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ENGINEERING NEWS



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## EUROPORT '85

OCTOBER 15, 1985 ISSUE



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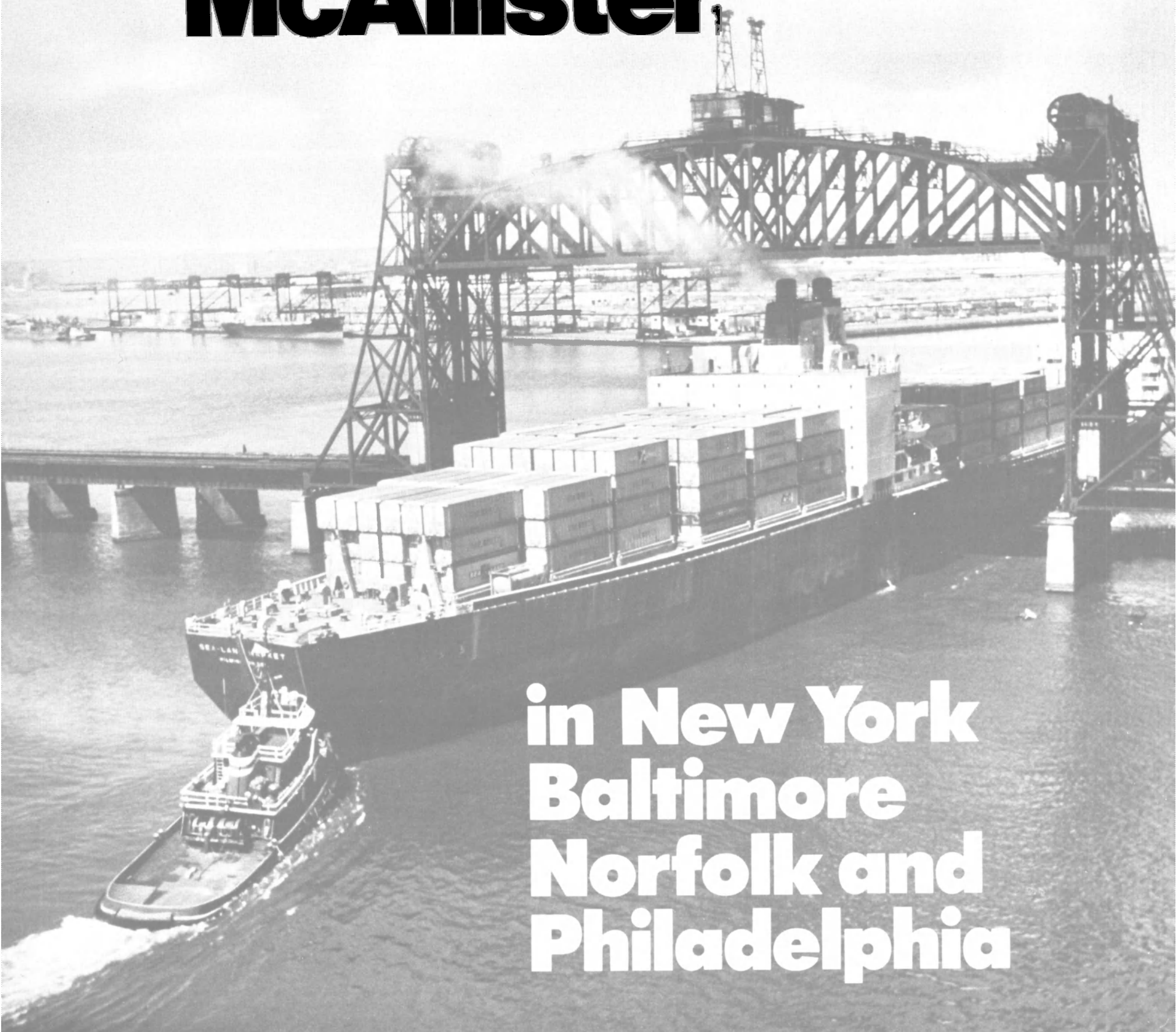
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## ON THE COVER

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### Tenneco Announces A Significant Oil Discovery Off Norway

Tenneco Oil Exploration and Production recently announced a significant oil discovery offshore Norway on Haltenbank Block 6507/7, the second major hydrocarbon discovery this year on the block, in which the company is a partner.

The 6507/7-3 well flowed at a combined daily rate of 15,491 barrels of oil and 8.94 million cubic feet of natural gas from three Middle Jurassic Age intervals between 7,769-8,957 feet. Total depth of the well is 9,350 feet.

The wildcat, approximately 1.5 miles south of the 6507/7-2 discovery announced previously, disclosed a different oil accumulation from the earlier well. The #2 well flowed 14,343 barrels of oil/ condensate and 74.4 million cubic feet of natural gas a day from Middle and Lower Jurassic Age formations.

The #3 well is in the Norwegian Sea, approximately 150 miles northwest of Trondheim, Norway. Water depth in this area is approximately 1,135 feet.

The block, acquired in Norway's 8th License Round, is operated by Conoco Norway Inc. with 30 percent working interest. Partners, in addition to Tenneco's 10 percent working interest, are Arco Norway Inc., 10 percent, and Statoil, 50 percent.

Additional drilling will be required to determine the extent of the field, which has been named Heidrun.

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Maritime Reporter/Engineering News

## NAVSEA Awards Marinette \$23.3-Million Contract Option For 7 More YPs

Marinette Marine Corporation of Marinette, Wisc., has been awarded seven additional Yard Patrol (YP) craft by the Naval Sea Systems Command. This latest award was an option on Marinette's current contract of YPs now under construction. This brings to 20 the total number of YPs to be built and delivered by Marinette by early 1988. The value of this latest contract option is \$23.3 million.

The YP craft will be utilized by the Navy at the Annapolis training Academy for instruction of midshipmen in seamanship, navigation, and marine engineering disciplines. The vessels are wood hull construction with an aluminum superstructure, overall length of 108 feet, a beam of 22 feet 9 inches, and a full load draft of 5 feet 9 inches.

Marinette Marine Corporation, now in its 43rd year of operation, is renowned for its versatility in the design and construction of commercial and government ships of all types.

## GD Awarded \$28.9-Million For Sub Contract Design

General Dynamics Corporation, Electric Boat Division, Groton, Conn., was recently awarded a \$28,950,000 cost-plus-fixed-fee contract for the development of a contract design for SSN-21 class submarines. The work will be performed in Groton, and is expected to be completed on October 1, 1986. The contract funds would not have expired at the end of the current fiscal year. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-85-C-2127).

## BWA Finishes Deepwater Gulf Of Mexico Floating Production Study

Brian Watt Associates, Inc. (BWA) of Houston recently presented the final results of its study on the use of semisubmersible vessels for oil production in deep waters in the Gulf of Mexico. The study evaluated marginal and full field development in 1,700-foot and 3,000-foot water depths.

BWA performed the work in conjunction with Hughes Offshore, Noble Denton Associates, C-E Natco, and Coflexip. The work required 12 months to complete at a cost of more than \$750,000. BWA announced that the study had shown that semisubmersible-based floating production systems provide a very cost-effective solution for production in deep water.

For further information on the study, contact Rick Davis at (713) 590-9955.

## Tarbutton Elected VP For American Maritime

Guy Ames Stitt, president of American Maritime Int'l, Inc. (AMI), has announced the appointment of Dennis C. Tarbutton to the position of vice president-marine support services. Mr. Tarbutton will have the responsibility for providing support services to marine equipment manufacturers and

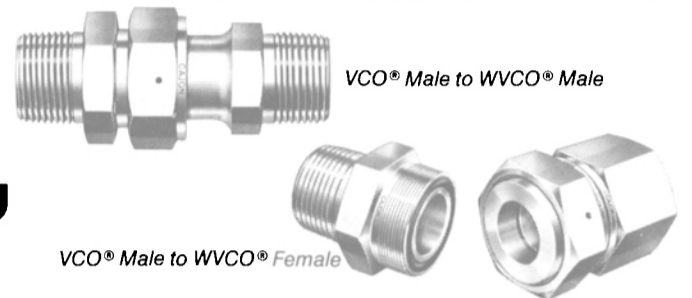
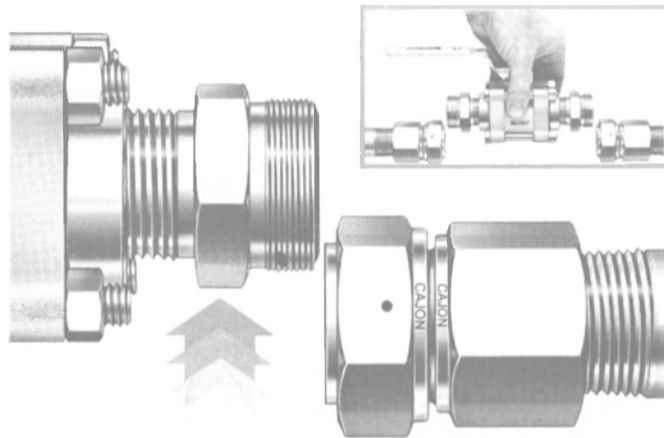
other marine support industry members throughout the United States. AMI is well known as one of the top marine management consulting firms solely dedicated to working in the private sector with both private shipyards and the marine support industry.

Mr. Tarbutton brings over 18 years of marine experience to AMI and has held various management positions with Tacoma Boatbuild-

ing Company, Todd Pacific Shipyards Corporation, and Lockheed Shipbuilding and Construction Company.

Mr. Tarbutton's BS degree in business administration and extensive experience in ship new construction, overhaul, conversion and repair will greatly enhance AMI's capabilities within the marine support industry, Mr. Stitt commented.

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## CSSRA Annual Conference Set For February 10-11 In Montreal, Canada

All speakers have now been confirmed for the sessions of the Canadian Shipbuilding and Ship Repairing Association's (CSSRA) 38th Annual Technical Conference, CSSRA president **Henry Walsh** recently announced. The conference will be held Monday, February 10 and Tuesday, February 11, 1986 in Montreal's Queen Elizabeth Hotel and is expected to attract members of the marine community from across Canada and around the world.

"Next year's conference will include the first ever Canadian Shipbuilding & Offshore Exhibition (CSOE '86)," Mr. Walsh noted. "By incorporating CSOE '86 into our technical conference, we expect to attract large numbers of exhibitors to display or explain their goods and services to the marine industry. The estimated development costs of the Hibernia oil project off Newfoundland are \$5 billion, and 50 percent of these expenditures will be marine-related. This demand could mean employment opportunities and spin-off industrial benefits if sourced in Canada. CSOE '86 will play a major role in highlighting what equipment and services are available from Canadian industry. The exhibition, located on the convention floor, will be open from 3 to 7 p.m. on Monday and from 10 a.m. to 5 p.m. on Tuesday."

The technical conference open sessions will begin at 9 a.m. on Tuesday, February 11 with presentations in two adjacent meeting rooms. That evening a banquet will be held at 7:30 p.m. in the hotel's Grand Salon. Registration for all functions will be held both Monday

and Tuesday on the mezzanine level.

The CSSRA Annual Technical Conference is the largest and best known marine technical conference in Canada. Last year over 800 people attended the conference, including the international media and Canadian Government officials.

For additional information on the conference, contact CSSRA secretary/treasurer **Mrs. Joy MacPherson**, Suite 801, 100 Sparks Street, Ottawa, Ontario, Canada K1P 5B7; telephone (613) 232-7127.

## \$18.3-Million Contract To Dillingham Ship Repair For T-ACS Conversion

The Maritime Administration has awarded an \$18,396,652 contract to Dillingham Ship Repair of Portland, Ore., for the conversion of a National Defense Reserve Fleet containership into the third in a series of U.S. Navy Auxiliary Crane Ships (T-ACS).

When converted, the T-ACS 3 (ex-President Polk) will become part of the Ready Reserve Force (RRF), a special component of the merchant reserve fleet which is maintained by MarAd and funded by the Navy.

The T-ACS program was instituted by the Navy in response to President **Reagan's** call for a rapid deployment force to be available at all times. Its specific purpose is to provide a means to off-load cellular containerships which lack self-unloading capability in areas where shoreside cranes are unavailable during wartime or other national emergencies.

