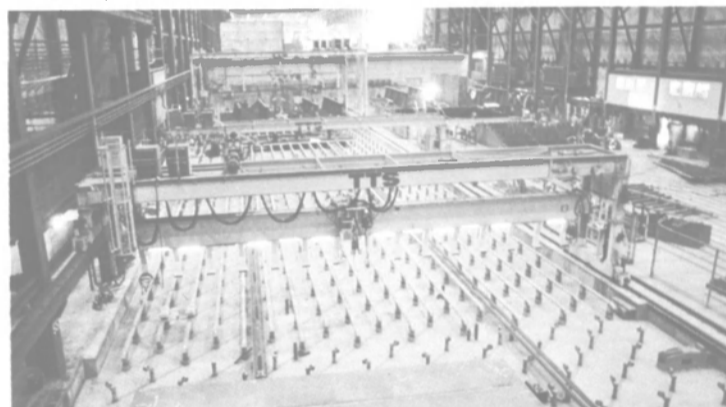
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93rd SNAME Annual Meeting

— 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.

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.

MARINE INDUSTRIE

Booth No. 632

Marine Industrie Limitee of Sor-el, 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.

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.

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/BIFEX 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

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 container-ship; 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.

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**The most positive
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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 (IN-MARSAT 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, Gun-clean 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 add-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 Aeospace & 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)

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ENGELHARD

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**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 Thor-

don® 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-engi-

neered 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-



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**Introducing
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Marine Design
Software Programs**

HydroComp will formally introduce the first release of **NavCad** at this year's International Maritime Exposition (SNAME). Our new innovations in marine design software include **NavCad:Props** (propulsion system analysis), **NavCad:Props Plus** (propeller selection) and **NavCad:Power** (power prediction). All three programs will be available for demonstration at the show.

Visit us in Booth 811 to learn about **NavCad** hands-on. And register to win the **NavCad** program of your choice to be awarded at the end of the show.



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Circle 196 on Reader Service Card
Maritime Reporter/Engineering News

bec, Canada will exhibit its bulk-head 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.



Sometimes

you need all your eggs in one basket.

In today's world of super high-tech systems, you have to consider the whole range from hardware to software, integration to installation, training to support, wherever you may be.

Who do you call when the system goes down? Will the software supplier have any interest in your hardware problems? Will your hardware supplier train your personnel in software operation? Will the system designer handle installation? Or, who services any of it on the other side of the world?

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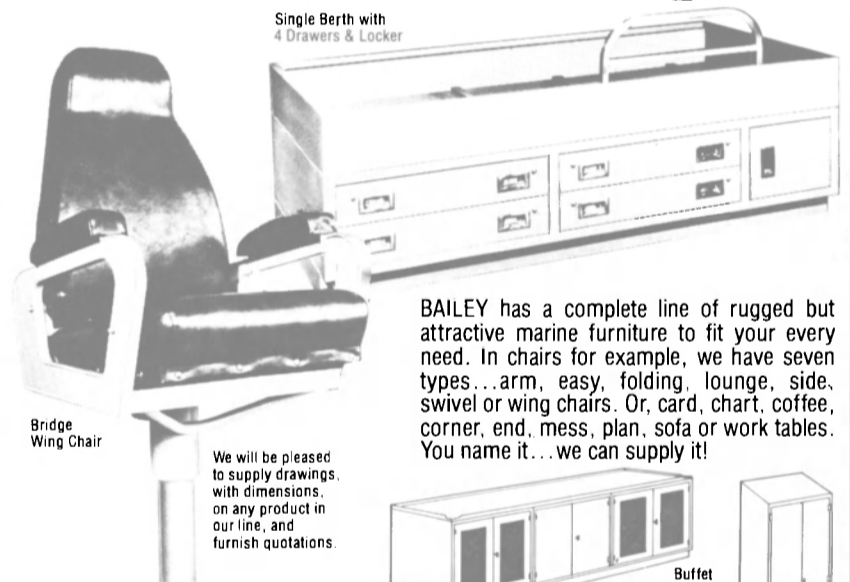


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An easy way to add 16 tons of variable load

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' x 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 1/2"	2.13	2.96
80-32 3/4"	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 1/2" and 3/4" 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. 1/4" Core meets A-0 requirements.

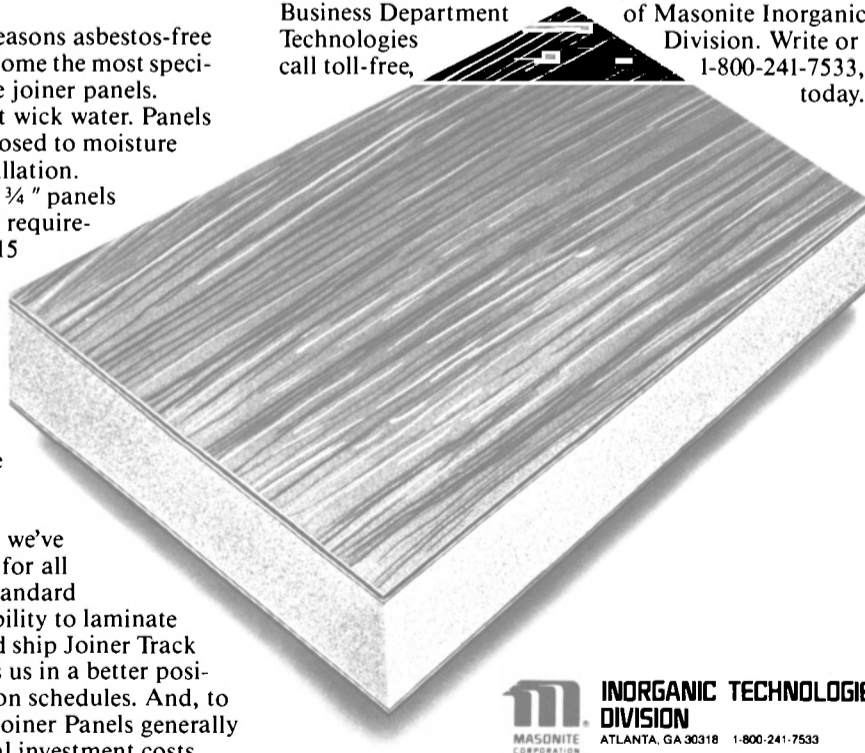
And, there are other benefits due to low density and light weight.

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.



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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.

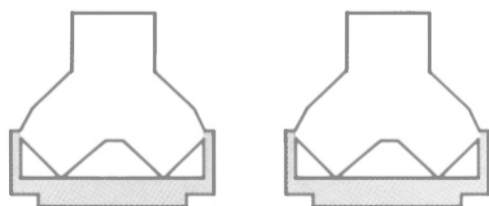
Other oil purification systems are timer-controlled, which means they de-sludge only at pre-set intervals. If heavy seas stir-up the "muck" in your fuel tanks, the intervals may be too far apart. Result: dirt gets into your day tank and fuel lines, causing disastrous engine wear... In the Westfalia system, 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.

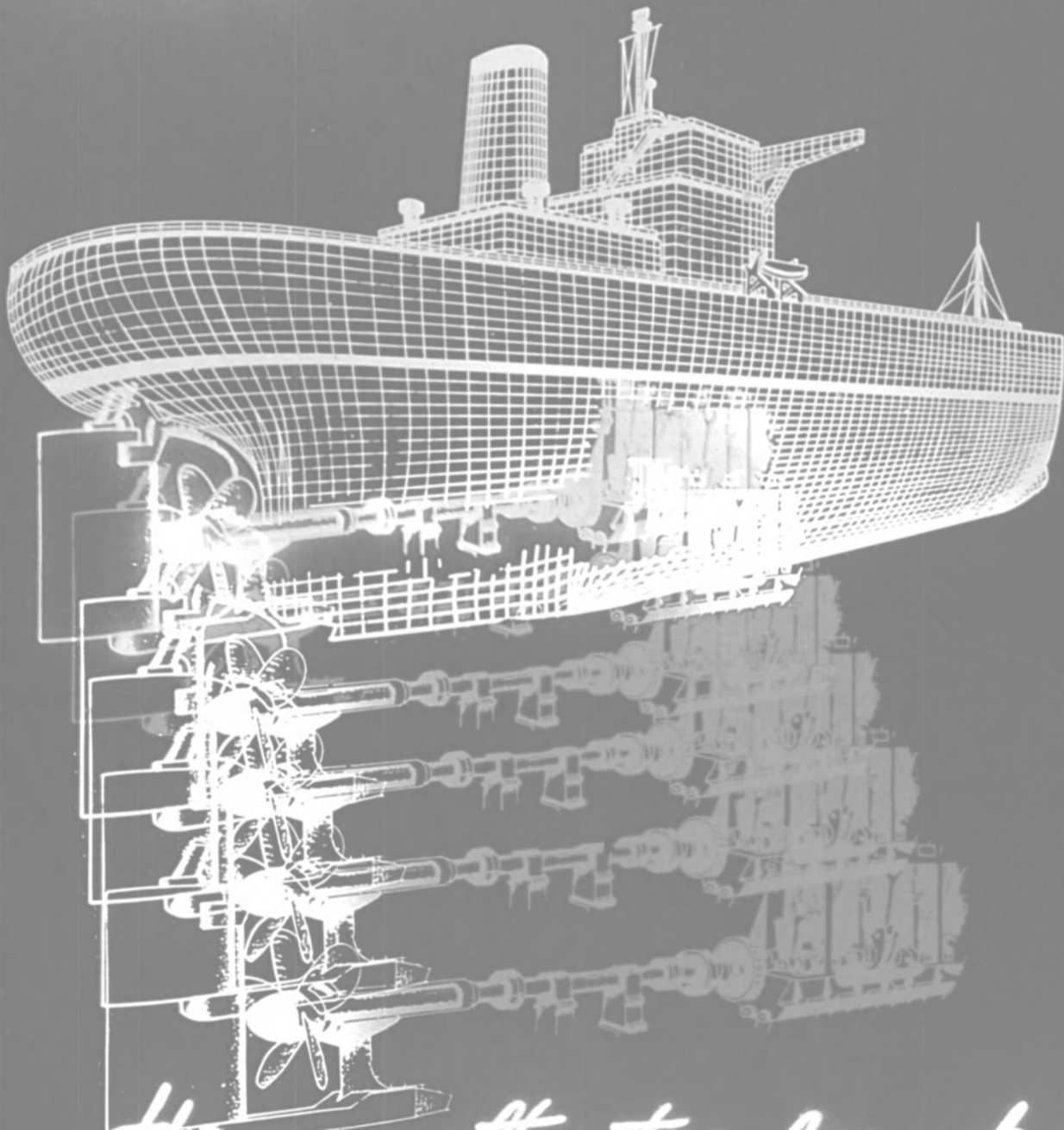


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**Falk Names Peter Davis
Director Of Marketing**



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.

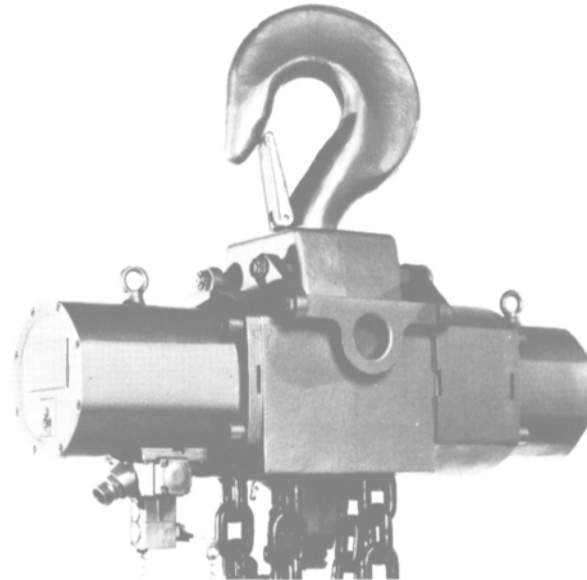
For a brochure detailing the specifications and operating features of Raytheon's newly enhanced DSF-6000 Digital Survey Fathometer,

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).

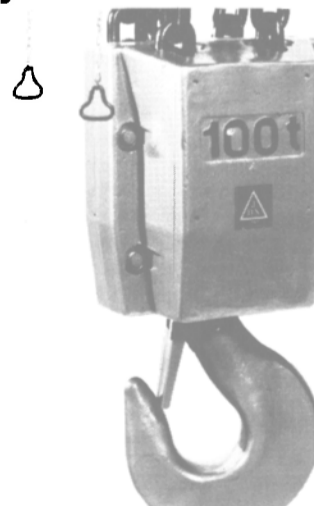


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Circle 204 on Reader Service Card

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, Orter, 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 reprovise.

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 cop-

per. 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

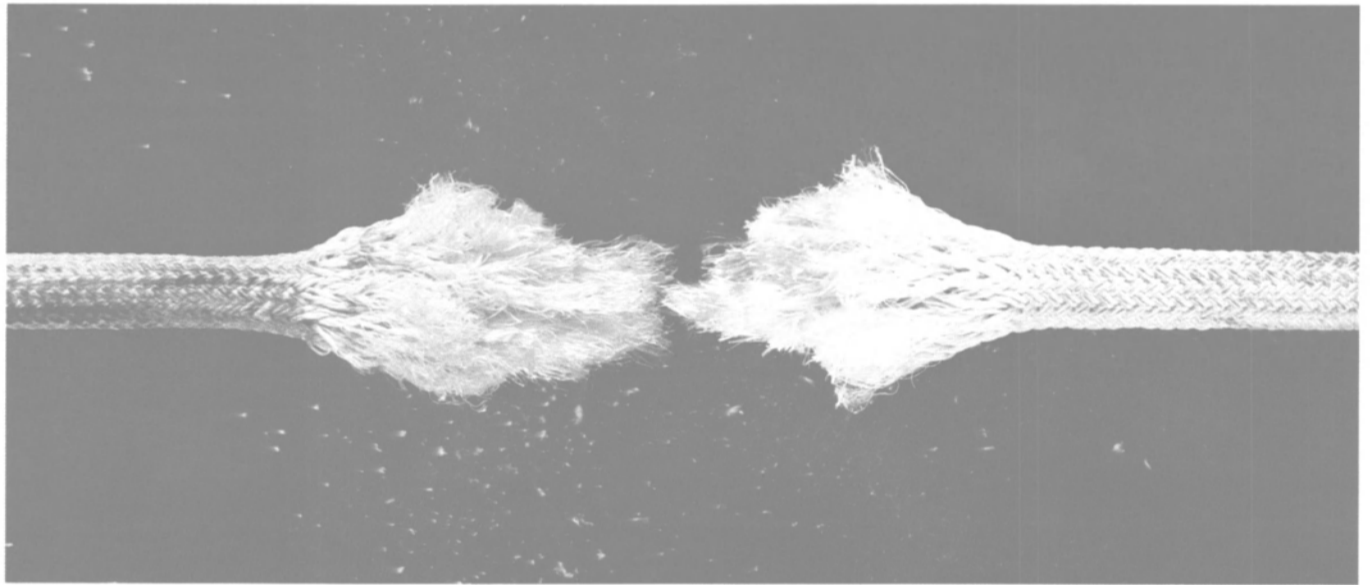
for project graphics systems; VISION, a solution to project management; and VISIONmicro, project management software for the PC. The systems are defined in clear text, which is accompanied by colorful graphics.

In addition, a convenient, pre-paid "information request" postcard is included in the brochure.

For a free copy of this interesting and informative brochure,

Circle 79 on Reader Service Card

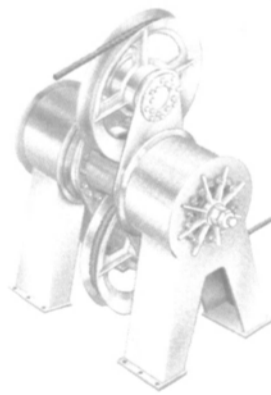
YOU CAN PREVENT A DISASTER LIKE THIS WITH MURDOCK'S NEW ROPE TENSION COMPENSATOR.



Towing and docking in rough seas is much safer and easier with Murdock's Rope Tension Compensator aboard.

The Compensator provides the rope with the elasticity essential to absorbing enormous shock loads. Based on Murdock's advanced elastomeric technology, the Compensator maintains a constant tension on the rope. It instantly pays out rope when shock loads develop, then retracts rope when the load subsides. There's no opportunity for slack to develop.

This eliminates the danger of a sudden shock load causing the rope to snap.



Tension forces generated by the compensator and the length of rope travel it allows are easily adjustable. Because it's a passive

system, there's no maintenance other than occasional lubrication of the bearings.

The compensator is easy to install. Aboard ships, it usually is mounted between the winch and fairlead — without altering the vessel's winching system. It also can be installed on docks and single-point mooring systems.

Learn more about how Murdock's Rope Tension Compensator can prevent disastrous mooring line breaks. Write or call Murdock today.

MURDOCK ENGINEERING COMPANY

P.O. Box 152278, Irving, Texas 75015
(214) 790-1122, TWX 910-860-5901, Telex 792996

In Europe contact: Gray Mackenzie, 3rd Floor, Royalty House
72-74 Dean Street, London W1V 5HB Telephone: 01-439 7252, Telex: 25697

Circle 250 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 staff is qualified to Class III of MIL-B-17901B specification.

The brochure illustrates design advantages as well as installation and replacement information. Charts comparing staff 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 trans-

portation 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 commitments 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.

PRECISION SHIP TESTING.

RAYDIST continues support of world-wide sea trial services which commenced in 1952 with the USS UNITED STATES and now includes today's modern super tankers, the U.S. Navy's sophisticated nuclear submarines, and Aegis guided missile cruisers.

RAYDIST provides standardization data to 1/100th of a knot, along with precise radiometric position data for navigation, turning circle characteristics, acceleration, deceleration, and stopping distances.

RAYDIST is unequalled in ship trial experience (more than 300 ships). Our reputation for performance at a reasonable cost has made Raydist the accepted standard for the industry.

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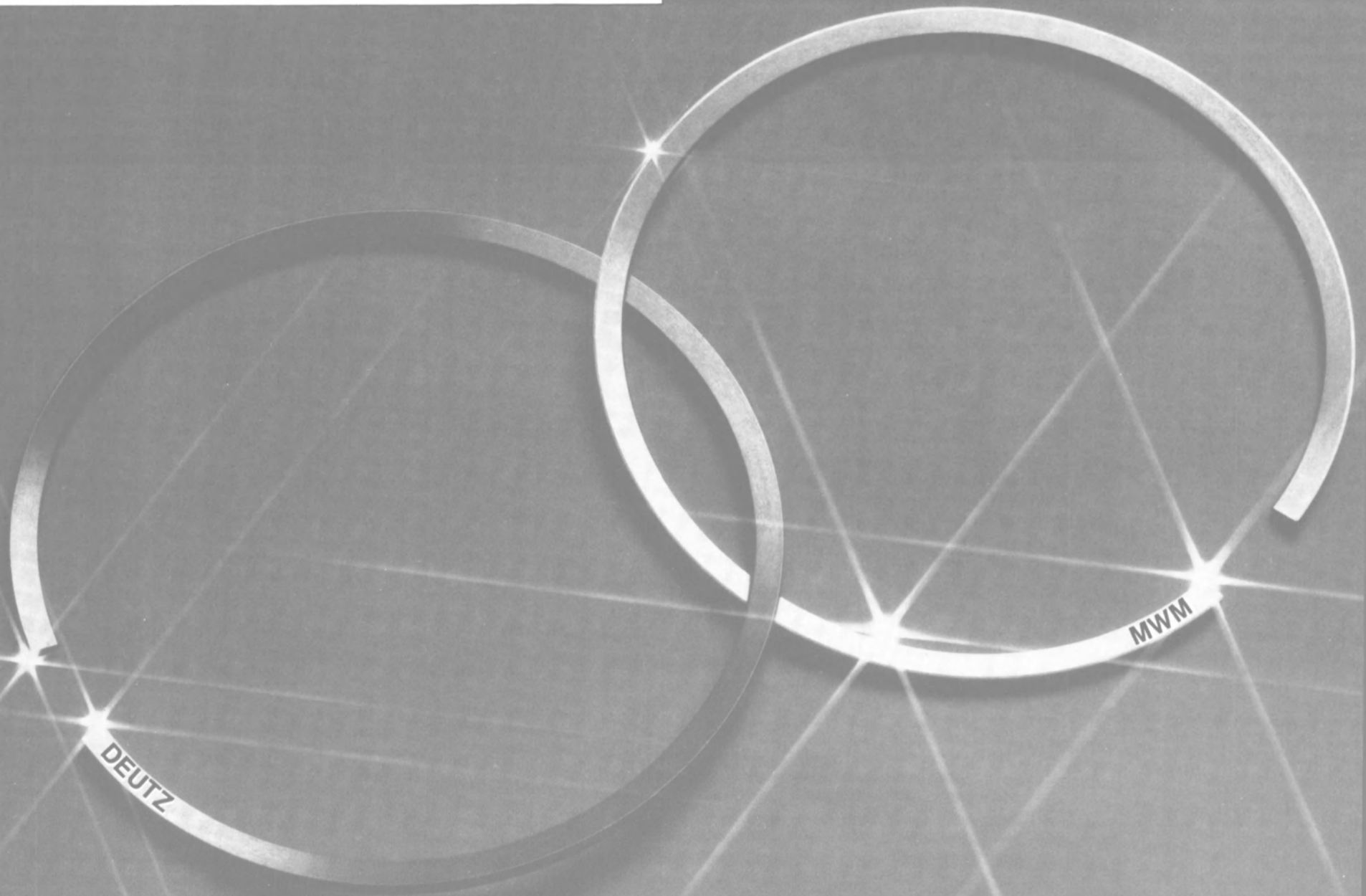


RAYDIST Marking the spot at sea since 1946.

For more information, write or phone: Teledyne Hastings-Raydist, P.O. Box 1275, Hampton, VA 23661, U.S.A. Telephone (804) 723-6531. TWX: 710-882-0085. USS Ticonderoga (CG 47) photo courtesy Ingalls Shipbuilding, Pascagoula, Mississippi.

Circle 126 on Reader Service Card

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, highly trained service personnel and a fast supply of genuine spare parts anywhere, anytime.

Give us a call!

DEUTZ MWM

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

**“Sea-Slide®
Increased My Speed,
Saved Fuel &
Didn't Inhibit
Antifoulants.”**

Jim Taylor



Proof Positive!

Jim Taylor of Jim Taylor Marine Railway in Ft. Myers, Florida ran two 26' boats (one fiberglass, one aluminum) over a 2000 yd. course at a constant 3500 rpm engine speed. When Sea-Slide was applied, both boats ran the course faster.

Sea-Slide cut 12.3 seconds or 12.4% from the time of the fiberglass boat, and 8.1 seconds or 5.6% from the aluminum craft. **That means a saving of time and fuel.**

Sea-Slide Drag Reducing Overcoat is based on the principle that a wettable surface where water spreads (hydrophilic - water loving) produces less drag than a surface on which water beads (hydrophobic - water hating). Sea-Slide actually binds a layer of water around your hull causing less friction and water turbulence—resulting in less drag!

Antifoulants Still Work!

Sea-Slide does not interfere with normal antifoulant action. Easily applied with brush, spray or roller, Sea-Slide requires no mixing of hazardous chemicals and is cleaned up with soap and water. It cures to a clear, hard surface in 4 hours and lasts up to 12 months. One gallon covers an average of 750 square feet, more than twice the coverage of other bottom coatings.

Increase your speed and save fuel with Sea-Slide.

**Nothing Else Should Be Between
Your Boat And The Water.**



Drag Reducing Overcoat

HYDROMER, Inc., Salem Industrial Park, Route 22, P.O. Box 337,
Whitehouse, NJ 08888 Phone (201) 534-9034
Dealer Inquiries Invited © 1985 Hydromer, Inc.

Circle 141 on Reader Service Card

**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 recently 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 Trans-

america 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



CUAÇÃO DRYDOCK COMPANY Inc

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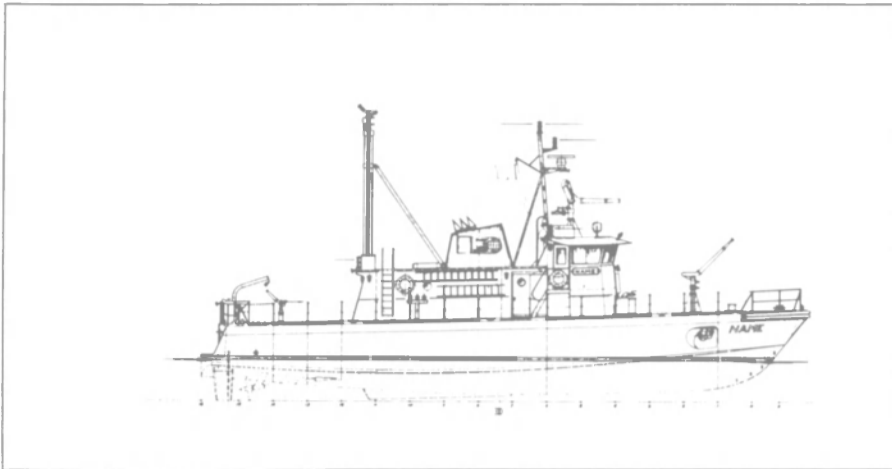
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ITT-420355 WU-640394

Circle 231 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.	Lake Shore, Inc.
Allied Corporation	Leslie Co.
American Systems Engineering Corporation	Machinery Repair Division
Atlantis Services Inc.	Marotta Scientific Controls
Aurora Pump	Pacific Pump
Bendix Electro Dynamic Division	Rix Industries
Buffalo Pumps, Div. of Buffalo Forge	Sargent Industries
Byron Jackson Pump	Solar Turbines, Inc.
Cameron Pump Division	Terry Corporation
Cla-Val Company	Transamerica Delaval, Inc.
Colt Industries	Treadwell Corporation
Elliott Company	Turbodyne
Excelsior Brass Works	Vacco Industries
Gimpel Corporation	Viking Pump-Houdaille, Inc.
Hale Fire Pump	Ward Leonard Electric Co., Inc.
Hardie-Tynes	Warren Pumps, Inc.
Manufacturing Co.	Washington Engineering Co., Inc.
Ingersoll-Rand Compressor Div.	Waukesha Bearings Corporation
Jay-Cee Fastener Corporation	Westinghouse Electric Corp. Turbine Division
John Crane	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