The Dillingham contract calls for the installation of six pedestal-

mounted deck cranes with related electrical generating equipment; upgrading the quarters aboard the Polk to accommodate an increase in crew complement and reactivating the vessel to RRF status so that it could be ready to load cargo on five days' notice. The cranes are being supplied under a separate contract. The work at Dillingham is expected to be completed in 12 months.

The first crane ship to be converted, the Keystone State (ex-President Harrison), was redelivered, underwent logistic exercises and entered the RRF last year. The second vessel, ex-President Monroe, is now being converted at Continental Maritime of San Francisco, Inc.

## MarAd Selects 15 Port Locations To Berth 37 RRF Cargo Vessels

The Maritime Administration in cooperation with the U.S. Navy recently announced the selection of 15 port locations on the East and West Coasts for the berthing of 37 cargo vessels in the Ready Reserve Force (RRF), a select group of merchant vessels which can be activated on five days' notice.

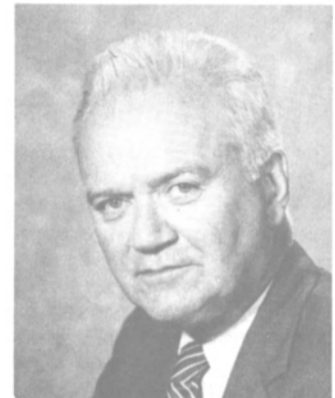
The RRF is a part of the National Defense Reserve Fleet operated by MarAd. RRF vessels, currently totaling 65, are acquired and maintained by MarAd and funded by the Navy.

The berthing arrangement is a part of the Navy's outporting plan for the strategic location of sealift vessels near shipyards and loading ports which would be used in an emergency.

Contracts totaling about \$5 million for 27 vessels, including the cost of moving the ships to their assigned lay berths later this year, will be

signed with private owners or operators of piers, wharves, docks or quays (number of ships in parentheses) in Brooklyn, N.Y. (2); Baltimore, Md. (2); Norfolk, Va. (1); Quonset Point (3), Providence (1), and Melville (1), R.I.; San Francisco (3), Los Angeles (2), and Alameda (2), Calif.; South Portland, Maine (1); Jacksonville, Fla. (2); Tacoma, Wash. (3); and Portland, Ore. (4). Ten additional vessels are being berthed at Navy facilities in Yorktown, Va., Philadelphia, Pa., and Alameda.

## Kelly Joins Newport News Shipyard



Robert A. Kelly

Newport News Shipbuilding, a subsidiary of Tenneco Inc., has named **Robert A. Kelly** to the position of vice president-public relations, effective this month.

Mr. Kelly moves to Newport News from the Olin Corporation where he was vice president, public relations/communications. Mr. Kelly was responsible for formulating and implementing PR policies, plans and programs.

Prior to his position at Olin, Mr. Kelly served as assistant general manager, public relations, for Texaco, Inc.

Furthermore, Mr. Kelly served as Deputy Assistant Press Secretary to the President in 1974 and 1975. During this appointment, he worked with Cabinet public information officers on coordinating media coverage.

## Coast Guard Increases Container Safety Check

Coast Guard officials in Washington recently announced an increase in inspections of freight containers to see how well shippers of hazardous materials are following regulations. Random inspections of 20- and 40-foot containers are underway at port terminals across the country.

The National Cargo Bureau, Inc., the U.S. Customs Service and vessel terminal operators are assisting in the operation. The Office of Hazardous Materials Transportation of the Department of Transportation's Research and Special Programs Administration is conducting inspections where freight containers are packed at locations other than vessel terminals.

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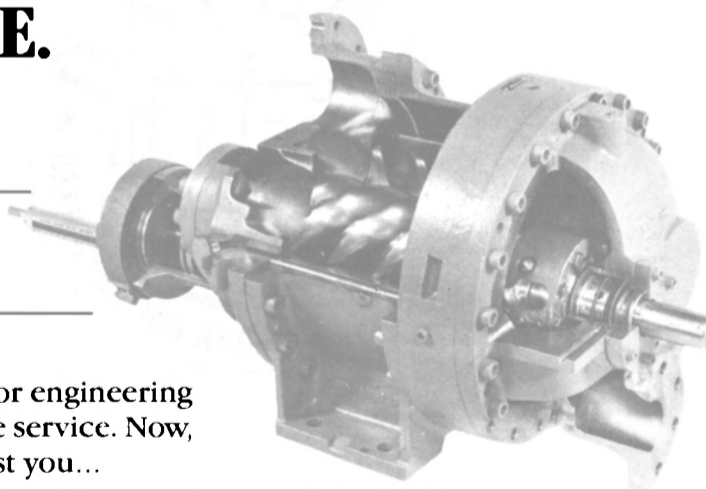
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Alsthom's Diesel Group has received an order for four SEMT-Pielstick type 9 PC 20 L engines to power the 2,600-passenger cruise liner (model shown) ordered by Royal Caribbean Cruise Line from Alsthom's Shipbuilding Division, Chantiers de l'Atlantique. This diesel order is valued at about \$4.5 million. The PC 20 engines form part of the new range of Pielstick diesels introduced to the market at the beginning of 1985.

With a total output of 28,000 bhp, the RCCL engines will be constructed by Alsthom's Etablissement Mecanique at Saint-Nazaire. These engines are of the medium-speed, long-stroke type, and have been developed to limit fuel consumption and to burn residual fuel.

The propulsion system for the Royal Caribbean ship will have several innovative features, including engine installation on an elastic suspension system to reduce noise and vibration.

The order for the ship will provide some four million hours of work for Alsthom's shipyard at Saint-Nazaire, plus three million hours for French subcontractors and suppliers.

For further information and free literature on Pielstick diesel engines,

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**Master Marine Reports  
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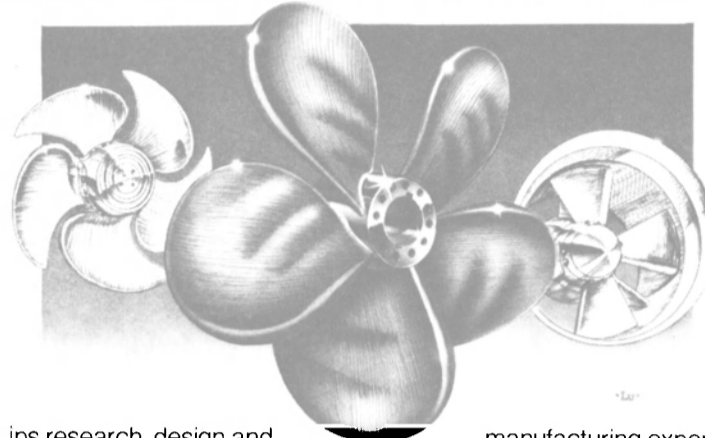
Master Marine, Inc. of Bayou La Batre, Ala., recently announced that the yard had completed the conversion and retrofitting of two Gulf shrimpers for the East Coast fishery, and that they are presently converting a third vessel to a scalloper. They also reported that the 180-foot Honduranian coastal tanker Island Fueller (photo) was at Master Marine earlier this summer for major refurbishing.

Master Marine builds workboats including tugboats, pushboats, deck barges, oil supply vessels and floating drydocks, as well as all types of commercial fishing trawlers.

Master Marine is offering free four-color brochures and other literature on the facilities, capabilities, etc., of the yard. For full information and copies of the publications,

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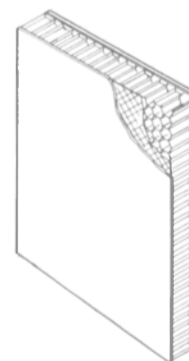


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## MSC Awards 2 Contracts Totaling \$26.2-Million For Cargo Work

The U.S. Navy's Military Sealift Command recently awarded two contracts for the transportation of military cargoes to Praia da Vittoria in the Azores and the Naval Air Station in Bermuda.

A contract estimated by the MSC at \$22.3 million went to Trailer Marine Transport Corporation of Jacksonville, Fla., for the carriage of cargo to the Azores from both the Military Ocean Terminal in Bayonne, N.J., and the Naval Supply Center in Norfolk.

The Bermuda contract was awarded to Offshore Express Company of Houma, La. This contract is estimated by the MSC as worth approximately \$3.9 million. Offshore Express also has a contract with the Navy to operate harbor tugs at Diego Garcia in the Indian Ocean.

Both of these contracts cover a period of two years.

## Marinette Marine Complete Expansion Of Dockwall Along Menominee River

Marinette Marine Corporation of Marinette, Wisc., has just added another 1,100 feet to its existing 1,100-foot dockwall along the Menominee River. Planning for the dockwall extension began in 1982 when Marinette applied for grant funding through the Wisconsin Harbor Assistance Program. Through approval and partial funding by the grant, the shipyard added more than \$1 million of its own to develop the

project at a total cost of more than \$2 million.

The extended dockwall provides for additional ship berthing spaces and was engineered with deeper sheet piles to accommodate future plans for a large vertical shiplift. The new wall also provides additional land usage for the year, and greater water depth alongside.

The dockwall was designed and engineered by Owen Ayres & Associates of Eau Claire, Wisc., the same firm that designed Marinette's administrative and technical center and new ship erection building. Construction was accomplished by Michigan Lakeshore contractors. Marinette holds a 99-year lease from the City of Marinette for use of the dockwall.

For full information on the vessels constructed and services offered by Marinette Marine,

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## Avondale Offers Free Color Brochure On Full Propeller Line

Avondale Shipyards, Inc., a subsidiary of Ogden Corporation, Harvey Quick Repair Division, Harvey, La., is offering a free, full-color, foldout brochure on Avondale propellers.

The six-page publication gives an informative synopsis of the propeller styles offered by the company, as well as the manufacture, repair and applications of Avondale propellers.

The bulletin shows color photographs of the Style "S" (Modified Taylor), Style "F" (Modified Troost), Style "A" (Modified Taylor), Style "K" (Kaplin), and "Spe-

cial Style" (manufactured in its entirety to the customer's drawings and specifications).

According to the publication, Avondale propellers are manufactured to a customer's design with material specification such as carbon steel, Avondale stainless steel, manganese bronze, nickel manganese bronze and nickel aluminum bronze.

To receive a free copy of this informative and well-written brochure on Avondale propellers,

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## New Corporation Formed, Warren Pumps Inc.— Free Literature Available

Warren Pumps Inc., a newly formed corporation organized by the managers of Warren Pumps—Houdaille, Inc. and Scott-Macon, Ltd., a New York-based financial advisory firm, successfully completed recently the purchase of the business of Warren Pumps-Houdaille, Inc. from Houdaille Industries, Inc., Fort Lauderdale, Fla. The price of the purchase was not disclosed.

According to George G. Landberg, president of Warren Pumps Inc. and former president of the Houdaille subsidiary, all of Warren's operations, facilities, trademarks and patents were included in the purchase and all 483 employees of the former subsidiary will assume their previous positions in the new corporation.

Since its founding more than 85 years ago, Warren Pumps has been involved in the design and manufacture of a broad line of pumps for industrial and federal markets. The

company's principal facility is located in Warren, Mass., with additional operating facilities maintained in Rhode Island and New Jersey.

For more information on the newly formed corporation and their full line of marine equipment,

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## \$616.3-Million Contract For Ohio Class Submarine To General Dynamics

General Dynamics Corporation, Electric Boat Division, Groton, Conn., was recently awarded a \$616,373,519 fixed-price-incentive contract for a FY-85 Ohio (SSBN-726) class submarine. The work will be performed in Groton, and is expected to be completed by December 1990. The contract funds would not have expired at the end of the current fiscal year. The Naval Sea Systems Command, Washington, D.C., is the contracting activity (N00024-85-C-2062).

## Free 14-Page Booklet On Gas Turbine Controls Offered By Woodward

The Woodward Governor Company is offering a 14-page booklet on their extensive line of mechanical-hydraulic governors, electronic controls, actuators, and metering valves commonly applied to gas turbines.

The publication is divided into seven separate sections: Mechanical-Hydraulic Governors for Industrial Gas Turbines; Electronic Controls for Industrial Gas Turbines; Accessories for Electric Load Sharing; Actuators for 2301, 43027, and 2500 Controls; Fuel Valves for Industrial Gas Turbines; Accessory Equipment for 2301, 43027, EPG, and 2500; and Woodward Services.

For many gas turbines a mechanical-hydraulic governor offers the simplest, most reliable, and economical means of control. Mechanical-hydraulic governors combine, in a single unit, their turbine-driven-speed-sensing function with a hydraulically powered actuator.

Electronic controls by Woodward offer extended flexibility with wide speed control ranges, automatic synchronizing and paralleling, isochronous load sharing, and interface capability with electric or pressure-controlled process inputs. Additionally, the Woodward 43027 Control and the Integrated Control/Sequencer offer a virtually unlimited number of control functions for large and complex turbines, according to the booklet.

The Woodward Governor Company has manufactured prime mover controls exclusively since 1870. Controls for industrial gas turbines are manufactured at the Engine and Turbine Controls Division in Fort Collins, Colo.

For a free copy of this informative booklet on Woodward controls for gas turbines,

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ENGELHARD



## Seebeckwerft To Build Cellular Containership For China Ocean Shipping

Seebeckwerft AG of Bremerhaven, West Germany, has signed a contract for the construction of a fully cellularized containership with the State shipping company of the People's Republic of China, China Ocean Shipping Company (COSCO). The shipyard won this order against strong international competition.

This will be the 16th newbuilding constructed by Seebeckwerft for COSCO in a business relationship that dates back 10 years. The ships have developed from a multipurpose cargo vessel to the highly sophisticated cellular containership. The latest newbuilding, designated yard No. 1062, is scheduled for delivery in mid-1986. It will be the most modern vessel in the COSCO fleet.

Yard No. 1062 will have an overall length of 653.5 feet, beam of 93 feet, depth to first deck of 50.7 feet, and summer draft of 35 feet. Container capacity will be 1,699 TEUs.

A main propulsion plant consisting of a M.A.N.-B&W diesel engine with an output of 9,977 bhp will be installed, giving the ship a trial speed of 16.35 knots. The vessel will be built to the rules of Germanischer Lloyd class +100 A 4 E (Containership) +MCE AUT.

## Contracts Awarded To Bardex Hydranautics —Literature Available

Bardex Hydranautics has been contracted by Reading and Bates Drilling Co. and Ishikawajima-Harima Heavy Industries Co., Ltd., for the design and manufacture of the BOP and subsea equipment handling systems and the handling/elevator systems for the vertically stored risers for the Zane Barnes semi-submersible. The Friede & Goldman center caisson Trendsetter Class semi-submersible is scheduled for delivery in the fall of 1986.

The major components of the BOP/subsea handling system are the BOP bridge crane, BOP transporters, BOP capturing system, sea fastening and test stump systems, and subsea equipment skid jacks. Major components of the vertical riser handling/elevator system are two riser bridge cranes, two riser elevators, and the control system.

Bardex Hydranautics, Reading and Bates, and Friede & Goldman closely coordinated the design development work on the vertically stored riser and BOP handling systems.

Bardex Hydranautics is headquartered in Goleta, Calif., with offices in London, Singapore and Houston. The company designs and manufactures heavy-load moving equipment for offshore and shipyard-related activities.

For further information on Bardex Hydranautics and their services,

Circle 68 on Reader Service Card

## MarAd Awards Research Contract For \$343,819 To Detroit Diesel

The Maritime Administration has awarded a cost-shared \$343,819 contract to the Detroit Diesel Allison Division of General Motors Corporation in Detroit, aimed at the marine diesel application of a technology based on the on-line, variable-timing, electronic fuel injection system now used in GM's automotive and tractor/truck diesel engine series. There is at present no such application in U.S. marine vessels.

The GM fuel injection system, in concert with an advanced by-pass blower and turbocharging system, will be installed aboard a towboat owned by Warrior and Gulf Navigation Company, a division of U.S. Steel Corporation located in Mobile, Ala.

Under the contract, GM will totally fund the accelerated development phase of the project at an estimated cost of \$500,000. MarAd will cost-share the on-board demonstration phase, with the agency providing \$343,819 and the Detroit Diesel Division \$198,000.

## Forney Offers Full-Color Brochure On New Control System

Forney Engineering Company, Carrollton, Texas, is offering a free, six-page, full-color brochure on their new Mini AFS-1000 control system.

According to the brochure, the Mini AFS-1000 control system achieves new levels of flexibility and economy for analog and digital control applications. The brochure states that the Mini AFS-1000 utilizes modern microprocessor technology on single board computer cards, and that the unit can be configured to fulfill specific requirements.

The publication explains, through the use of several fine full-color photos and clear, communitive text, the operation and special features of the mini unit.

The brochure is broken into several sections and includes such topics as: "System Architecture," "Operator Interface," "Hardware Features" and "Software Features."

For a free copy of this detailed and informative brochure,

Circle 92 on Reader Service Card

## Norton, Lilly Opens Montreal Office

John H. Griffith, president of Norton, Lilly & Co., Inc., the oldest and one of the largest steamship agencies in North America, has announced the opening of a new office in Montreal as part of Norton, Lilly's expanding presence in eastern Canada. The new office, Norton, Lilly et Cie (Canada) Ltee, is located at: Suite 707, 276 Rue St. Jacques, Montreal, Quebec H2Y 1N3; customer service telephone numbers: (514) 281-0066 and 281-0079.

## Hamburg Yard Jumboizes First Of Four Vessels For Hapag-Lloyd

The jumboizing of the first of four Hapag-Lloyd North Atlantic containerships has been completed by Blohm and Voss shipyards of Hamburg, West Germany. The Nuernberg Express, built in 1978, has been given a new middle section approximately 30 meters long (about 98½ feet), increasing the vessel's TEU (20-foot equivalent unit) capacity from 1,758 to 2,594. Blohm and Voss completed the job within the month specified by the contract.

The Nuernberg Express moved immediately to the Unikai Container Terminal in Hamburg port to pick up cargo for the U.S. East Coast.

The other three sister ships, Stuttgart Express, Koeln Express and Duesseldorf Express will be jumboized in the same way.

By using a West German shipyard for the conversion, Hapag-Lloyd was able to obtain from the Bonn Government a building subsidy

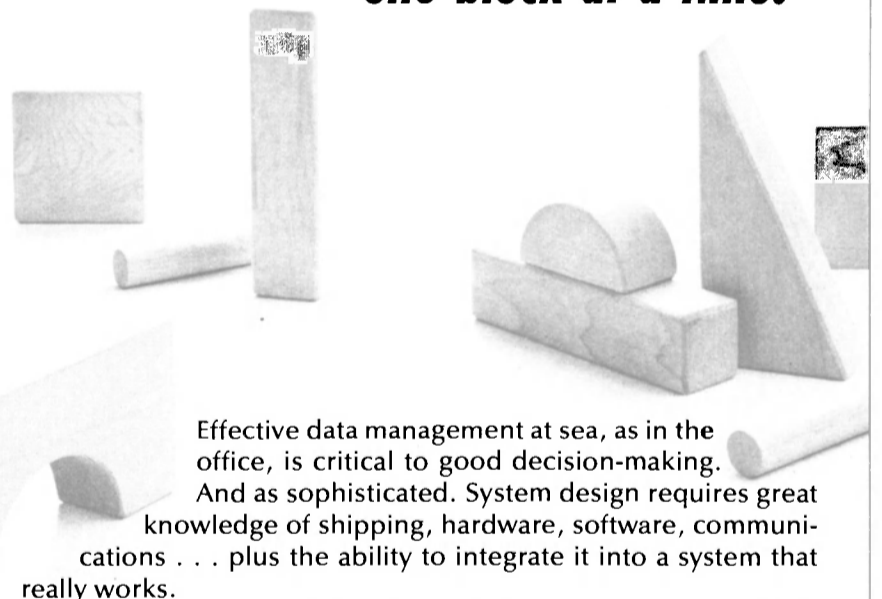
amounting to 12.5 percent of the contract price. The bill for the conversion of the four is believed to be between 60 and 70 million deutsche marks (about \$22 to \$26 million).

## Mike Markey Appointed Chief Engineer For Markey Machinery

M.J. (Mike) Markey, grandson of the company founder, has been named chief engineer for Markey Machinery Company of Seattle, it was announced by William J. Markey, president and chief executive officer.

A graduate of Stanford University in mechanical engineering, Mike Markey has been with the company for the past 27 years serving in various engineering capacities. He replaces Robert G. Kennard, who passed away recently. Mr. Kennard had been chief engineer with Markey for more than 45 years, and had been instrumental in the development and manufacturing of modern, multi-faceted deck machinery in a number of fields.

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After a 20-month, \$120-million conversion, MPS Pvt. Harry Fisher heads down Chesapeake Bay to the Atlantic. Ship is one of five Maersk Line vessels reconstructed by Bethlehem—three at Sparrows Point and two at Beaumont Yard under a \$600-million U.S. Navy contract.

## Sparrows Point Yard Delivers Third Maersk MPS Conversion

The last vessel in a three-year, three-ship reconstruction program at Bethlehem Steel Corporation's Sparrows Point Yard near Baltimore was renamed the Pvt. Harry Fisher by Congresswoman **Helen D. Bentley** (R-Md.), guest of honor and sponsor at the christening ceremonies.

Formerly named the Evelyn Maersk and a part of the Maersk Line fleet until she entered the yard in February 1984, the ship is named to honor a U.S. Marine Corps hero of the Boxer Rebellion who was killed in 1900 while defending the American Legation in Peking, China. Pvt. **Fisher** was posthumously awarded the Congressional Medal of Honor.

The ship will be part of the U.S. Navy's Maritime Prepositioning Ship (MPS) Program under the Military Sealift Command, and will be operated by Maersk Line Limited of New York. As such, she will be stationed in potential trouble spots around the world and carry part of the equipment and supplies for a Marine Corps Amphibious Brigade.

To meet the requirements of the

MPS program, the yard separated the vessel amidship and added a 157-foot-long midsection, extending her length to 755 feet. Her depth was changed with the addition of two deck levels, increasing the keel-to-deck depth by nearly 16 feet—from 54 to almost 70 feet. Doing this required the alteration of three existing decks—first, main, and upper.

These expansions provided more cargo hold cubic space for a third set of 36-ton-capacity twin Hagglands cranes, and a new 80-man deckhouse for "surge" crews during periodic loading and unloading. The normal crew complement will be about 65, composed of civilian and MSC personnel.

Other major additions included new ramps, fuel tanks, repair shops, and a helicopter landing platform aft. Bethlehem was able to improve productivity by pre-outfitting many of the new modular units with piping, cable ways, and machinery before lifting them into place aboard the ship.

Reconstruction statistics, with the new 755-foot overall length and 69-foot 10½-inch depth, include a

displacement of 28,249 long tons and a 32-foot 10½-inch full-load draft.

The Fisher's diesel engine propulsion plant will provide a speed of 17.5 knots operating at 85 percent of maximum continuous rating. The main engine is a Sulzer 7RND76M with a mcr of 15,960 bhp at 112 rpm.

On-board capabilities include 120,000 square feet for vehicles, space 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.

The MPS program was proposed by the Secretary of Defense in 1979 as a new option for increasing the responsiveness of Marine Corps forces requiring immediate and rapid deployment. In response to a contingency or actual crisis, equipment aboard the ships will be unloaded and then joined with air-transported Marine Amphibious Brigade personnel. Self-deployed tactical aircraft would rapidly complete the emplacement of the brigade in an operational area.

## NKF Engineering Expands With Acquisition Of Two Additional Firms

NKF Engineering, Inc. of Reston, Va., recently acquired two small companies to expand its capabilities in serving U.S. government and commercial clients. The firm has purchased the Marine Engineering and Design Division of Halifax Engineering of Norfolk. This 24-person group has been renamed the Craft Engineering and Design Division of NKF, and will remain at its Norfolk location to continue to serve U.S. Navy customers in the design of small craft.

NKF has also acquired control-

ling interest in System Enhancement Services Company of Crystal City (Arlington), Va., which has become a subsidiary of NKF and consists of 28 employees who provide U.S. Navy and commercial customers with technical support services in ship design, ship systems engineering, and program management.

NKF is a small business concern that serves U.S. Government and commercial clients in analysis, research, test, and operational support of naval vessels and programs. The corporate staff consists of some 200 scientists, engineers, and management professionals. The company has branch offices in Crystal City and field offices in Columbia, Md., Philadelphia, and San Diego.