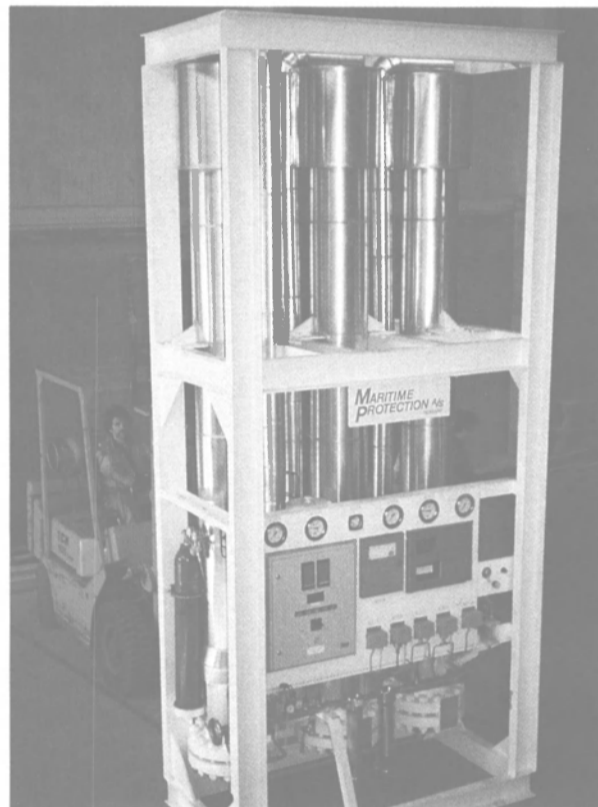
General Counsel, described current thinking and legislation on rights in data both in Congress and DoD. He responded to many questions from the audience who expressed concern over the reversal of roles in that the burden of providing clear and convincing proof is borne by industry whenever the government challenges those rights, even if those rights have been in existence for 20 years or more. Much discussion en-

sued 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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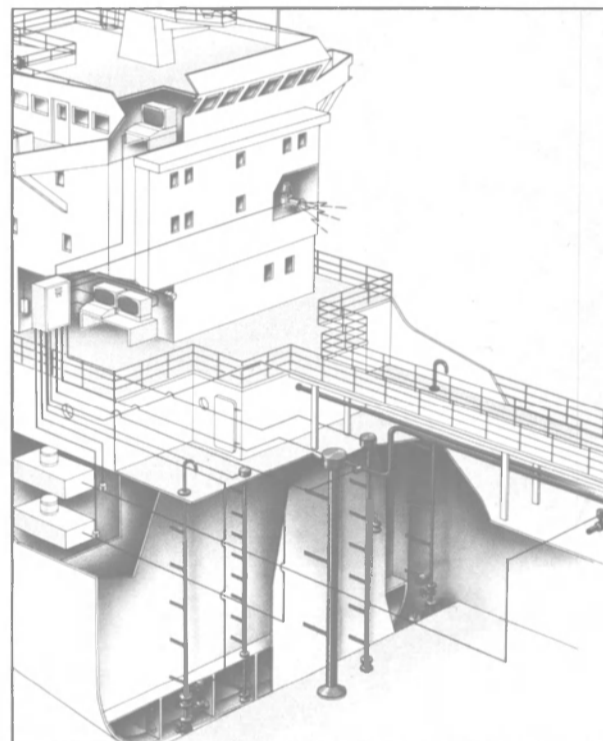


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MMA Sponsors Forum

(continued)

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 U-**



VADM William Rowden

rich 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.

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, engineering, 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

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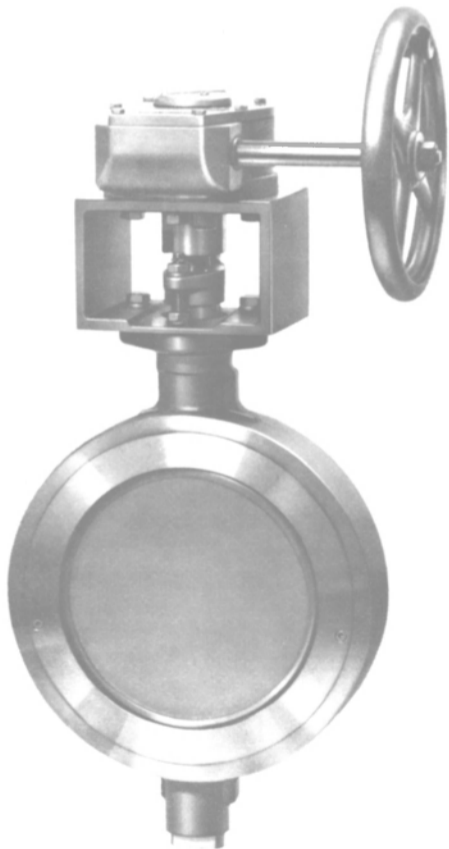
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must bring its experience, knowledge, skill, and integrity to the attention of the Navy and Congress.

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**.

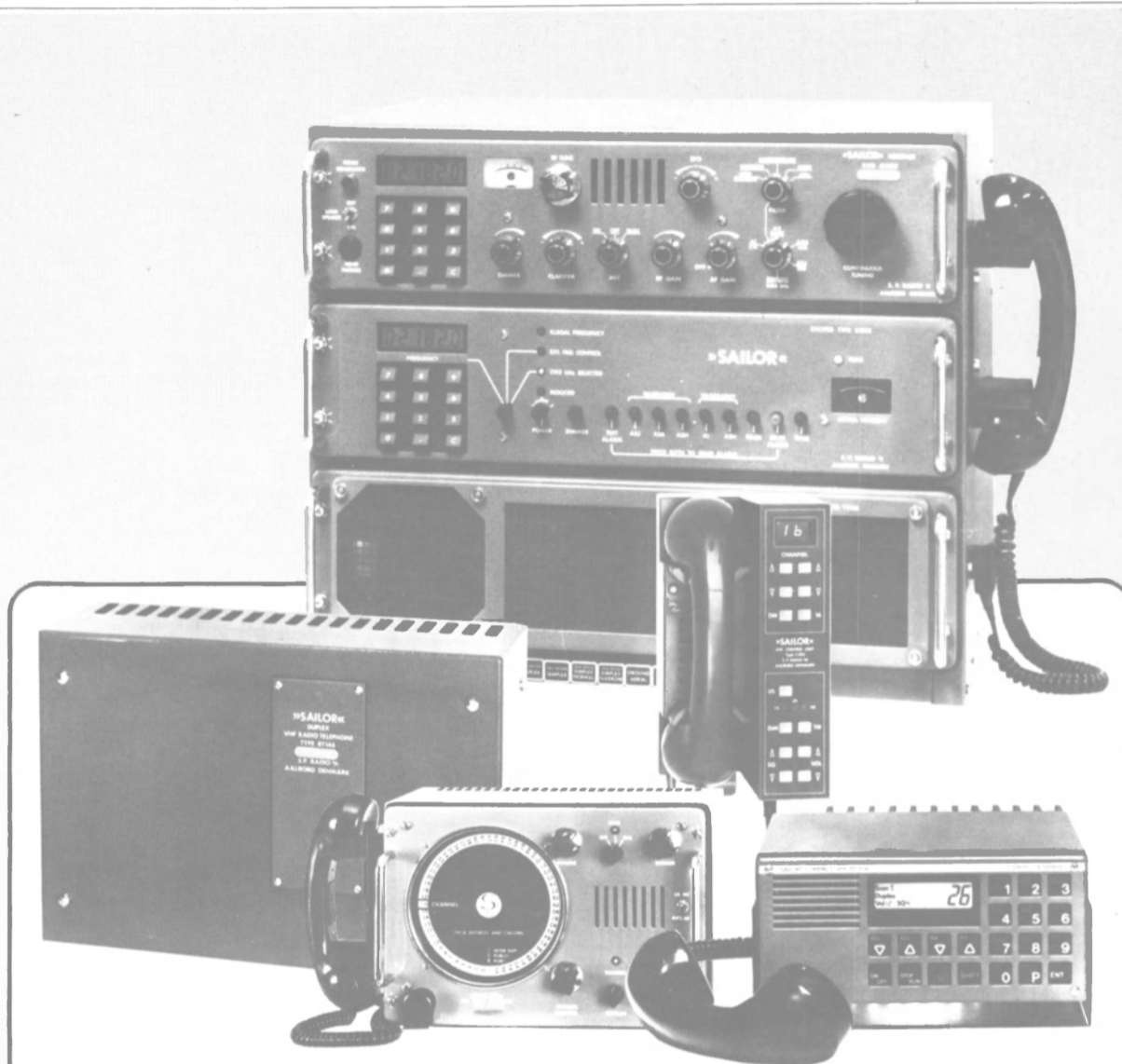
William W. KinKead, director of the Office of Policy and Plans since November 1983, continues in that position but now reports to Mr. **Bourdon**.

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.



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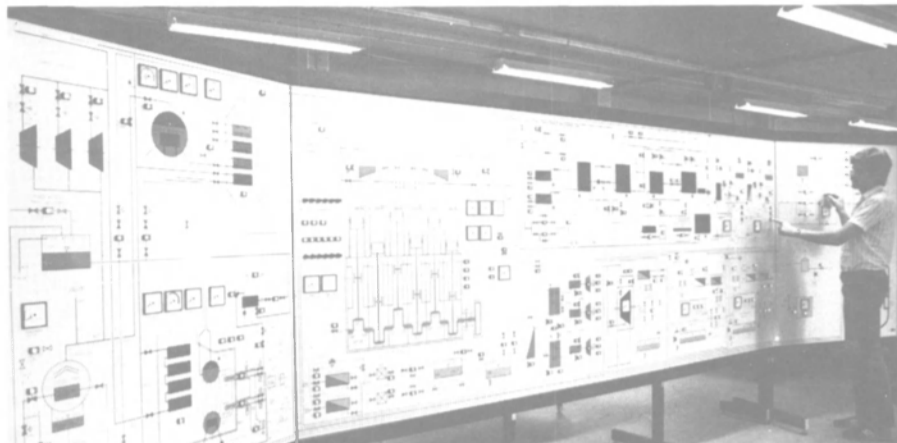
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ELECTRONICS UPDATE



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 its 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 com-

puterized 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

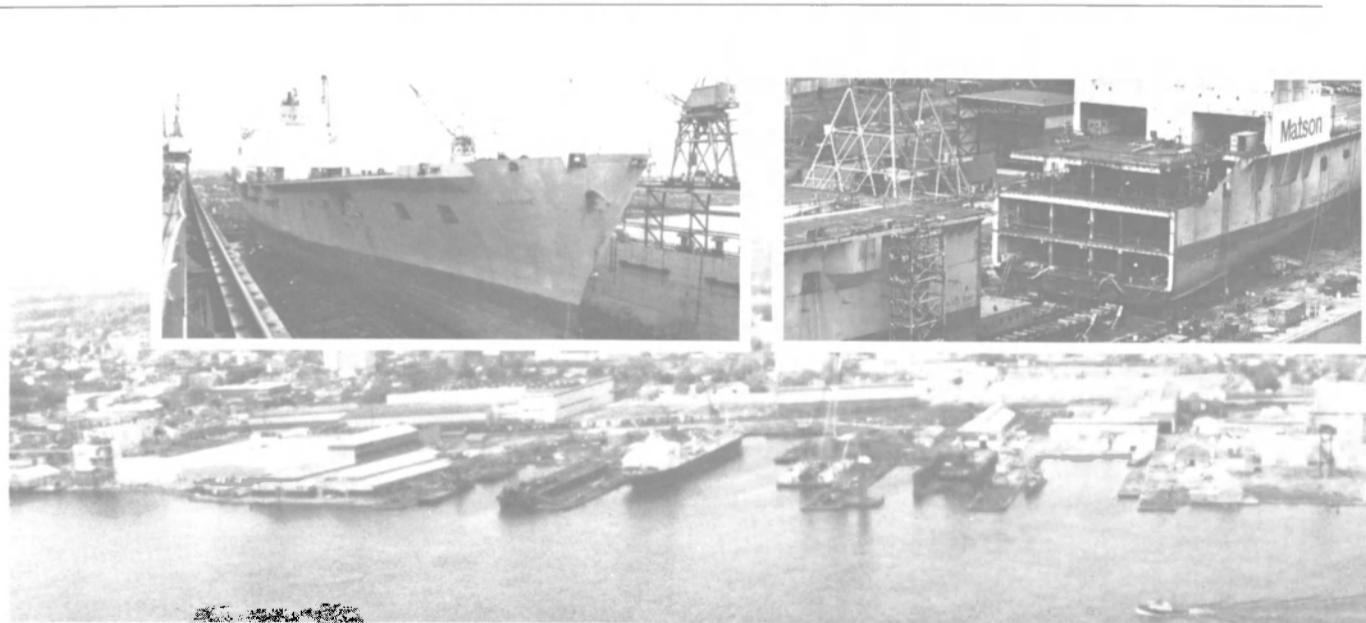
vessels in the Pacific and Indian Oceans and the Arabian Gulf region. The company maintains an extensive network of double-stacked container trains which criss-cross North America. The entire system accommodates both dry and refrigerated cargo.

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.



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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 pro-

spective 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 associa-

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 (OPNAV). 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 Washing-

ton 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.

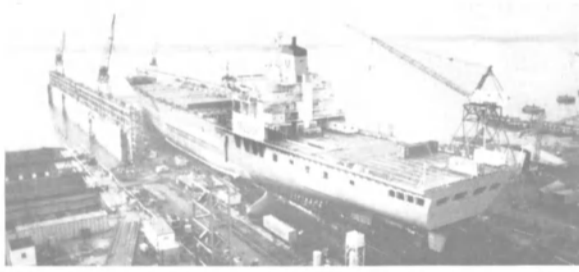
New Duramax double tow-knees feature two thick nitrile rubber pads securely vulcanized to either steel or aluminum plate, providing double the protection of a single tow-knee. These plates which measure 20 inches wide by 36 inches long are available in steel thicknesses of 1/4-, 1/2- or 3/4-inch.

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 13 1/2-inch widths. Again plate thickness varies from 1/4-inch to 3/4-inch.

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

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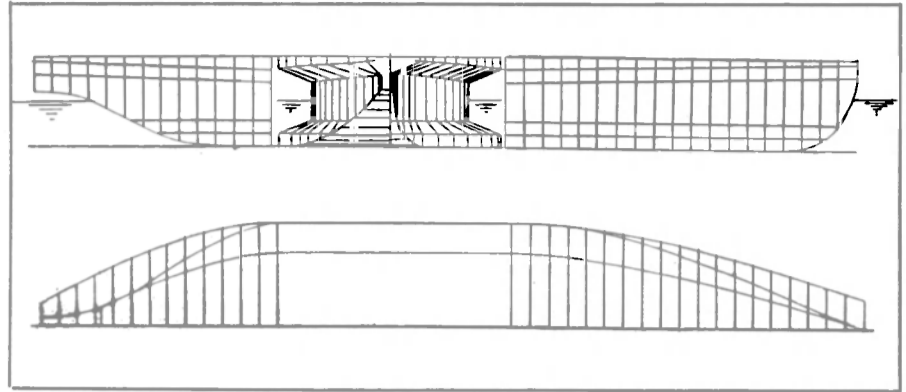
New Mono-Hull Form Provides Ultra-Stable Drilling Platform

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

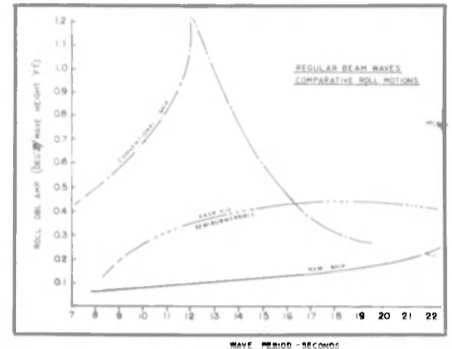
area—elements that the designer strives to obtain with conventional semi-submersible design. Structurally, the hull can be simplified by using straight-line framing and developable surfaces, complementing low fabrication cost techniques.

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 degrees 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.



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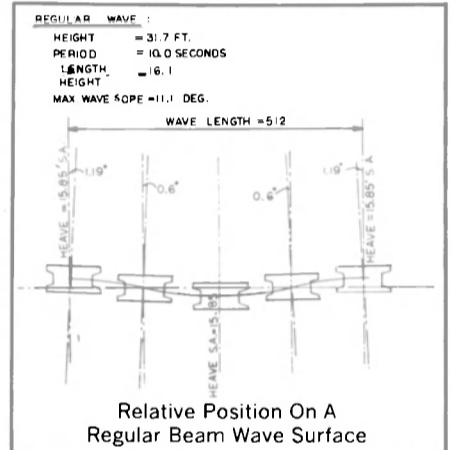
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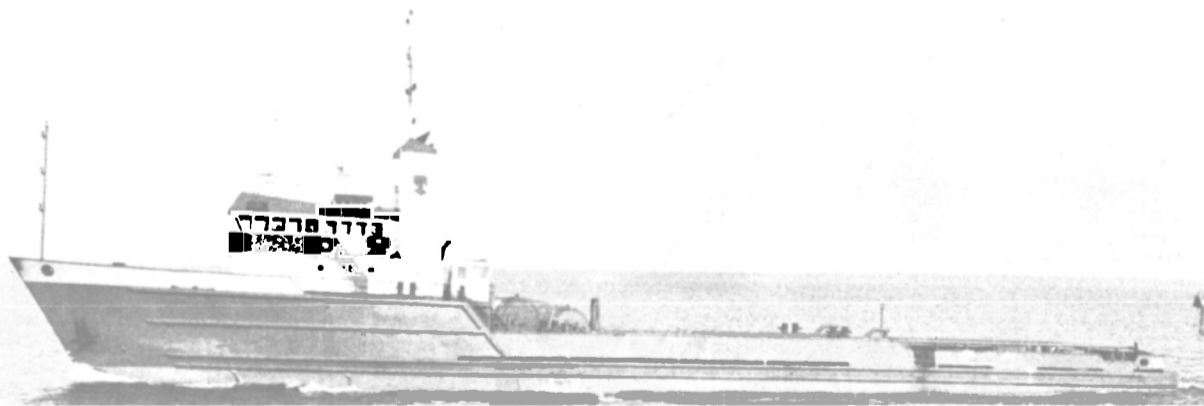
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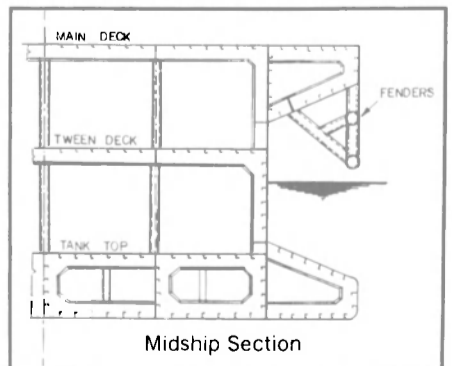
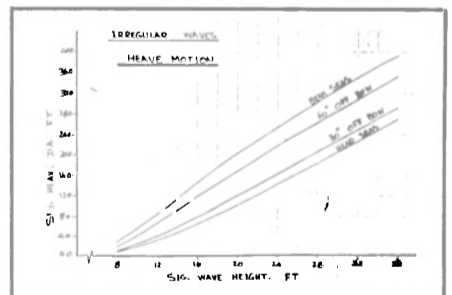
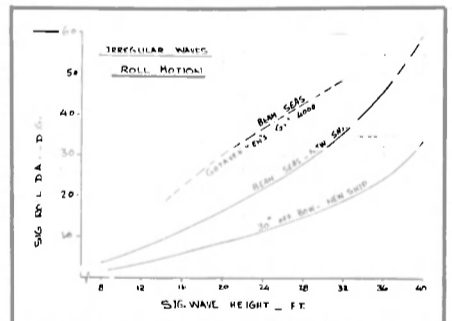


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Midship Section

Circle 134 on Reader Service Card

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-sub-

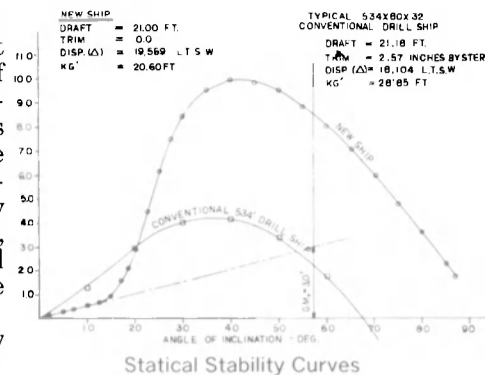
mersible drilling units, as they possess unique qualities for long-term drilling operations in extremely harsh environments. However, the outlined advantages of this new ship design should make it suitable for certain areas that are presently considered semi-submersible territory, thus bringing to the offshore industry a significant cost-saving device.

Summary

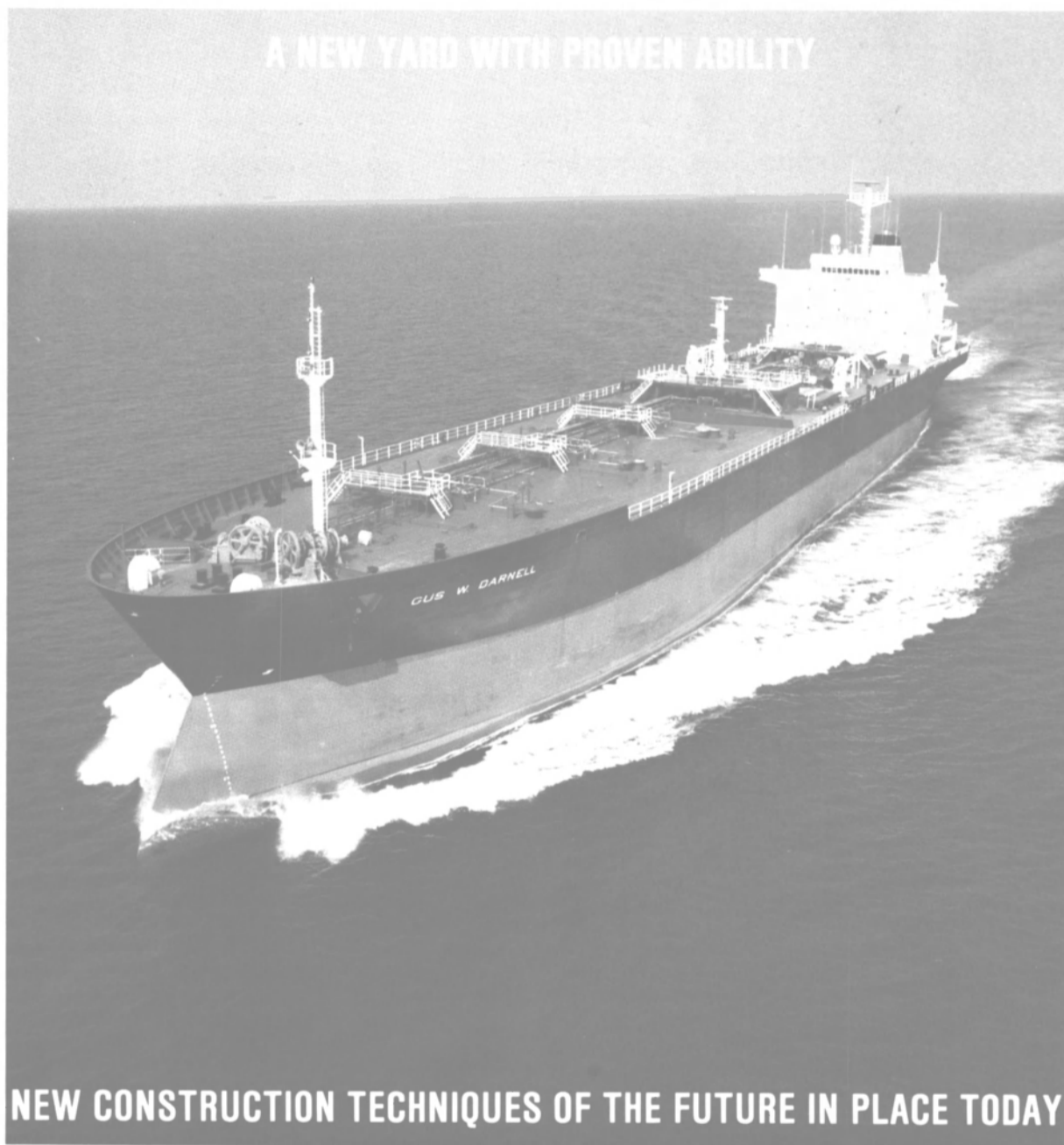
A new mono-hull form has been

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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Circle 345 on Reader Service Card

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.

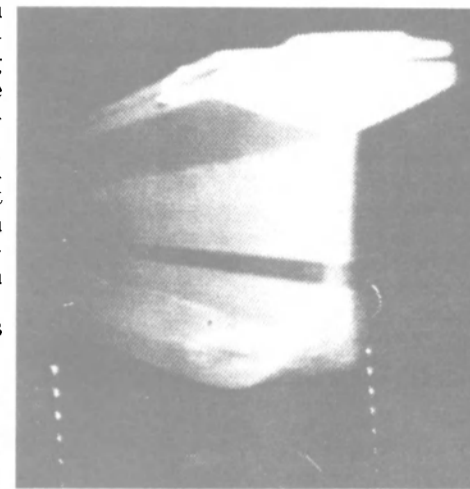
- High payload to displacement ratio when compared with a semi-submersible. The variable load (drilling supplies) of this ship is 9,000 short tons, while a comparable semi-submersible would have 4,000 short tons.

- Large usable deck area in comparison with a conventional drillship is a direct result of the hull configuration having a beam of 96 feet,

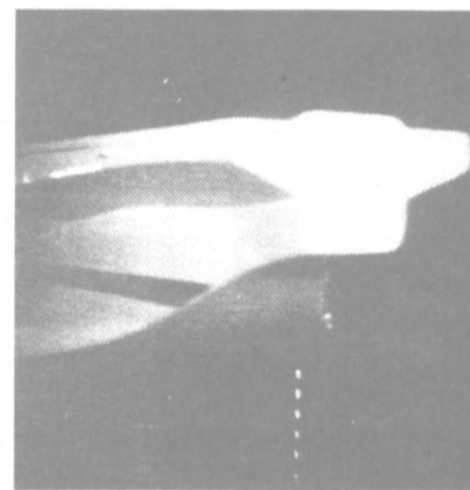
compared with a drillship with a beam of 70-75 feet. This beam increase accommodates drilling equipment and provides ample space for storage and working purposes.