## New Terry Turbine Offers Low-Cost Maintenance —Literature Available

Terry Steam Turbine has announced a new single-stage turbine for applications up to 50 hp, incorporating a unique "back-pullout" feature which assures minimal maintenance expense, according to **William L. Wathen**, Terry president.

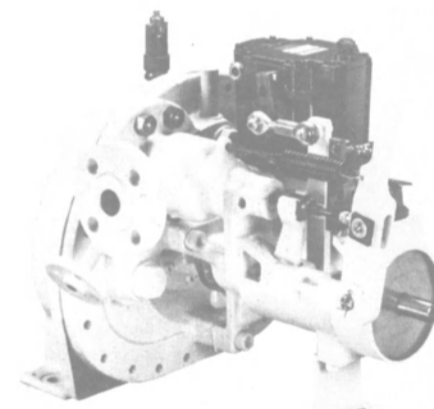
Called GLT-260, the small turbine meets the longevity requirements of API 611, and includes Terry's unique rotating parts assembly design, affording the proven maintenance simplicity of back pullout pumps. "This provides remarkable convenience, and maintenance time savings," Mr. **Wathen** said.

Other GLT-260 features include: Terry's proven cantilevered, solid-wheel design; oil-free lubricating system; innovative governor valve, and tight shut-off trip valve; component standardization; steel casing, and stainless steel glands.

With one packing box, GLT-260's gland maintenance costs are cut in half. Also corrosion and erosion problems—common in iron or carbon steel gland boxes—are minimized with use of stainless steel.

The unit's high temperature ball bearings are sealed and grease-packed, eliminating the need for lube oil, related maintenance costs, and cooling water. Bearing life is L-10, in excess of 50,000 hours.

Standard governor provided with the GLT-260 is a Woodward TG-13.



Terry Steam Turbine's new single-stage turbine for applications up to 50 hp.

"Its high-level performance and excellent maintenance record help assure long, trouble-free service," Mr. **Wathen** commented.

GLT-260 turbines are available in inlet pressures and temperature ratings to 650 psig (45.7 KG/CM<sup>2</sup>) and 750F (399C), and back pressures to 75 psig (5.3 KG/CM<sup>2</sup>).

Terry Steam Turbine, headquartered in Windsor, Conn., is a component of Ingersoll Rand Worldwide, with other manufacturing facilities in Niantic, Conn.; Germany; Mexico; and Canada.

For further literature containing full information,

Circle 61 on Reader Service Card



Rep. **Helen D. Bentley**, member of Congress from Maryland, was sponsor of the Pvt. Harry Fisher. Shown with her at the ceremony are (L to R): Commo. **Richard F. Donnelly**, MSC commander; **David Watson**, general manager of Sparrows Point yard; **Birger Jurgensen**, president and COO, Maersk Line, Limited; **David H. Klinges**, vice president of Bethlehem's Marine Construction Group; and Lt. Gen. **George B. Crist**, chief of staff, U.S. Marine Corps.

## Colonna's Shipyard Wins \$3.1-Million Navy Order For Barge Work

Colonna's Shipyard Incorporated, Norfolk, Va., is being awarded a \$3,092,576 firm-fixed-price contract for the selected restricted availability for barge VEB-1. The work, which is expected to be completed April 14, 1986, will be performed in Norfolk. The contract funds would not have expired at the end of the current fiscal year. The contracting activity is the Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Va. (N00024-85-H-8134).

## Currie Named Senior VP And General Manager, Western Cruise Lines

Alex Currie has been promoted to senior vice president and general manager of Western Cruise Lines, it was recently announced by Bernard Chabot, president of Eastern Cruise Lines. Mr. Currie was previously vice president and general manager.

Western and Eastern Cruise Lines are both wholly owned subsidiaries of Gotass Larsen, and Mr. Chabot is the president of both lines.

Western's ship, the S.S. Azure Seas, is homeported in Los Angeles and is the only major cruise ship to make three- and four-day night cruises to Mexico 50 weeks a year.

## Moss Point Reports On Recent Progress And Backlog At Yard

Moss Point Marine, Inc., Esca-tawpa, Miss., reported it is currently converting a 383-foot T-2 tanker to a 17,000-short-ton hopper barge, constructing twenty-six 110-foot lighter barges for the U.S. Navy, converting a partially completed 173-foot supply boat to a 212-foot cargo vessel, and doing preliminary work on a newly won contract for the construction of two U.S. Navy 134-foot landing craft (LCU).

Since the beginning of 1985, Moss Point has delivered a 219-foot freezer/trawler, an 800-passenger paddlewheel/excursion boat, two 92-foot tugs, and eight Navy barges, four of which were delivered three months ahead of contract delivery dates.

The shipyard also recently put into service a 160- by 60-foot floating drydock which has been used to overhaul a variety of tugs, supply vessels and fish boats.

John Dane III, president of Moss Point Marine, said the shipyard has a backlog of work through mid-1986 and that pending projects will extend through late 1986.

Since its founding in 1980, Moss Point Marine has been one of the most active small shipbuilders in the U.S. To date, the yard has delivered more than 60 vessels.

## Johnson & Towers Named Distributor For John Deere Diesels

Johnson & Towers, Inc., diesel power specialist with operations in Mount Laurel, N.J. and Baltimore, Md., has been selected by Detroit Diesel Allison and John Deere in their joint "New Force" program to distribute the John Deere 14-model line of four-cycle (50-250 hp) diesel

engines, according to Al Harris, J & T vice president.

The agreement, effective immediately, adds the highly regarded John Deere Diesels to the Johnson & Towers distributorship for Detroit Diesel Allison products in both operations. With this new line, J & T now offers a comprehensive range of diesel power from 50 to more than 4,000 hp, including the huge Alco diesels.

The company will market the Deere line in gensets for prime and

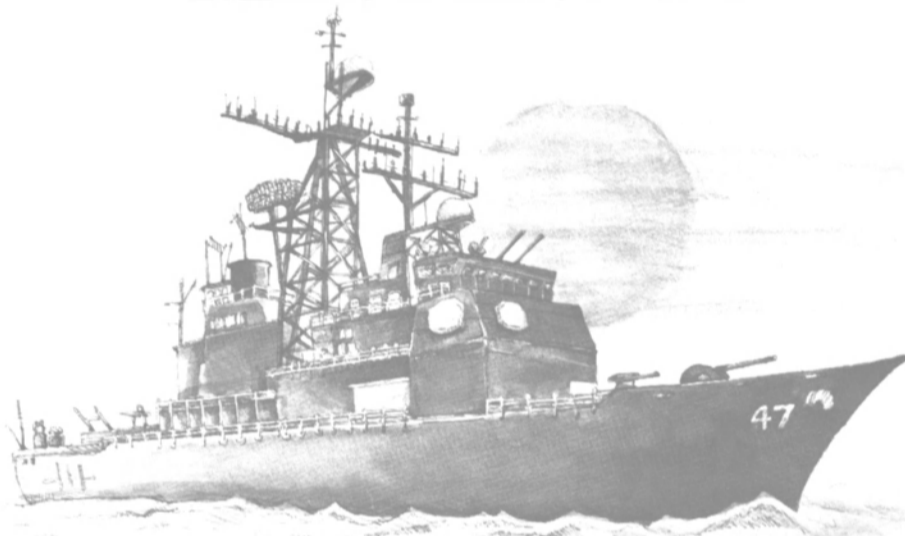
emergency power, power units and marine engines as well as replacements for existing engines in the field. The firm will also provide complete parts and service on John Deere engines.

Headquartered in Moline, Iowa, Deere with more than 60 years' engine experience has produced millions of diesels, notably in the agricultural equipment field.

For more information on John Deere diesel engines,

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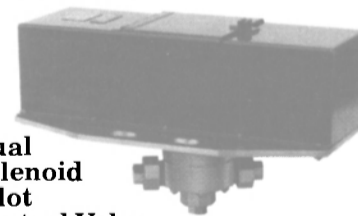
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# EUROPORT '85

Amsterdam, Netherlands — November 12-16

The 22nd Europort International Maritime Exhibition will be held this year on November 12-16 at the RAI Exhibition and Congress Centre in Amsterdam, Netherlands. Whether the shipowners' interest is deepsea, coastal, or inland waterways, Europort is both a shop window and meeting place for equipment and people. Many shipping executives have said that a day at Europort is equivalent to many months of visiting manufacturers, shipbuilders, engine builders, and suppliers of the latest items of marine equipment.

Despite the continuing recession in the world shipping industry, business goes on and for many survival is a question of the ability to own and operate efficient tonnage. Older vessels are being replaced by the hybrid ship capable of fulfilling several roles and manned by smaller but better-qualified crews.

These vessels require the latest and best equipment, from satellite navigation and computerized cargo operations to new designs of diesel engines and cargo-handling gear, all of which are to be seen, examined, and discussed at the Europort Exhibition.

The Europort in Amsterdam in November 1983 was the first to be held on a biennial basis and the first

since the exhibition and congress was taken over by the RAI Exhibition and Congress Centre management. That meeting was a great success and this year the demand for exhibition space is again at a high level, the demand coming not only from the many regular exhibitors but from many new exhibitors.

A survey taken at the 1983 exhibition showed that more than 80 percent of the visitors attending were more than satisfied with what they saw and the manner in which it was presented. This year's Europort is bigger than ever and will contain the most comprehensive display of marine equipment ever to be assembled at one time in the same place.

All sectors of the maritime world will be on display, from shipbuilding and ship repair to inland waterways and main and auxiliary machinery. More than 60,000 visitors are expected from some 75 countries; over 50 percent of the people attending will have the responsibility for decision-making within their own companies.

The importance of the Europort Exhibition within the world maritime industry is recognized by the presence of different national stands, with groups of companies from Western and Eastern Europe as well as the Far East participating

in joint ventures. In the case of the United Kingdom, the British Marine Equipment Council has arranged for a joint display by more than 12 leading companies in the marine field.

Now that Europort is a biennial event rather than an annual one, there is a larger concentration of new equipment on display, and there is no overlap with any other major maritime exhibition. New designs and systems are features of the main and auxiliary engine displays, as well as the fuel oil handling and treatment equipment that is the heart of the engine room operations.

Safe and easy access to harbors, jetties, piers, and rivers is of great importance to the ship operator. The dredging section of the Europort Exhibition is a show on its own, with some of the largest single units of dredging equipment on display.

## Maritime Congress

What kind of ships will be required to serve the world markets in the 1990s? There can be very few shipowners who have not given considerable thought to the problem of identifying the probable size of ships for a possible future market. To help in providing a realistic solu-

tion to this important problem, the theme chosen for the 1985 Europort International Maritime Congress to be held on November 12 and 13 is "Ships for the 1990s." By dividing this two-day congress into four sections it is hoped that all major aspects of the problem will be covered.

Sir **Adrian Swire**, chairman of the International Chamber of Shipping, will officially open the congress and will deliver the keynote speech in which he will give an analysis of the shipping market, show the structural changes in patterns of ownership during the past decade, and demonstrate how there has been a transfer of influence to the Far East.

This opening address will set the scene for the entire congress, which starts with a session on trade patterns and shipping economics, followed by the second session dealing with application of new marketing strategies by both shipowners and shipbuilders. Having considered the markets, their size and location, the third session is on the design of ships for the 1990s in terms of main and auxiliary machinery and equipment.

In the final fourth session the

(continued)



## In the engineering of new-generation container ships, Hitachi Zosen brings efficiency, safety and economy to the forefront.

Hitachi Zosen's world famous, proven shipbuilding technology is now being applied to build a new generation of container ships that not only offers a greater load-carrying capacity, but improved labor efficiency, safety and economy as well.

Recently completed and delivered to the owners in Japan, the ultra-efficient 36,375 gross ton container ship "SHIN-BEISHU MARU" (1,680 TEU, about 14 tons/container) typifies how Hitachi Zosen is always working to meet the growing demand for efficient shipping.

The "SHIN-BEISHU MARU" features a hull,

engine and auxiliary equipment specifically designed to carry containers economically and efficiently.

The hull is designed for economical navigation at high speed — a bulbous bow enables greater speed with a minimum increase in main engine horsepower, and a bulged stern reduces hull vibration.