- 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



Oblique View on Bow of a Scale Model



Oblique View on Stern of a Scale Model

good structural integrity when compared with a semi-submersible.

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.

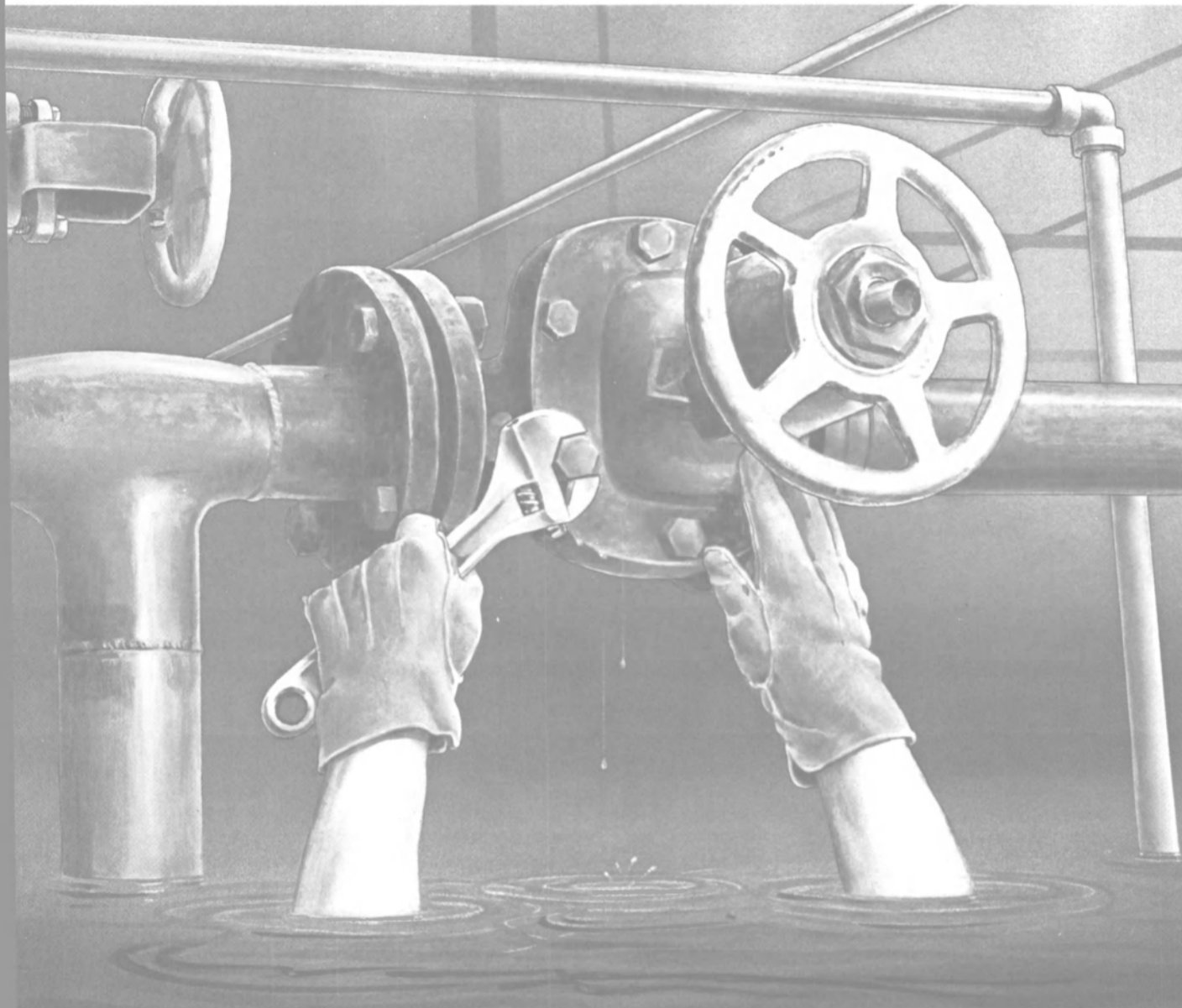
Articles in the publication explain the use of electronic controls in regulating air/fuel mixtures and in generation of power by internal combustion engines. Proper procedures for maintaining solid state ignition systems are also discussed.

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*,

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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-threaten-

ing 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)

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copper-free aluminum housings resist salt-water corrosion to keep lamps burning brightly. Even through storms that last 40 days and 40 nights. All models accept mercury-vapor, metal-halide or high-pressure-sodium lamps. And, Phoenix offers variations for hazardous service.

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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 com-

plicated 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,

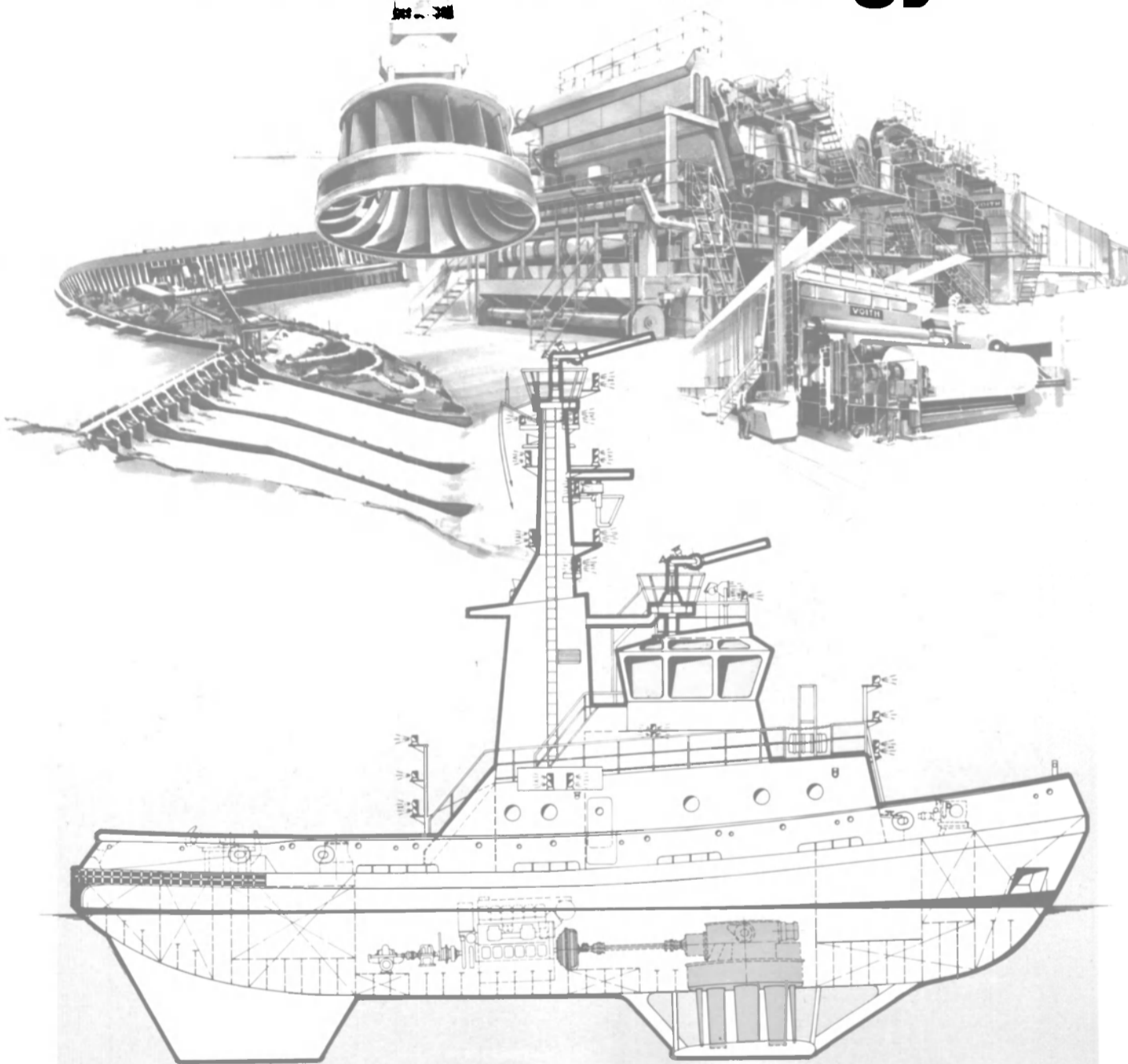
Circle 15 on Reader Service Card

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.

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Circle 115 on Reader Service Card

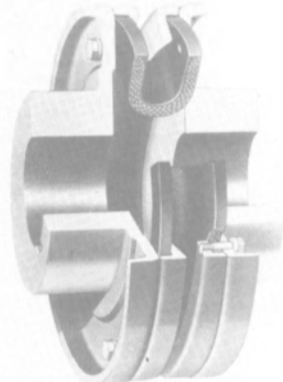
Cairns Named Operations General Manager For Cross And Southern Ocean

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 (1/8-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, "Steel-flex" 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

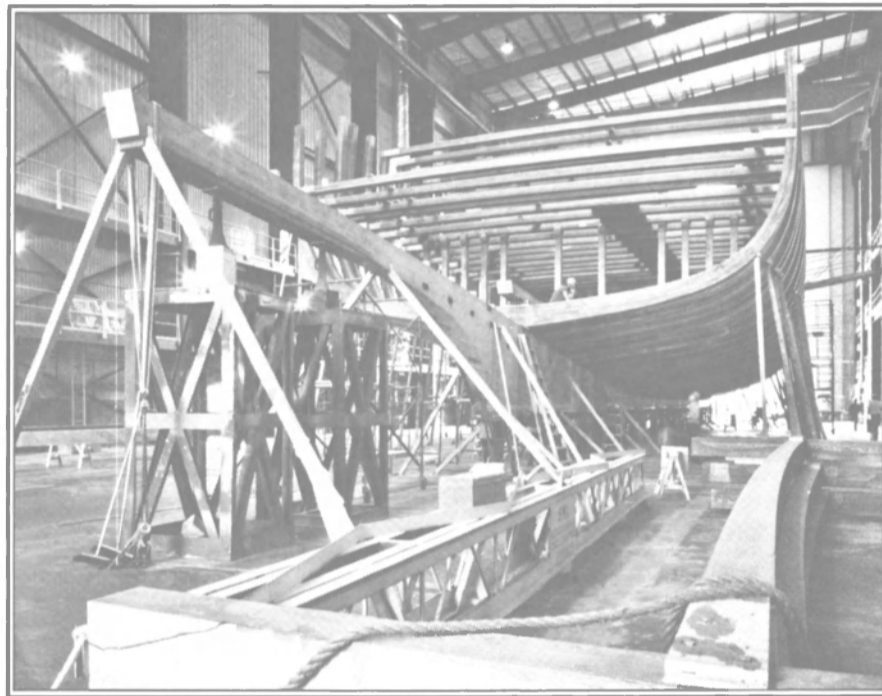
Raytheon Company, Equipment Division, Wayland, Mass., is being awarded a \$4,427,620 modification to a previously awarded cost-plus-award-fee contract for incremental funding for the relocatable over-the-horizon radar system for use.

The work, which will be per-

formed 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).

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Artubar Tugs
these 150 foot, 7,200 horsepower tugs are designed to connect with 5 deck articulated barges.



Yard Patrol Boats
used in training at the U.S. Naval Academy



Torpedo Weapons Retrievers
designed and built by MMC to replace the Navy's aging TWR vessels.



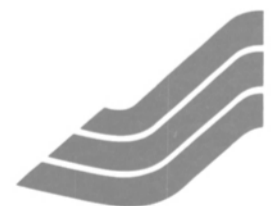
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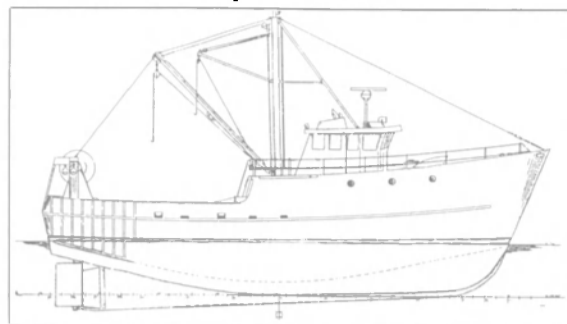
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Circle 277 on Reader Service Card

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 fresh-water 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.

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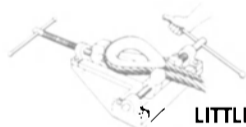
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Circle 340 on Reader Service Card

**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 driv-

ing 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.