The machinery section is equipped to enable unattended operation of the engine room around the clock. Only 18 crew members are needed to run the ship efficiently.

And, for super-rationalized operation at the bridge, the control section is equipped with

satellite navigation equipment, automatic steering equipment and a maritime satellite communications system.

"SHIN-BEISHU MARU" is a prime example of how Hitachi Zosen's innovative technology carries the efficiency of new-generation container ships ever higher. Our technology can also build a new-generation container ship having the high performance you require.

Now more than ever, it's Hitachi Zosen for container ships that will meet your shipping needs at present, and far into the future.

For more information, contact Hitachi Zosen or the overseas representative nearest you.

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(continued)

Congress will look ahead to the fully integrated ship and the use of satellite communications for more efficient and profitable operations.

Members of the Committee of Honour, which is under the patronage of HRH Prince Bernhard of the Netherlands, will take part in the congress as chairmen of the sessions. The first session will be chaired by **Brian Griffiths**, dean of the City University Business School. In this session **J. Jens**, immediate past senior deputy director, Maritime Safety Division of IMO, will talk on the application of new safety requirements, and another senior executive will discuss the planning of ports to handle ships for the 1990s.

The second session of the first day, under the chairmanship of Dr. **N. Nordenström**, president of the International Association of Classification Societies, will be concerned with markets and money. Marketing strategies and shipping economics is the subject for Prof. **Victor Norman** of the Norwegian School of Economics and Business. He will be followed by **Otto Norland**, a familiar figure at international ship finance meetings, who is now with the Deutsche Schiffahrtsbank AG in Bremen. He will speak on the matter of finance for ships.

The first session on the second day, chaired by Mr. **Jens**, will look at the marketing problems facing both the shipowners and shipbuilders in the next decade. At this important session Dr. **John Parker**, chairman and chief executive officer of Harland & Wolff Ltd., will speak for the shipbuilder, while **W.A. Mulock Houwer**, a member of the board of Koninklijke Nedlloyds Groep nv, will present a shipowner's projection of the shipping scene in the 1990s and how the challenge of changing trade patterns may best be met.

The second half of the third ses-

sion will be of a technical nature, with **J. Neumann**, managing director of YARD Ltd., and Dr. **Bob King**, a director of YARD, presenting a paper that considers some of the ship types likely to be required in the 1990s, and which suggests the corresponding machinery installations designed to give the required flexibility and reliability while offering low first cost and low operation costs.

Representatives from Howaldtswerke-Deutsche Werft, the shipyard involved in the study of the "Ship of the Future" for West German shipowners, will present a technical paper entitled "The Equipment Package for the Ships of the Future—A Challenge to a New Equipment Generation." Much of the equipment at present in use aboard ship is outdated and must be completely redesigned.

The congress will take a realistic look ahead as the fourth and final session under the chairmanship of **George Thebaud**, president of the Association Technique Maritime et Aeronautique, investigates the fully integrated ship and the use of satellite communications for more efficient operations. Three speakers will deal with various aspects of this important subject—**R.F. Hansford** of Racal Marine Systems; **J. Christopher Bell**, development officer of INMARSAT; and **Thomas A. Stansell Jr.**, director of Marine and Survey Systems Ltd.

The Europort Congress Coordinating Committee, under the chairmanship of **J. Stuart Robinson**, director and secretary of the Institute of Marine Engineers, believes that the congress theme, Ships for the 1990s, is of vital interest to the maritime industry, from shipowners and shipbuilders to engine manufacturers and the designers and suppliers of all the auxiliary equipment.

**CONGRESS PROGRAM**  
**Tuesday, November 12**  
 Keynote address: Sir **Adrian**

**Swire**, chairman, International Chamber of Shipping.

**Session 1: Trade Patterns and Shipping Economics.**

Chairman: Prof. **Brian Griffiths**, dean, The City University Business School, London.

"Application of New International Safety Requirements," by **J. Jens**, immediate past senior deputy director, Maritime Safety Division, INMARSAT.

"A Shipowner's View of Shipping Policy and the Effect of Future Legislation in General upon World Trading Patterns," by a speaker to be announced.

**Session 2: Application of New Marketing Strategies.**

Chairman: Dr. **N. Nordenström**, president, International Association of Classification Societies.

"Marketing Strategies and Shipping Economics for the 1990s," by Prof. **Victor Norman**, The Norwegian School of Economics & Business Administration.

"The Bank's Attitude and Philosophy to Finance for the Ships of the 1990s," by **Otto R. Norland**, Deutsche Schiffahrtsbank AG.

**Wednesday, November 13**  
**Session 3: The Design of Ships Required in the 1990s.**

Chairman: **J. Jens**.  
 "A Shipowner's Projection of the Shipping Scene into the 1990s and Ways of Meeting the Challenge of Changing Trade Patterns," by **W.A. Mulock Houwer**, member of the board, Koninklijke Nedlloyds Groep nv.

"The Shipbuilder's Philosophy for Marketing His Products and How an Owner's Needs Are Met," by **John Parker**, chairman and chief executive, Harland & Wolff Ltd.

"Selection of Main and Auxiliary Machinery for the Ships of the 1990s," by **J. Neumann**, managing director, and Dr. **R.H. King**, director, YARD Ltd.

"The Total Equipment Package," by **U. Gerbitz**, chief manager, Project Department, Howaldtswerke-Deutsche Werft AG.

**Session 4: Fully Integrated Ships and the Use of Satellite Communications for More Efficient Operation.**

Chairman: **G. Thebaud**, president, Association Technique Maritime et Aeronautique.

"Integrated Maritime Electronic Systems," by **R.F. Hansford**, technical director-large ship system projects, Racal Marine Systems.

"Satellite Communications—A Force for Change in Fleet Management," by **J. Christopher Bell**, service development officer, INMARSAT.

"Global Positioning System," by **Thomas A. Stansell Jr.**, director, Marine and Survey System.

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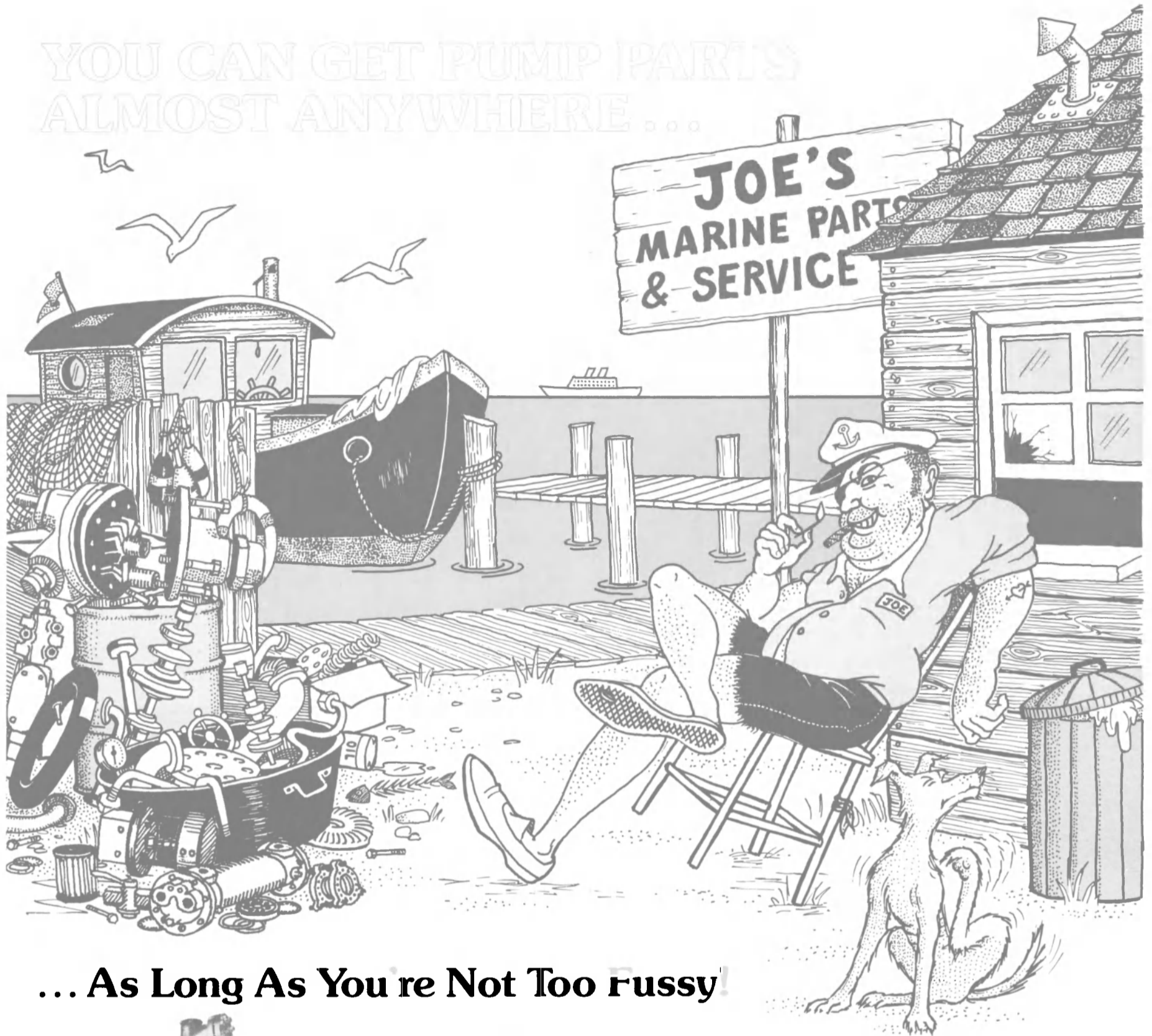
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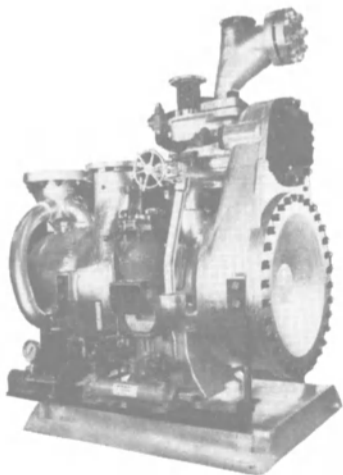
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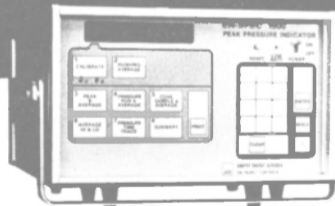
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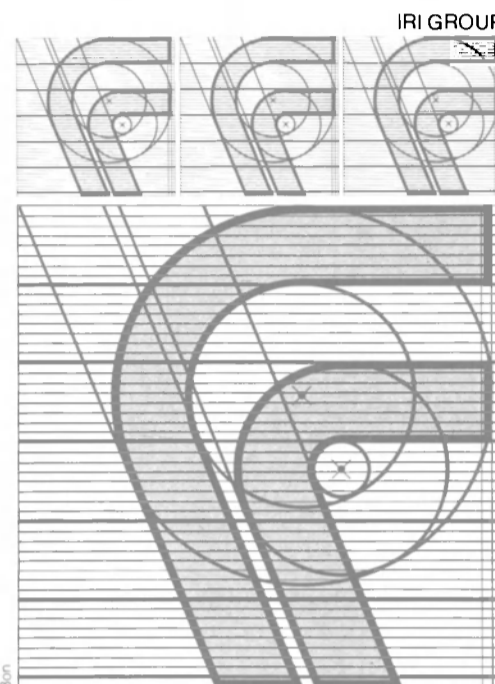
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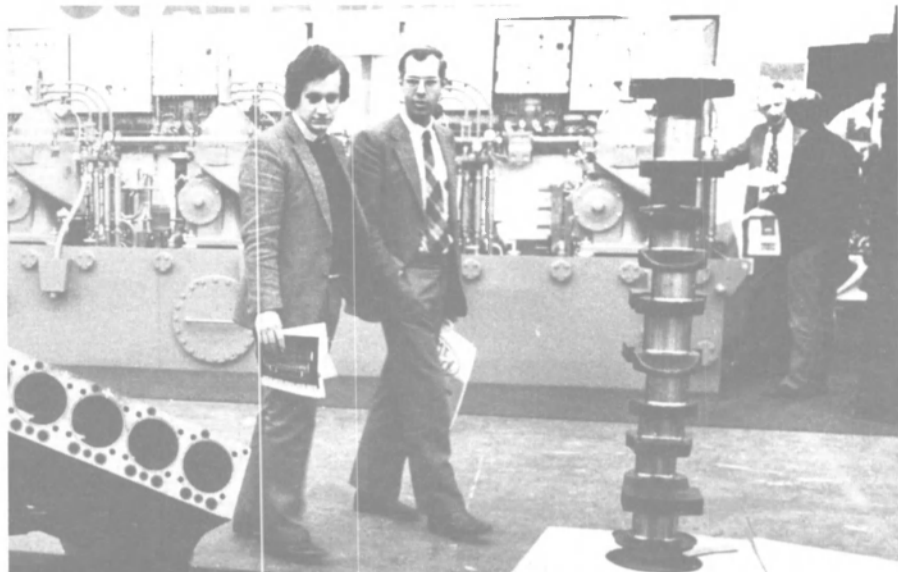
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## Hyundai Launches First Of Three Big Bulk Carriers For Bocimar

The Mineral Dampier, first of three 168,500-dwt bulk carriers under construction for N.V. Bocimar S.A. of Belgium, was launched recently at the Ulsan Shipyard of Hyundai Heavy Industries in South Korea. These three bulkers have a special significance, as they are the first ships to be built by HHI for a Belgian owner. Bocimar is a subsidiary of the CBM Group, one of Belgium's foremost shipping companies.

These big vessels are being built to comply with the rules of Det norske Veritas, and will be classed 1A1, Bulk Carrier, +MV, EO, HC/E (Hold Nos. 2, 4, 6, and 8 may be empty), IB for Unrestricted Ocean Service. They are designed to carry coal or grain in all holds, or ore cargo in hold Nos. 1, 3, 5, 7, and 9.

The Mineral Dampier has an overall length of about 951.5 feet, beam of 147.6 feet, depth of 78 feet, and design draft of 55.8 feet. Powered by a Hyundai/B&W 6L80MCE diesel engine with a maximum continuous rating of 16,555 bhp at 77



rpm, she will sail at a service speed of 13 knots when operating at 90 percent of mcr (14,900 bhp at 74.5 rpm), including 15 percent sea margin and 1,000 bhp for the shaft generator. She will carry a normal complement of 33 persons.

The first of the three-ship series is scheduled for delivery in November this year, with the other two delivered during the first half of 1986.

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Shaft alternator	Fuji	Echo sounder	Furuno
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## Baldt Announces Corporate Reorganization

In an effort to more efficiently serve the shipbuilding and offshore markets, Baldt Inc., Chester, Pa., announced a major corporate reorganization. The announcement was made by **James E. Palmer**, company president. The reorganization includes the formation of three operating divisions—Marine Products, Distribution and Safety Products & Systems.

The Marine Products Division will manufacture, procure and market the traditional Baldt proprietary products. Their selling activities will be concentrated on North American shipyards, governmental agencies and related customers and distributors.

The Distribution Division will consist of Dreyfus Supply and Machinery Corp., Washington Chain and Supply, Inc., Tri-Tex Marine Inc., and Baldt European Sales Division. This group of wholly owned subsidiaries will continue to operate independently by their existing local managements. However, a corporate ombudsman will be appointed to provide more timely

communications and attention to operating problems and opportunities.

The immediate task of the third division, Safety Products & Systems, will be the successful commercialization of the Moor-Free II Rapid Release System as well as the integration, promotion and development of Remote Systems Technology Inc., a newly acquired subsidiary. Long-term goals include the development and marketing of higher technology, engineered products and/or services that are related to the safety and security of personnel and equipment.

"The principal objectives of this new plan are twofold," said Mr. **Palmer**. "First is the redirection of our planning, promotional image, and future investments toward safety-related products and systems. Moor-Free, its technology and subsequent derivative products will be the early cornerstone of this effort. Second is to regroup our existing resources to optimize the current businesses and the markets they serve," he said.

For more information and literature describing Baldt equipment,

Circle 83 on Reader Service Card

## First Ship Repaired In New Chilean Floating Drydock



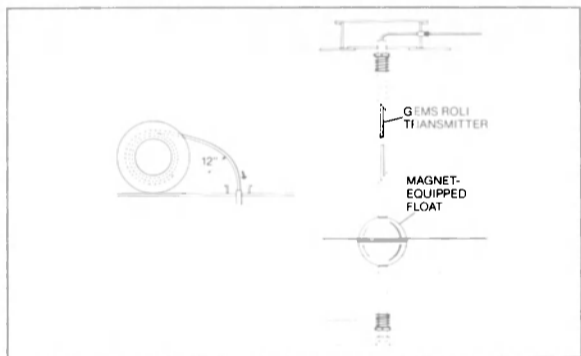
The 16,992-dwt bulk carrier Renacimiento was the first vessel to enter the new and recently commissioned floating dock Valparaiso III at the Chilean Port of Valparaiso. With a lifting capacity of 10,000 tons, the new dock is capable of handling vessels of up to 30,000-dwt, and gives Valparaiso docking facilities for the first time since 1980.

The dock, built at ASMAR's Talcahuano yard, was designed by Senermar S.A. of Spain and is owned and operated by Sociber, a joint venture involving ASMAR and E.N. Bazan of Spain.

For additional information on ASMAR's ship repair facilities,

Circle 98 on Reader Service Card

## Gems Roli Provides Continuous Level Indication For Deep Tanks



The Gems Roli linear insert installs from outside of the tank, directly from its shipping spool.

A unique, roll-out linear insert to provide continuous level indication in deep tanks is now available from Gems Sensors Division, Plainville, Conn. The unit is readily adaptable for use in inaccessible or difficult tanks as well. Called the Gems Roli, the insert provides consistent accuracy to 3/4-inch to  $\pm 1/2$ -inch. It is supplied on a spool for easy shipping and handling. A wide choice of magnet-equipped Gems floats is available for use with the insert.

This versatile Gems Roli is inserted into a pre-installed 1 1/4-inch, Schedule 40, non-magnetic pipe. When installed in stainless steel pipe, it is compatible with many different liquids.

The Roli may be used with all of Gems receivers, or with instrument control loops which are equipped with 0-5 VDC, 0-12 VDC or 4-20 MA signal conditioners. Gems zener barrier Safe Pak relays may also be used with the Roli to make it intrinsically safe.

These linear inserts are said to be ideal for use in land-based facilities such as large chemical storage and process tanks, oil storage vessels, aboard marine tankers, or in other large tanks where accessibility is a problem.

For further information and free literature on the Gems Roli,

Circle 85 on Reader Service Card

October 15, 1985

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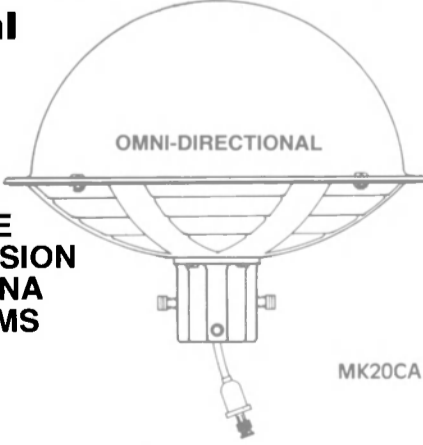
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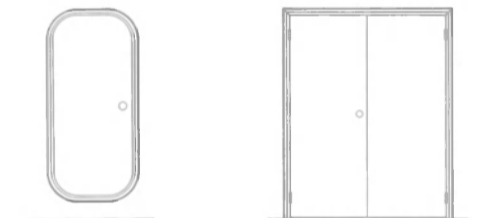


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## Northwest Marine Wins \$12.2-Million Contract For USS Duluth Overhaul

Northwest Marine Iron Works, Portland, Ore., was recently awarded a \$12,282,010 fixed-price-incentive contract for the regular overhaul of the USS Duluth (LPD-6). The work will be performed in Portland, and is expected to be completed June 29, 1986. The contract funds would have expired at the end of the current fiscal year. There were 12 bids solicited and 10 offers received. The Naval Sea Systems Command (NAVSEA), Washington, D.C., is the contracting activity (N00024-85-C-8506).

## Stork Services Names Curacao Drydock Inc. U.S. Agent—Brochure Available

Stork Services B.V., Hengelo, Holland has appointed Curacao Drydock (USA) Inc. exclusive agent in the U.S. to promote its full product line.

Stork's product line includes: spare parts for diesel engines at competitive prices (short delivery times are affected by holding stock in Rotterdam); high-quality reconditioning of all engine parts, including exhaust valves, bearings, cylinder covers, and piston heads; Aquamarin oily-water separators (units are packaged complete, use no filter cartridges, and meet MARPOL standards); Stork-Jaffa steering gear for oceangoing and modern inland vessels (spare parts are available and repairs can be carried out on board); dockside arms (improves hull treatment efficiency saving drydocking time).

For more information and bro-

chures contact **Richard R. Klatenberg** at Curacao Drydock (USA) Inc., 26 Broadway, New York, N.Y. 10004, (212) 943-0122, or

Circle 75 on Reader Service Card

## \$46-Million Rehabilitation Of Port Of Portland's Terminal 2 Now Underway

State of Oregon and Port of Portland officials joined with area business people at the edge of the Willamette River recently to witness official ceremonies noting the beginning of construction on the \$46-million renovation of Port of Portland's Terminal 2.

The rehabilitation project, the most ambitious effort undertaken by the Port in this decade, will update nearly a quarter mile of waterfront and add 18 acres of new terminal area. The new section will include two new ship berths, a new crane, warehouse, and assorted yard equipment.

Financing for the project was made possible through a \$40-million General Obligation Bond approved by port district voters in May 1984.

The ceremony included Oregon Secretary of State **Barbara Roberts**, State Treasurer **Bill Rutherford**, Port of Portland Commissioner **Blake Hering**, **Arthur A. Riedel**, president of Riedel International, whose firm won the major construction contract, and Port Executive Director **Lloyd Anderson**.

According to Capt. **Peter Norwood**, Port of Portland Marine Director, the terminal rehabilitation will result in one of the most modern and versatile general cargo facilities on the West Coast.

## Todd Pacific Wins \$5.6-Million Contract For FFG-10 Work

Todd Pacific Shipyards Corporation, Los Angeles Division, San Pedro, Calif., was recently awarded a \$5,607,444 firm-fixed-price contract for the selected restricted availability of the USS Duncan (FFG-10). The work, which is expected to be completed by December, will be performed in San Pedro. Two bids were solicited and two offers received. The contract funds would not have expired at the end of the current fiscal year. The Supervisor of Shipbuilding, Conversion and Repair, Long Beach, Calif., is the contracting activity (N00024-85-H-8237).

## \$84.2 Million In Contracts Signed For Construction Of 2 Big Bulkers In Brazil

Contracts worth the equivalent of \$84.2 million for the building of two 170,000-dwt bulk carriers were signed recently in Rio de Janeiro by the Banco Nacional de Desenvolvimento Economico e Social national development bank and the state-owned Docenave bulk carrier fleet. The \$84.2-million figure will cover 90 percent of the construction costs.

This marked the first contract signed under the new civilian government that took office this past March.

The two ships will be built by Verolme shipyards near Rio de Janeiro for delivery within 30 months. They are to be used for transporting high-grade iron from the Carajas mineral project to Japan, returning

with coking coal from Australia or Canada.

Docenave is the shipping arm of the Companhia Vale de Rio Doce, a state-owned mining company and developer of the Carajas project.

**Jose Augusto Amaral de Souza**, Docenave president, said the two new ships will boost the Docenave-owned fleet to 1,360,000 tons.

## John Gaughan To Be Nominated To Head Maritime Administration

President **Reagan** has announced his intention to nominate **John Gaughan** as Administrator of the Department of Transportation's Maritime Administration.

**Mr. Gaughan** is currently Deputy Assistant Secretary for Governmental Affairs for DOT.

A graduate of the Coast Guard Academy, he served nine years on active duty, earning a law degree during that period. Before taking his present post, he served as Director of External Affairs for the Maritime Administration.