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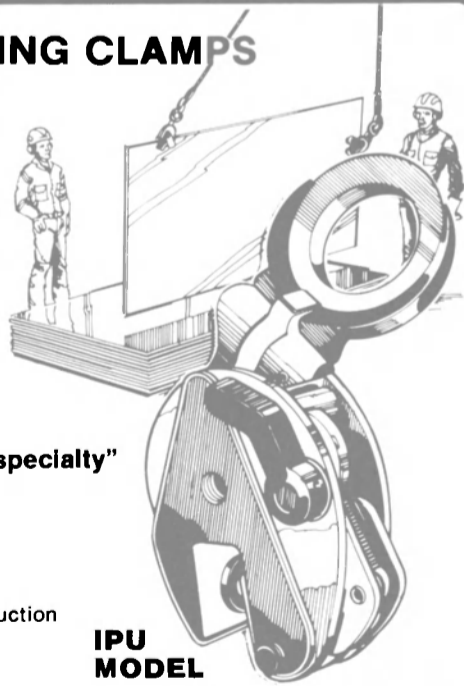
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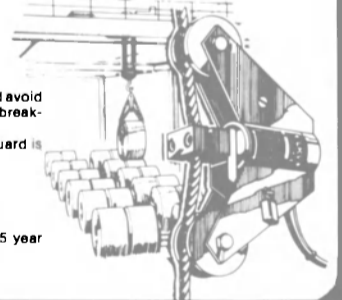


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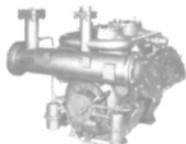
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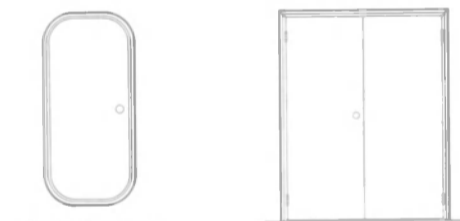
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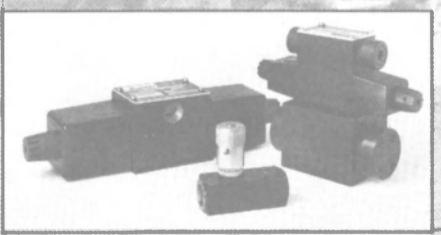
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Ellenbroek Named Marketing Services Manager/Coordinator For Hempel's U.S. Operations

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

Maritime Reporter/Engineering News

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).

Haglund Introduces New Hydraulic Motor—Literature Available

The Marathon from AB Haglund & 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 out-

standing 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 1/4-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,

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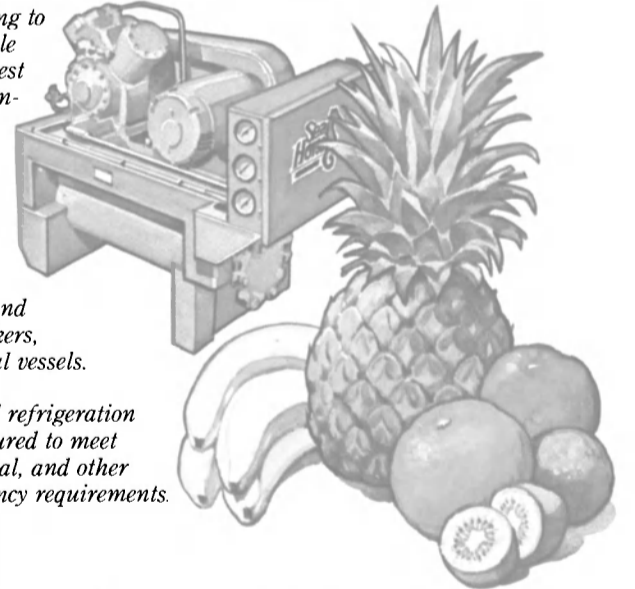
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G O C A R R I E R T R A N S I C O L D

Circle 203 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.

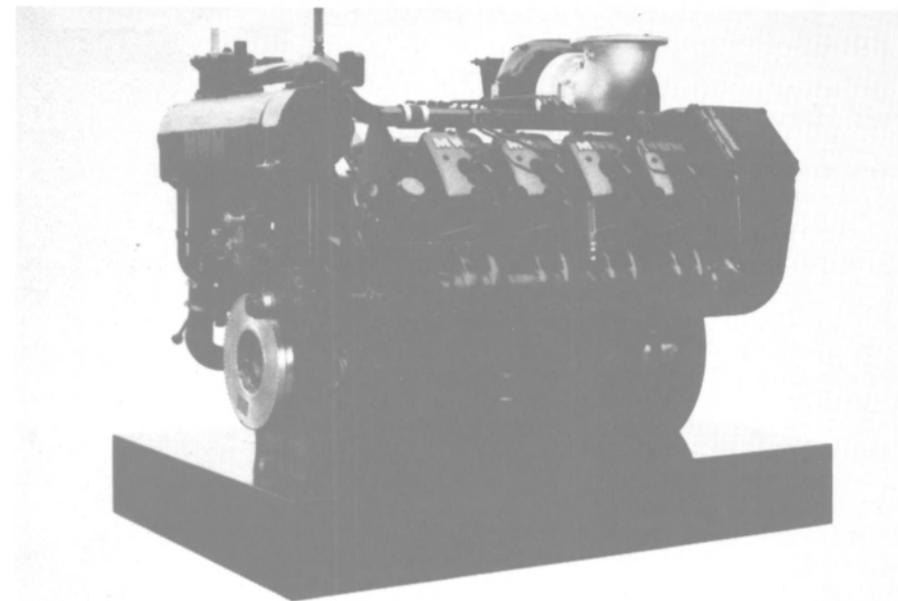
This merger brings together two leading engine builders with a total of more than 230 years' experience, as well as a combined reputation for quality, durability and service excellence.

The KHD Group engine division will be restructured with all activities concerning the water-cooled en-

gine 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 headquarter-



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.

ters of the new company is located in Montreal, Canada, with a division based in Atlanta, Ga.

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.

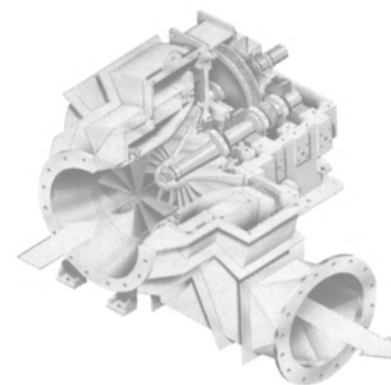
As with the air/gas X-FLO, the steam model features stainless steel

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 recompression processes, where steam is recycled for evaporation, distillation, drying, concentration or crystallization.



Ingersoll-Rand's X-FLO Steam Compressor

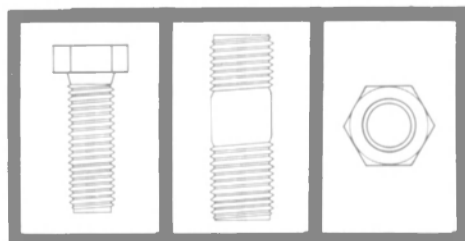
For more information and free literature on the new X-FLO Steam Turbo Compressor from Ingersoll-Rand,

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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.

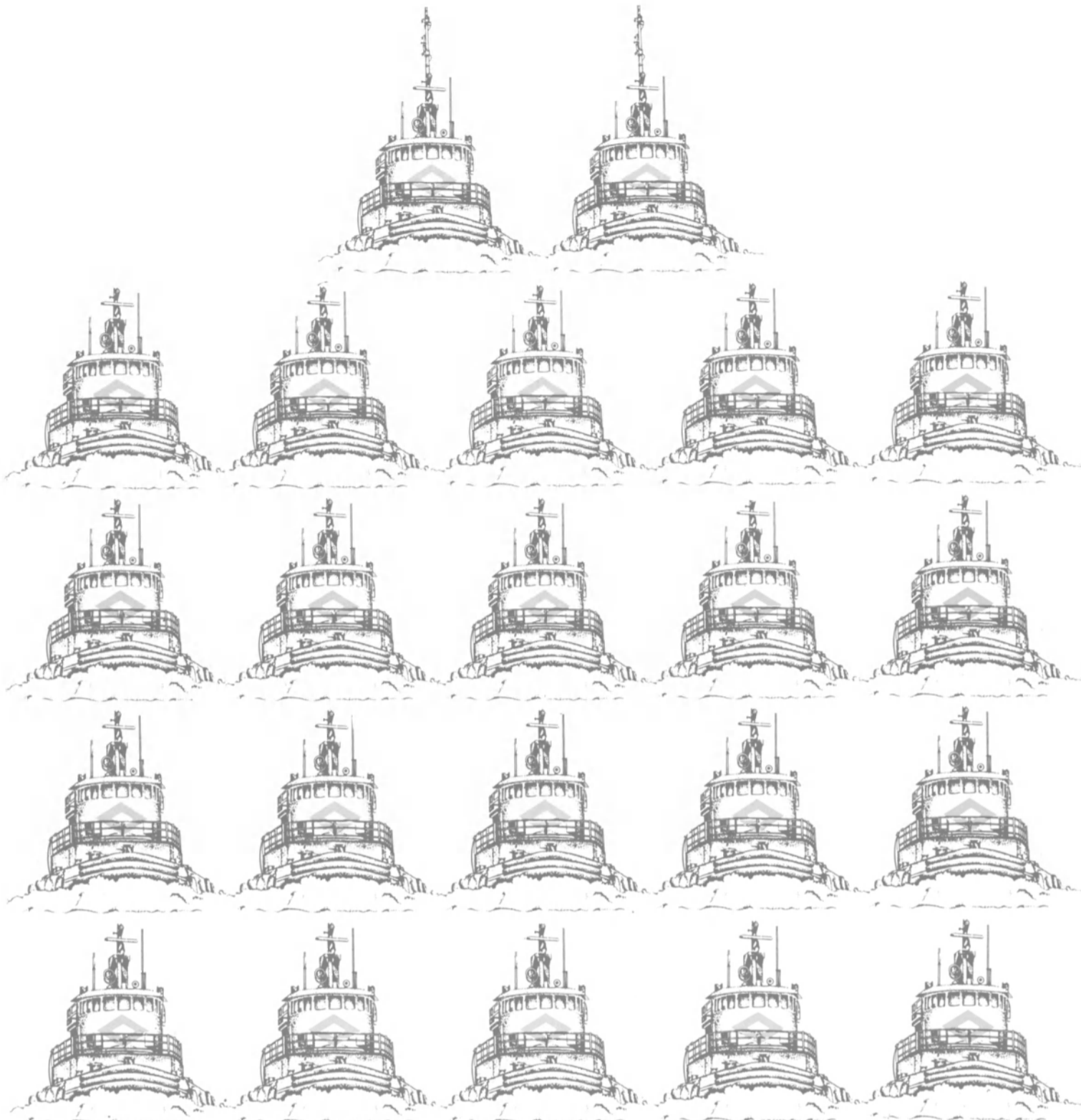
In addition to the expanded acreage for APL, the new Terminal 5 will have three full containership berths—up from the current two; four new 100-foot gauge container cranes—up from three 50-foot gauge cranes; an on-dock shed with 80,000 square feet of breakbulk

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

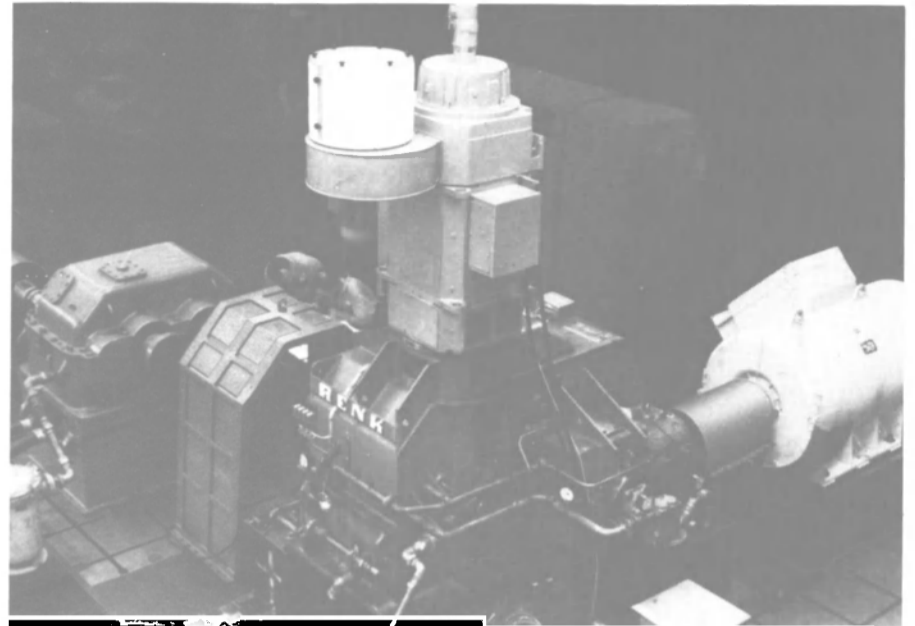
As the second largest consumer of energy aboard ships, the power generation equipment has been the object of many studies aimed at obtaining overall higher efficiency and lower electrical power costs.

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



RCF gearbox on test bed in Renk's Augsburg plant. Generator/motor is mounted vertically. All electric components have been supplied by BBC.

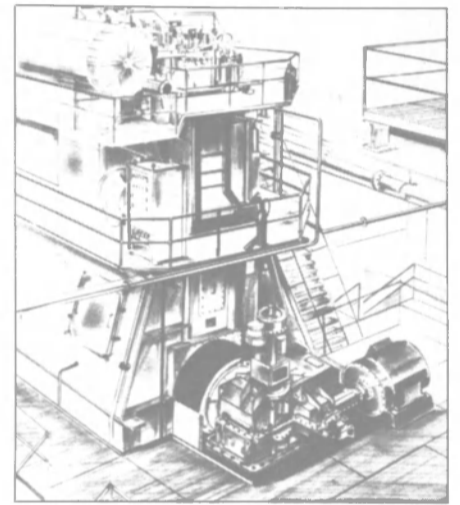
the main engine is operating between 70 and 100 percent of its rated speed. The annulus of the epicyclic gear will remain fixed while the engine is running at 85 percent of its rated speed; in this case the power transmission is merely mechanical.

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



Drawing of the RCF gearbox connected to the generator at forward end of main engine.

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.

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

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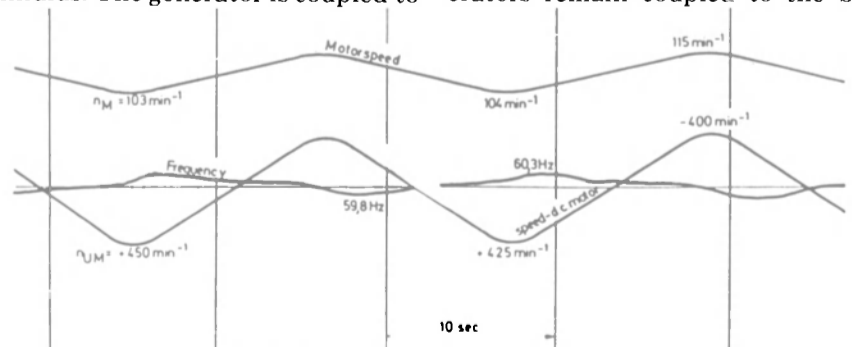
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Results of simulation on the test bed of heavy sea conditions. Engine speed (top curve) is periodically changed so that the dc motor operates in one case as a generator (minus sense of rotation) and in the other as a motor (plus sense of rotation) 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 container ships 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 Ship-repairers Limited of Southampton, 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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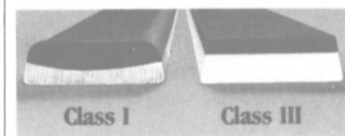
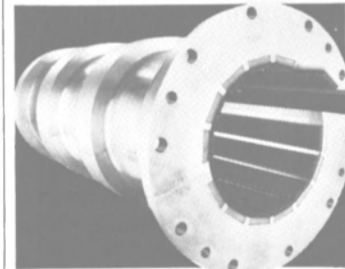
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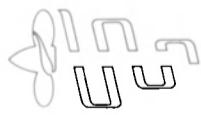


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Omnithruster PV700 Unit Being Retrofitted For CCGS 'Narwhal' —Literature Available



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 Navais 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,

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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 micro-computers 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 polynomialized 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, horsepower, 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.,

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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, and 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 Ship-repairers Limited of Southampton, 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



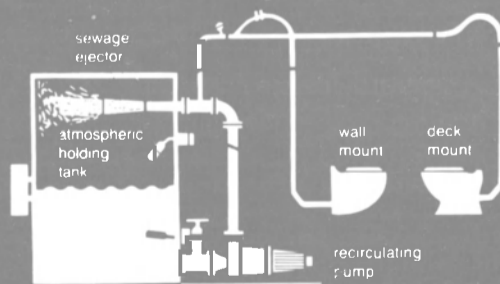
Vincent R. Almerico

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.

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Circle 200 on Reader Service Card

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

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Circle 212 on Reader Service Card
Maritime Reporter/Engineering News

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, nav aids, 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 Haugeund, 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,

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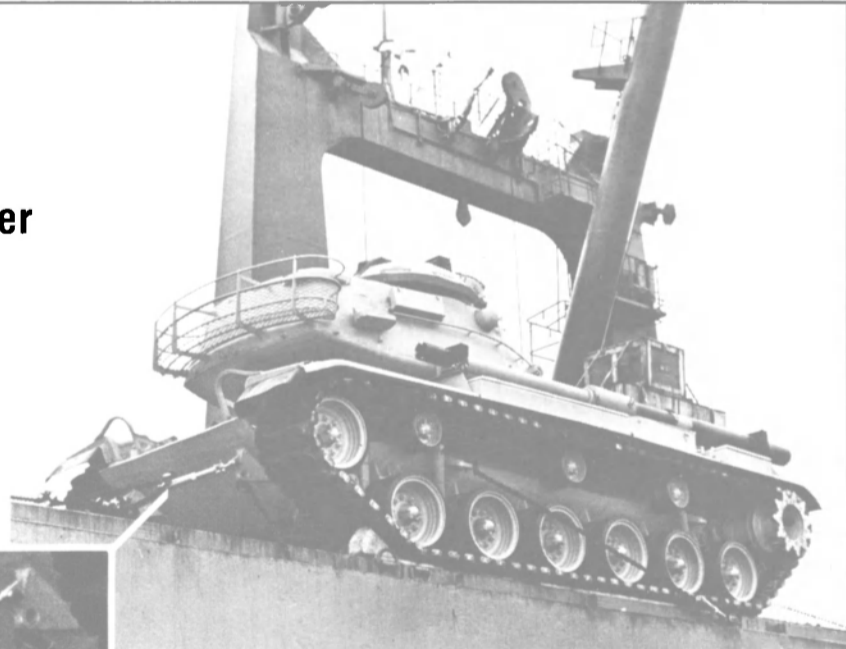
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Circle 192 on Reader Service Card

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 an-

gles 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.

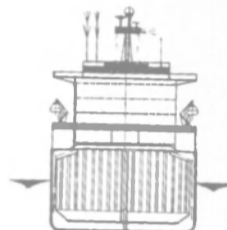
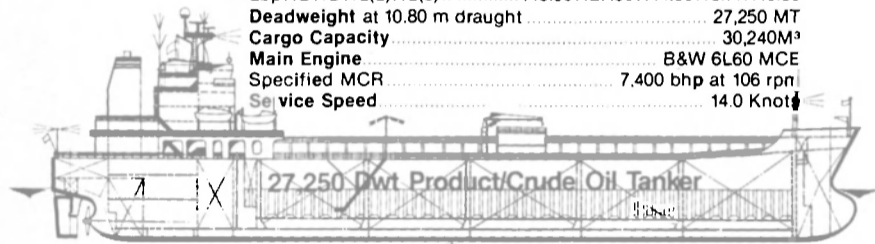
Chesterton is offering a free bulletin that gives complete information and a cutaway diagram of the seal. For a copy,

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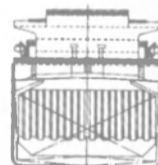
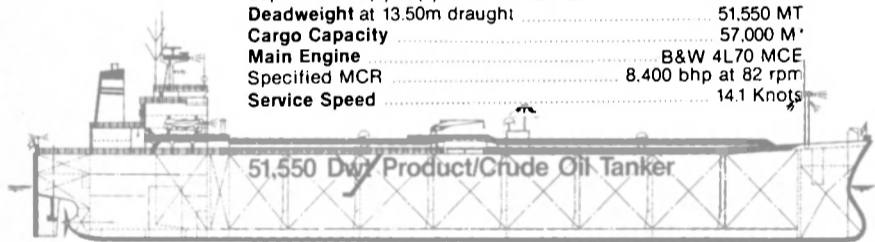
Maritime Reporter/Engineering News

New Conceptual Designs for Product Oil Tankers

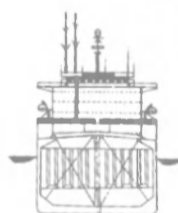
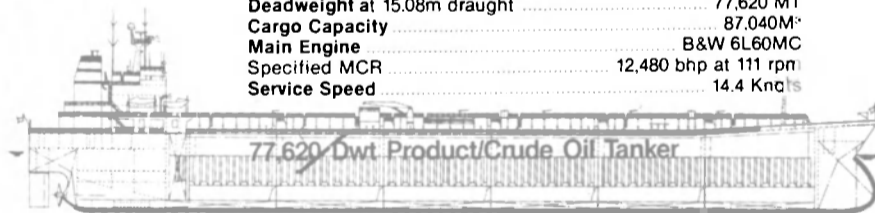
Main Dimension
Lbp x B x D x d(d) x d(s) 146.00 x 27.00 x 14.60 x 9.14 x 10.80
Deadweight at 10.80 m draught 27,250 MT
Cargo Capacity 30,240M³
Main Engine B&W 6L60 MCE
Specified MCR 7,400 bhp at 106 rpm
Service Speed 14.0 Knots



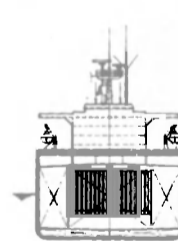
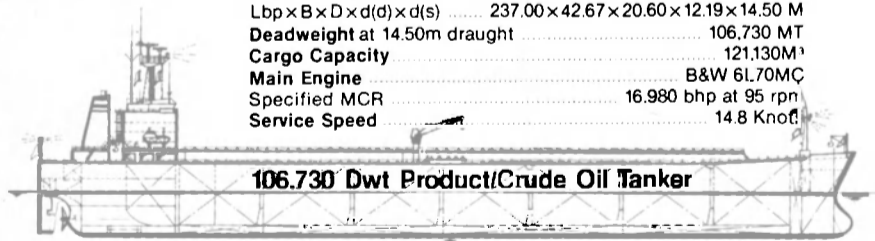
Main Dimension
Lbp x B x D x d(d) x d(s) 174.00 x 32.24 x 18.50 x 11.28 x 13.50 M
Deadweight at 13.50m draught 51,550 MT
Cargo Capacity 57,000 M³
Main Engine B&W 4L70 MCE
Specified MCR 8,400 bhp at 82 rpm
Service Speed 14.1 Knots



Main Dimension
Lbp x B x D x d(d) x d(s) 218.00 x 32.24 x 20.20 x 11.88 x 15.08 M
Deadweight at 15.08m draught 77,620 MT
Cargo Capacity 87,040M³
Main Engine B&W 6L60MC
Specified MCR 12,480 bhp at 111 rpm
Service Speed 14.4 Knots



Main Dimension
Lbp x B x D x d(d) x d(s) 237.00 x 42.67 x 20.60 x 12.19 x 14.50 M
Deadweight at 14.50m draught 106,730 MT
Cargo Capacity 121,130M³
Main Engine B&W 6L70MC
Specified MCR 16,980 bhp at 95 rpm
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Circle 159 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,

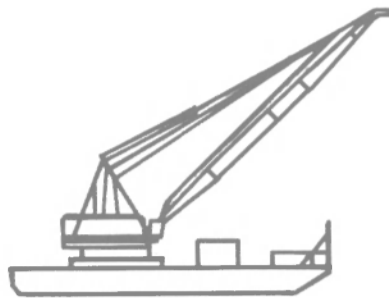
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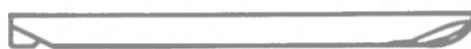
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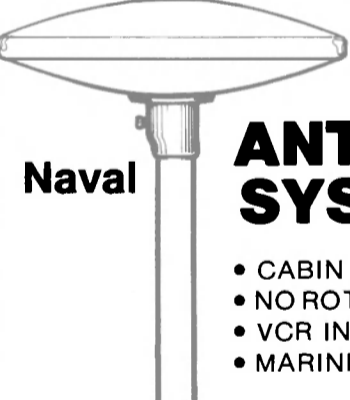


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Avondale Christens First Of Five Fleet Oilers Building For Navy

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 pre-fabricated 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,



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.

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 ves-

sels 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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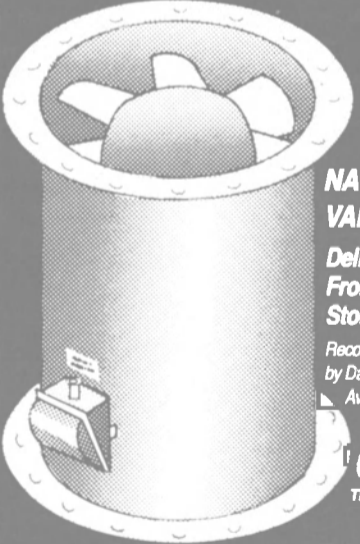
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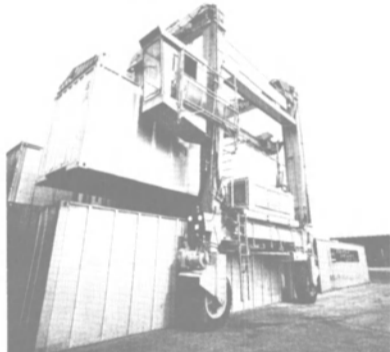
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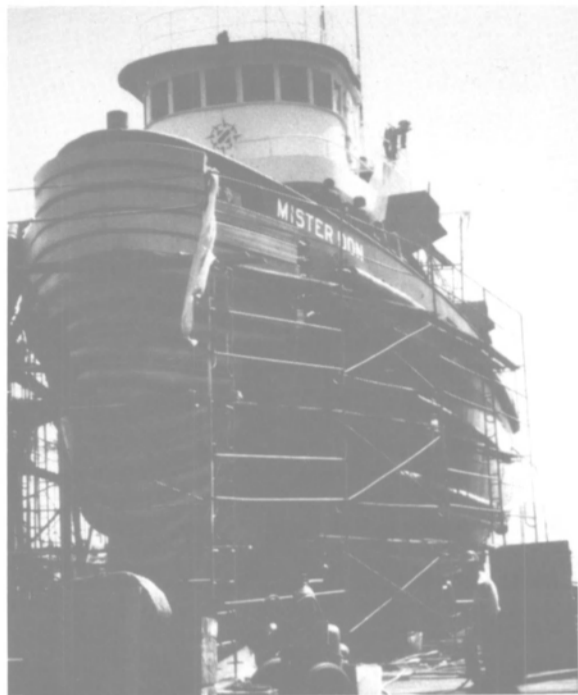
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Southwest Marine Completes Successful Conversion Of 5 Zapata Gulf Marine Tugs



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, 3-5/8 inches wide by 7-3/4 inches long by 2-5/8 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, fresh-water 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

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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 nominally 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 wear-down of 0.026 inch on the port shaft bearing, the one using Thordon XL, and a wear-down 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 wear-down 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.