**Mr. Gaughan** joined DOT in 1981, serving as Congressional Relations Officer for maritime and Coast Guard programs. He came to the department from the Federal Maritime Commission, where he was an attorney. His active duty service with the Coast Guard included command of the cutter Point Martin, and he holds the rank of Lt. Commander in the Coast Guard Reserve.

**Mr. Gaughan** holds a Bachelor of Science degree from the Coast Guard Academy and a Doctor of Laws degree from the University of Maryland. He is a member of the District of Columbia Bar Association and the Maritime Law Association.


## Lehman Joins Walker Boat Yard

Walker Boat Yard, Paducah, Ky., announced that **Kimble Lehman** has joined their operation as marketing manager. **Mr. Lehman** will report to **Ken Wheeler**, president, and will be responsible for marketing all of Walker's services.

**Mr. Lehman** is a graduate of Delta State University and has prior experience with Mainstream Shipyard, Newport Shipyard and Cairo Marine Service. He is also a certified marine chemist.

**Errata**—The Bailey Refrigeration Company advertisement appearing on page 14 of the October 1st issue of MARITIME REPORTER contained copy incorrectly added by MARITIME REPORTER stating that Bailey Refrigeration was exhibiting at Fish-Expo in Seattle. Bailey is not exhibiting at Fish-Expo. The correct copy stated that Bailey Refrigeration Company will exhibit at the S.N.A.M.E. Exposition in New York, booths 231-233.

Go With The Winner!



## The Compact, Low Cost Oily Water Separator That Works!

- T-model OWS
- 0.5-7.5 ton/hour
- No cartridges or expendables
- Skid mounted with pump and controls
- Less Expensive
- FINANCING AVAILABLE

**Worldwide Approval**

**SIGMA TREATMENT SYSTEMS**

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300 IN UNIT

EXCELLENCE

RELIABILITY

Circle 231 on Reader Service Card



# At Newport News, the technology of the future exists for you today.

It takes advanced technology, superior facilities and imagination to design and build the most sophisticated ships in the world.

At Newport News these capabilities are at your service.

Our integrated Computer Aided Design/Computer Aided Manufacturing System,

our modular construction techniques and our 900-ton superlift capacity enable us to build every kind of commercial ship to your specifications. And deliver on time.

So when you need a ship built to specific requirements, come to us. We can handle the toughest jobs, including some

other shipyards won't even attempt.

Newport News Shipbuilding.  
Newport News, Virginia 23607.  
1-804-380-2600. Telex 82-3453.  
TWX 710-880-0007.

**Newport News Shipbuilding**



A Tenneco Company  
Newport News, Virginia 23607

Circle 188 on Reader Service Card

An Allison **Gas** Turbine will get to the **scene** and back in a hurry. The concept is simple. When a high power-to-weight ratio is needed for fast marine propulsion, use an Allison high

power-to-weight ratio gas turbine. The Allison 501-KF creates more than 4,300 horsepower and the 570-KF produces 6,445 horsepower. Both engines have been proven time and again in

the most adverse environments. That's not all. The new 571-KF will soon be available with 7,694 horsepower. And Allison marine engines are marinized and constructed to withstand even the

**The Allison gas turbine.  
Now you see it.**





most rigorous maritime uses.

An Allison Gas Turbine is easily maintained. As a division of GM, Allison has a worldwide parts and service network which means you get the security, the

reliability and the technology of GM. Plus we have 50 years as an experienced military contractor.

For more information about Allison Marine Systems, write to Allison Gas Turbine Division,

General Motors Corporation,  
P.O. Box 420 Speed Code U6,  
Indianapolis,  
Indiana 46206-  
0420, USA.  
Telex 276400.



Circle 350 on Reader Service Card

**Now you don't.**



# ON THE COVER



## Pennsylvania Shipbuilding Dedicates Fast Supply Ship U.S.N.S. Denebola

Another of the U.S. Navy's T-AKR Class of fast supply ships, the USNS Denebola was dedicated recently at the Pennsylvania Shipbuilding Company's yard in Chester, Pa. Congressman **Dick Schulze** (R-PA) was the keynote speaker at the ceremony and his wife, **Nancy Schulze**, christened the ship. Vice Adm. **William H. Rowden**, USN, commander of the Naval Sea Systems Command, spoke on behalf of the United States Navy.

The U.S.N.S. Denebola (T-AKR 289) is the sister ship of the U.S.N.S. Capella, which was dedicated in June 1984 and delivered ahead of schedule by Pennsylvania Shipbuilding. The Denebola, which will be formally delivered to the Navy later this month, is the second of a two-ship contract awarded to Pennsylvania Shipbuilding which is part of a total eight-ship program.

One of the Navy's largest and fastest auxiliary ships, the Denebola

has an overall length of about 946 feet, beam of 105½ feet, depth of 66 feet 7½ inches, and draft of 36 feet 8 inches. Displacement is 55,000 long tons. She is powered by a steam turbine plant of 120,000 shp that gives her a service speed of 33 knots. The ship will carry tanks, armored personnel carriers, helicopters, and other wheeled equipment for an armored division of the U.S. Army. In one typical arrangement she will carry 122 M-1 tanks, 183 helicopters of various sizes, and other assorted wheeled vehicles.

The Denebola was built in Rotterdam in 1973 as the Sea-Land Resource. She was the third of a revolutionary new class of eight big containerships known as SL-7s constructed in European shipyards for Sea-Land Service, for operation in the U.S. foreign trade in the North Atlantic and North Pacific. At the time, they were the largest pure containerships ever built. What made them unique, however, was their speed. At 33 knots they could cross the Atlantic in four days, and operate a two-week sailing schedule comfortably. The former SL-7s are still the fastest commercial cargo ships of any size ever built.

In 1980, the high-powered vessels were sold by Sea-Land to the U.S. Navy for conversion to fast supply ships. The converted ships will be based in continental U.S. ports and will be on 48-hour notice to load and sail to wherever U.S. forces might be needed. From the U.S. East Coast they can reach France in four days, Lebanon in six, and the Arabian Gulf in 14. From the U.S. Pacific Coast they can reach Korea in six days and Southeast Asia in 10. They can be turned around and headed back to the U.S. for another load in only 24 hours. The Denebola will be manned by a civilian crew and will be based at the Military Ocean Terminal in Bayonne, N.J.

While the Denebola's engine room and living quarters have not been significantly altered, her cargo holds have been completely restructured. Where formerly she had four cargo holds arranged with vertical cells for container stowage, she now has five continuous decks connected by fixed ramps. She can carry up to 120 UH-1 helicopters or larger numbers of smaller models; up to 183 M-1 tanks or larger numbers of smaller tanks or armored personnel carriers, and multitudes of other military vehicles.

Two conventional holds aft of her superstructure can carry up to 46 twenty-foot containers, 25 thirty-five-foot containers, and 53 thirty-five-foot flat racks of supplies, spare parts, etc. She is also fitted for the carriage of eight Sea Sheds, an open-frame super-container 35 feet long, 25 feet wide, and 13 feet deep, designed for the transport of outsize and very heavy loads.

Helicopters can hold on and take off from two landing pads on her topmost deck, and can be stored in the space below it. Tanks and



Left to right: Mrs. **Nancy Schulze**, Congressman **Richard T. Schulze** and VADM **William H. Rowden**, USN, Commander, Naval Sea Systems Command.

wheeled vehicles are loaded through special doors on each side of the ship. Each door is fitted with a 73-foot by 20-foot folding ramp that has a design load capacity of 65 tons. These doors give access to 185,000 square feet of stowage area distributed over the five decks.

Two Hagglunds heavy-duty, 35-ton cranes are fitted amidships to handle loads over the side of the ship, and two more, each of 50 tons capacity, are fitted aft for the same purpose. Each pair of cranes can be worked in tandem to provide 70-ton lifts.

Pennsylvania Shipbuilding was also awarded another contract earlier this year by the Department of the Navy for the construction of two new fleet oilers of the T-AO 187 class. The basic contract value is \$222,476,849 (See MARITIME REPORTER, July 16, 1985 issue, page 33).

A new free capabilities brochure is available describing Pennsylvania Shipbuilding Corporation, all of its facilities and all services offered by this leading yard. For your copy,

Circle 77 on Reader Service Card



Left to right: Capt. **Martin Staiger**, USN Supervisor of Shipbuilding, Portsmouth; Rev. **Charles R. Jones**; Mrs. **Elaine Jones**; **Ronald J. Stevens**, president, Pennsylvania Shipbuilding; Mrs. **Becky Stevens**; Col. **Eugene Shoults**, USMC-ret., NavSea; **Owen Jameson**; Mrs. **Karen Jameson**; **Jessica Jameson**; Mrs. **Nancy Schulze**, sponsor; Congressman **Dick Schulze**; Adm. **William Rowden**, Commander NavSea; Mrs. **Grace Schulze**; Mrs. **Sally Rowden**; Col. **Robert Roddy**, US Army; Mrs. **Dale Kerslake**; Capt. **Ronald Kerslake**, USN—Readiness Officer at Military Sealift Command; **Thomas Weller**, chairman of the board, Pennsylvania Shipbuilding.

### U.S.N.S. Denebola T-AKR 289

Main Engines (2)	GE
Boilers (2)	Foster Wheeler
Boiler Control System	Bailey Controls
Air Compressors	Worthington
Reduction Gears (2)	GE
Bearings	Waukesha
Propellers (2)	Lips
Steering Gear	Western Gear
Firefighting	Walter Kidde
Cathodic Protection	Englehard
Anchors	Baldt
Compasses	Sperry, Baker Lyman
Telephones	Hose McCann
Radio Telephones—Telex	ITT MacKay
SatCom Terminal	ITT MacKay
Radar	Raytheon
Loran	Raytheon
Fathometer	Raytheon
HF/SSB Transceiver	Harris Corp.

Cranes	Hagglunds
Hatch Covers, Cargo doors, side port doors, bridge ramp and hinged platforms	MacGregor Navire
Hinged Ramp	Navire Cargo Gear
Mooring Winch	Western Gear
Anchor Windlass	Western Gear

## Western Cruise Lines Names David Sparkuhl Operations Manager

David John Sparkuhl has been named operations manager for Western Cruise Lines, San Pedro, Calif., it was recently announced by Alex Currie, senior vice president and general manager.

In addition to being in charge of all technical and mechanical operations of Western's Azure Seas, Mr. Sparkuhl is also responsible for overseeing the annual drydocking of the ship. "This usually takes place in January," said Mr. Sparkuhl, "and the ship alternates every year between drydock and wet dock, the former being when she is literally taken out of the water. For the first time since her arrival on the West Coast in 1980, she will only be in wet dock for one week in January 1986."

Mr. Sparkuhl joins Western from Todd Shipyards in San Pedro, where he was a shipyard supervisor. Prior to joining Todd in 1982, he worked for four years as a marine engineer. He received his Bachelor of Engineering degree in naval architecture from New York State Maritime College.

## A&T Wins Navy Contract For \$2.8 Million

Analysis & Technology, Inc. (A&T) has been awarded a \$2.8-million, 30-month contract from the Naval Underwater Systems Center (NUSC) in New London, Conn. Under this contract, A&T will provide a broad range of technical support for NUSC sonar transducer programs, principally those associated with the 688 Class submarines. These transducers act as underwater loudspeakers and microphones in producing and detecting sound in water. A&T's work will involve preparing computer-assisted performance predictions, military specifications and repair manuals, installation testing and maintenance, engineering failure analysis, and design evaluations.

## Siemens Wins \$800,000 Vessel Upgrading Contract —Literature Available

Siemens has been awarded an \$800,000 contract by Sea-Land Service, Inc. of Menlo Park, N.J., for the upgrading of four of its vessels to unmanned machinery space.

The upgrading of each ship includes replacing the existing monitoring and alarm system with the new Siemens Simos 32, as well as establishing a central firefighting station. The majority of the work will be done at sea, avoiding the costly interruption of service.

The order was placed with the Siemens-Allis Marine Department, South Plainfield, N.J.

For further information on Siemens' products, services, etc.,

Circle 67 on Reader Service Card

October 15, 1985

## Midland Affiliated Names P.E. Hubbard Senior VP, Sales And Marketing



Peter E. Hubbard

Eastern Gas and Fuel Associates announced recently that Peter E. Hubbard has joined its subsidiary, Midland Affiliated Company, as senior vice president, sales and marketing. Headquartered in Cincinnati, Midland is the largest barge operator on the nation's inland waterways, with revenues of \$201 million in 1984.