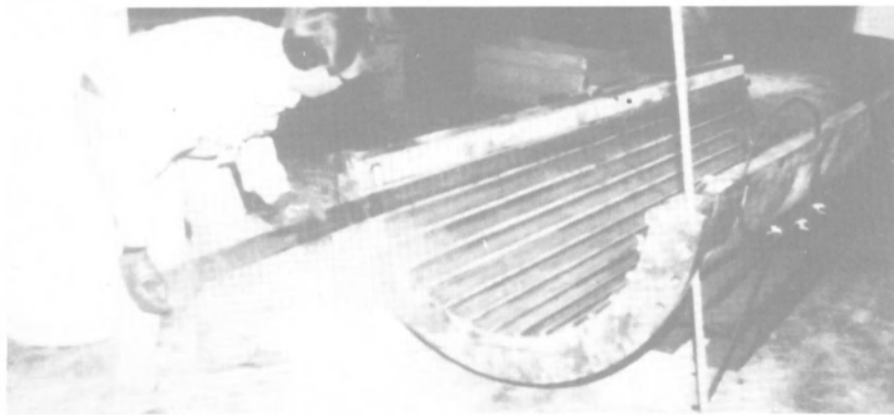
The Thordon material combines the known advantages of rubber bearings with increased rigidity, permitting higher pressures to be carried at lower dry and boundary friction levels. The major reason for its success is a low coefficient of friction—0.188 against machined bronze. It also has a constant, 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,

Circle 14 on Reader Service Card



Thordon XL molded staves were freeze-fitted into the Polar Sea's bronze bearing carriers.

November, 1985

Circle 320 on Reader Service Card →

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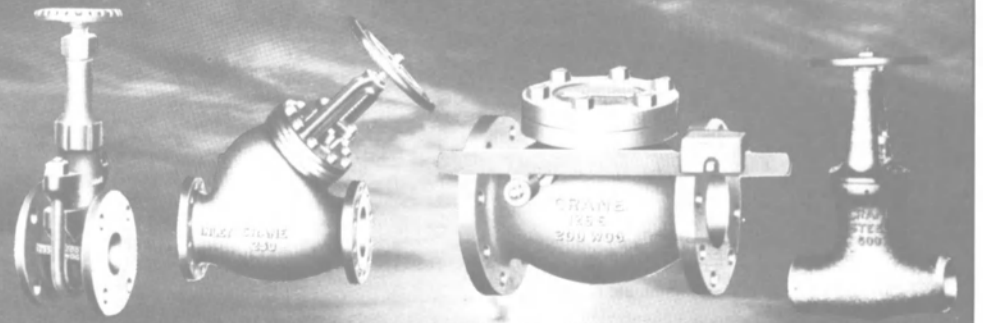
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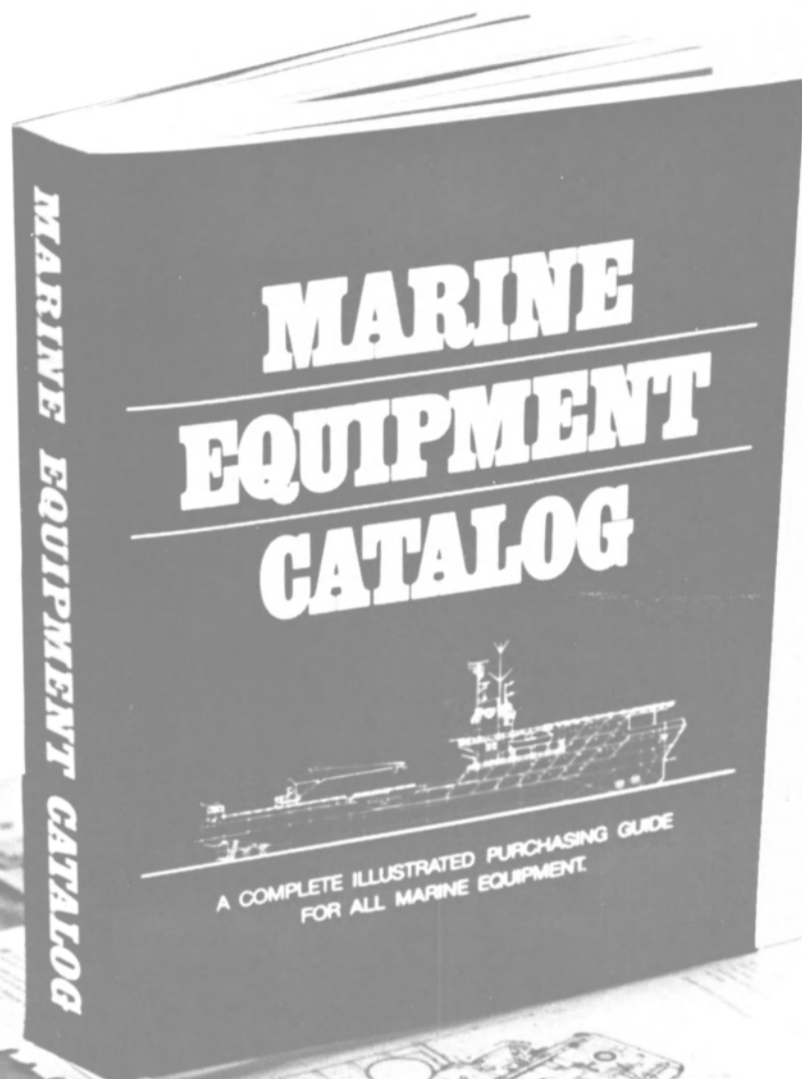
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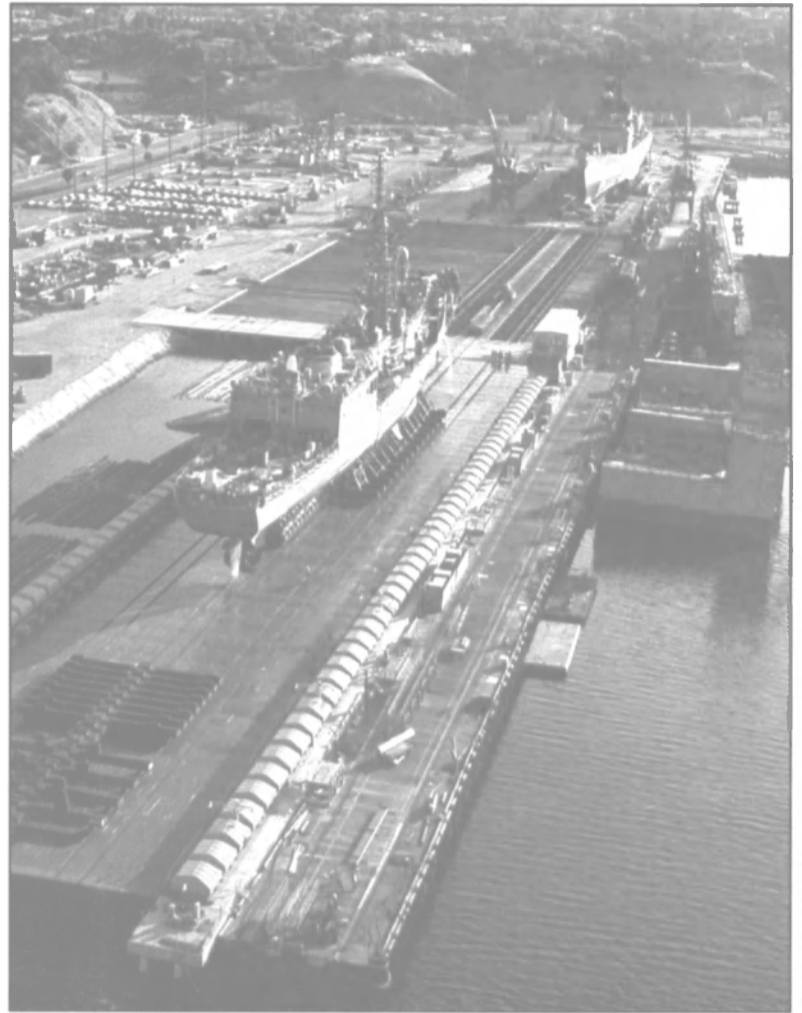
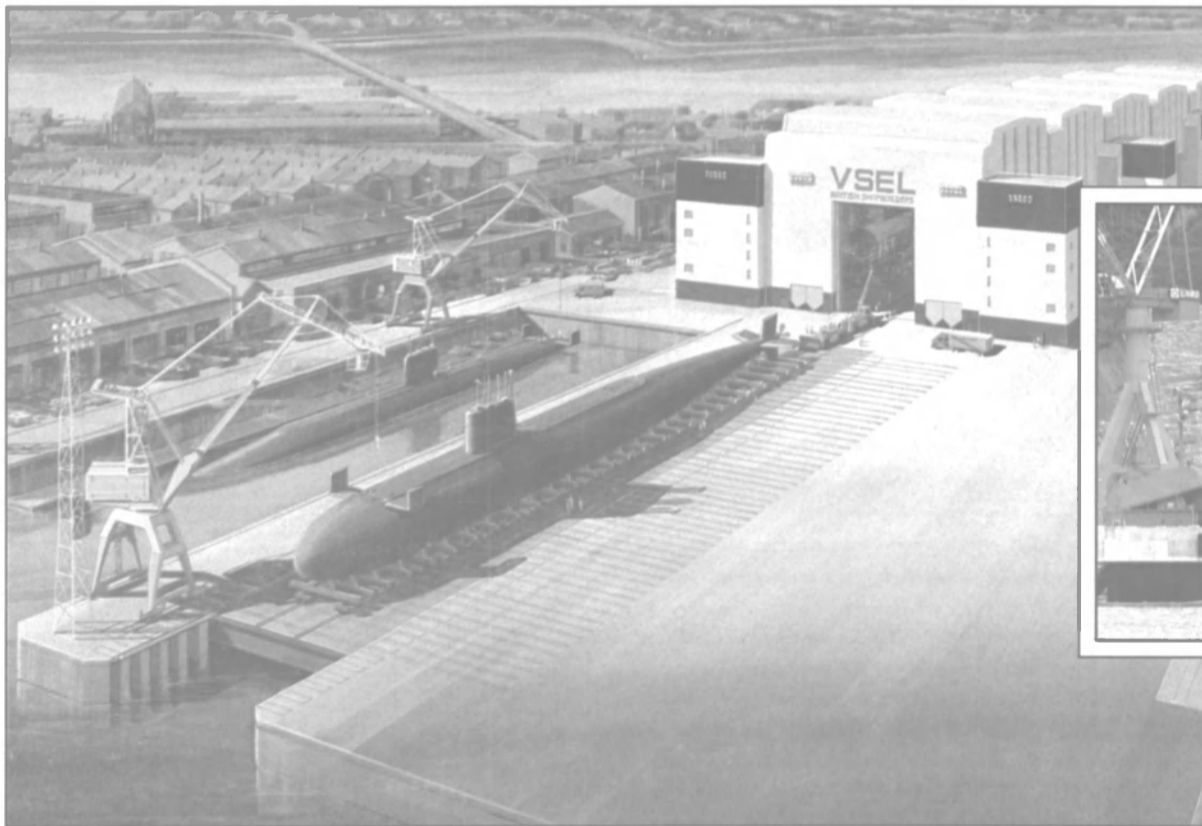


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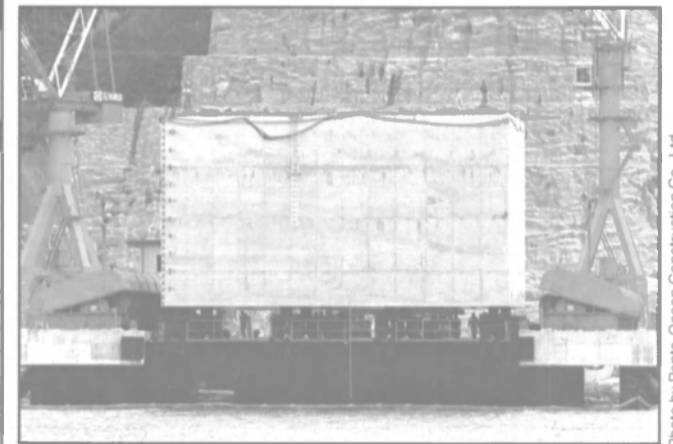


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