Mr. Hubbard was formerly senior vice president, sales and service, for Flying Tiger Line, a leading air freight company. He began his business career as an operations analyst with Flying Tigers in 1968 and held a succession of senior financial, planning, general management and marketing positions with the company. A Princeton graduate (B.A. in economics, 1964), Mr. Hubbard served for four years as a naval officer.

Eastern Gas and Fuel Associates is the Boston-based parent organization of energy-related companies engaged in coal mining, marine transportation and natural gas distribution. In 1984, revenues totaled \$1.3 billion.

## National Safety Council's Marine Section Announces Safety Convention Program

The marine section of the National Safety Council's Industrial Division has announced its program for the 73rd annual National Safety Congress and Exposition, October 28-31, at New Orleans, La.

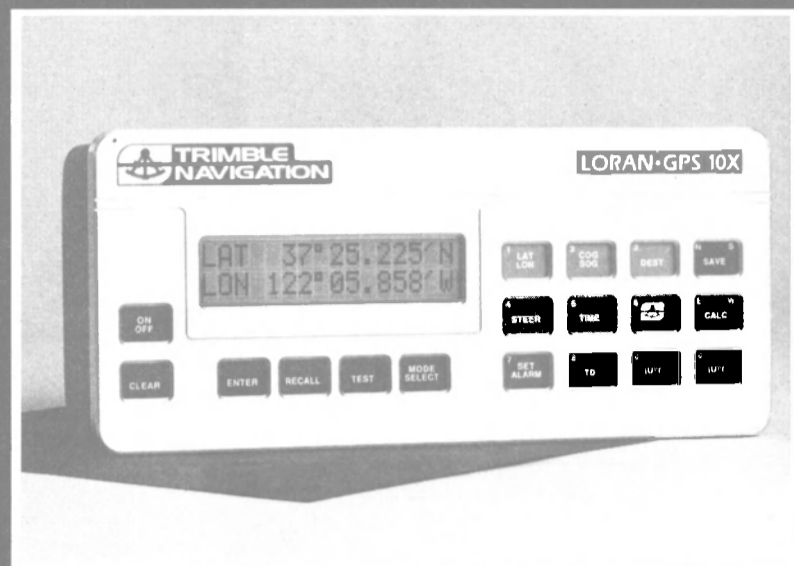
The sessions will be held on Monday and Tuesday, October 28 and 29, in the New Orleans Marriott. Topics to be discussed include: • Labor-based chemical dependency services • Preventive medicine at sea • Marine firefighting • Confined space/tank entry • Defensive driving in a marine terminal • An anti-terrorist vessel security plan.

This marks the first time in 44 years the event has been held away from Chicago. The convention is expected to attract more than 12,000 safety professionals from throughout the world. Nearly 150 educational sessions on various health and safety topics will be held during the four-day program.

For registration and additional information, write to Congress Planning, National Safety Council, 444 North Michigan Avenue, Chicago, Ill. 60611; or call (312) 527-4800.

Circle 330 on Reader Service Card →

## Trimble Navigation Integrates LORAN and GPS



### The Navigation System of the Future is Here Today in Trimble Navigation's LORAN-GPS 10X.

You don't have to decide between LORAN and GPS today. Invest in a Trimble LORAN Computer now and get the best in Loran performance. Upgrade to the LORAN-GPS 10X when you need to OR buy the 10X now and experience the continuously enhanced GPS performance capabilities as each new satellite is launched.

The combined LORAN-GPS 10X provides the mariner with the world's most precise positioning, velocity, and time solutions for navigation computations today. Enroute times will be shortened. Fuel consumption will be reduced. Efficient use of all your resources will result.

The LORAN-GPS (Global Positioning System) 10X is comprised of one or more identical, but independent, two-line, 16 character LCD remote heads and a mainframe that houses both the GPS and LORAN sensors. The GPS sensor is a two channel, multiplexed receiver providing position updates with typical accuracies of 25 meters or better and velocities accurate to 0.2 knots once per second. The LORAN sensor provides automatic ASF corrections to achieve LAT/LON accuracies of 200 meters or better. DR position is calculated when neither system is available.

With three modes of operation, LORAN, GPS, and DR (and satnav if you choose to add the interface), you have worldwide, continuous coverage—GPS 6–8 hours per day presently, LORAN in most northern hemisphere locations plus the two Saudi Arabian chains, and DR in between.

The 10X represents the ultimate in navigation electronics.

Call 800 TRIMBLE for more information.



**TRIMBLE  
NAVIGATION**

1077 Independence Avenue  
Mountain View, California 94043  
(415) 962-9893 Telex 171596

## ELECTRONICS UPDATE

### Trimble Introduces The New Loran•GPS 10X —Literature Available

Trimble Navigation of Mountain View, Calif., recently introduced its newest navigation aid, the Loran•GPS 10X.

The combined Loran•GPS (Global Positioning System) 10X provides among the most precise position, navigation, velocity and time systems available. According to the manufacturer, it will shorten en route times, reduce fuel consumption, and improve routing efficiency.

The Loran•GPS 10X Computer is a two-unit system comprised of a central processor unit and one or more identical weather sealed remote display units. The display unit has a two-line, 16-character LCD display. Each are capable of providing independent status and navigation information.

The central processor unit has a GPS Sensor, which is a two-channel, multiplexed receiver providing posi-

tion updates and velocity once a second. Position accuracy is typically better than 25 meters. The processor also includes a Loran Sensor which provides automatic ASF corrections to achieve latitude and longitude accuracy of approximately 200 meters and includes the Saudi Arabia Loran chains. DR position can be calculated when neither system is available. DR speed and heading will be derived from external sources. Speed and heading can also be entered manually if external sources are not available.

Three RS-422 I/O's are provided. These allow the system to receive external speed and heading, interface to a Magnavox 4102 and drive autopilots, computers, plotters and data logging devices provided they communicate using NMEA 0183 protocol. One hundred waypoints are also available for extensive trip planning.

For further information and free literature describing the new Loran•GPS 10X,

Circle 79 on Reader Service Card

## Port of London Awards Norcontrol Contract For Radar Display System —Free Literature Available

The Port of London Authority has awarded a contract to the Norcontrol Division of Kongsberg Ltd., for a new radar display system in the operations room of the Thames Navigation Service at Gravesend. Included in the contract are facilities for recording information about vessel movements and transferring it to the vessel movement data processor which has been recently installed.

The project, known as POLARIS (Port of London River Information System) is a major step towards improving safety for shipping using the river Thames. In 1984, 24,898 seagoing vessels and 13,500 movements within the port area handled approximately 48 million tons of cargo. This makes the Port of London and the river Thames the busiest waterway in the United Kingdom.

The new radar display system using Norcontrol VOC86 consoles, will cover the port approaches, the oil terminals at Shellhaven and Canvey Island, the Tilbury Dock complex and upriver as far as Erith. The VOC86, based on the VOC80A, enables unlimited off-centering of the displayed area. Conventional radar displays will continue to be used from Erith to Greenwich in the Thames Barrier Navigation Centre. These were installed in 1979.

At Gravesend, in the Thames Navigation Service building, the top floor is being renovated to provide an operations room which will house the new displays and computer terminals linked to the vessel movement data processor. Five Norcontrol consoles will display radar information from the four remote radars at Crayfordness, Broadness, Cliffe and Warden Point and from the local Gravesend radar. Normally, one console will display combined radar data from both the Crayfordness and Broadness radars.

One console will display information from the local Gravesend radar. Two consoles will display information from the Cliffe radar showing

two different areas. The fifth display will show radar data from the Warden Point radar which covers the main approaches to the port of London.

However, each display console is switchable between the five radar sources and therefore the input from any of the five radars can be displayed on any or all of the VOC86 consoles or in combination with the other radars.

Vessels entering the port approaches will be tracked by the system. The integrated tracking facility allows for automatic handover from one radar to the next of vessels inbound or outbound. Vessels at anchor or alongside berths are monitored.

Radar information passes through digital scan converters in each console which convert analogue radar signals into digital format for display on high-resolution TV screens together with synthetically produced chart information displayed in color. The TV presentation allows daylight viewing and an instantaneous visual presentation of the traffic situation in the port and its approaches. A standard feature is the ability to zoom in for a close view of any area of special interest.

With London, Norcontrol will have nine VTM systems operating in the UK. Teesport was the first in 1979 and this was followed by an offshore vessel traffic monitoring system for the Magnus platform operated by BP. The Forth Ports Authority, Portsmouth and Plymouth are other ports with Norcontrol vessel traffic management systems already in operation. Two MOD army ranges have Norcontrol radar surveillance systems. In September the Port of Sullom Voe will be fitted with a Norcontrol system.

Norcontrol, headquartered in Horten, Norway, is represented in the U.S. by Nav-Control, Inc. of Halesite, N.Y.

For further literature containing full information,

Circle 63 on Reader Service Card

## DEPENDABILITY!

DECK AND AUXILIARY MACHINERY DESIGNING, BUILDING, REPAIRING



### That's the VALERIE F.—and her MARKEY DECK MACHINERY.

The 16,000-hp, 153-foot tug Valerie F. and her 623-foot notched stern barge of the same name that make up the industry's newest integrated tug/barge system relies on the hefty, glutton-for-punishment Markey Hydraulic Capstan you see pictured at top for positive pull and hold power. A vessel on the Valerie F.'s scale calls for Markey on a big scale. Your vessel may call for mooring, anchoring, or towing machinery of a different size. No problem—Markey can supply the worry-free, machinery to do the job. Call us.

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79 S. Horton St., Seattle, Wash. 98134

Ph. 206-622-4697

Circle 301 on Reader Service Card

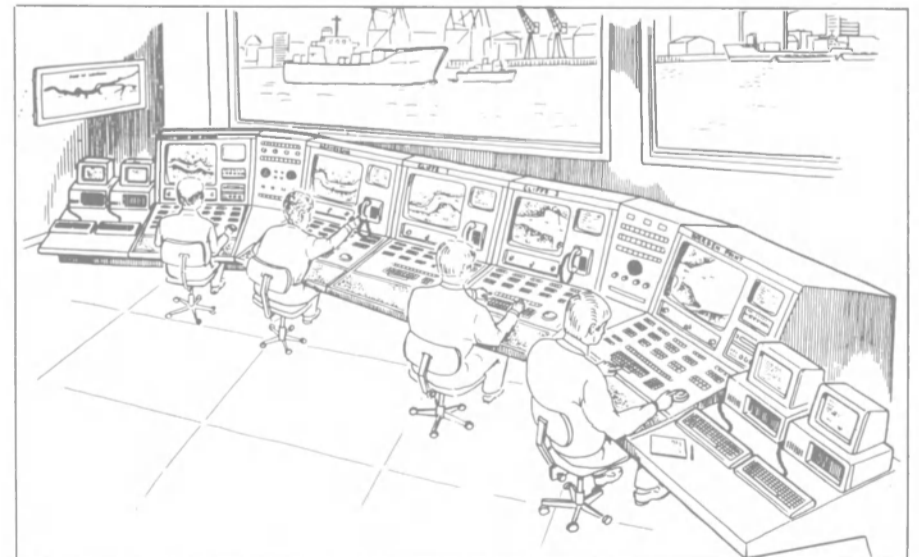


Diagram showing VOC86 displays in the Thames Navigation Centre.

## Raytheon Introduces Digital Depth, Speed And Temperature Indicator —Free Literature Available

Raytheon Marine Company has introduced the new, multifunction D-600 Digital Depth, Speed and Temperature Indicator. Large, dual LCD readouts display depth (in feet, meters, or fathoms), speed (in knots or miles per hour), surface water temperature (in degrees C or F), trip/log distance, and elapsed/count-down time. Four user-preset alarms sound alerts for shallow or deepwater limits, excess speed, and count-down signals. The new compact unit has a large keyboard for easy control of all seven functions and alarms.

The Raytheon Model D-600 "Information Center" offers outstanding range and performance features in one low-cost unit. Depth range is to 600 feet, speed indications to 99.9 knots, and surface water temperature measurements range from 32-120 degrees F, and 0 to 50 degrees C. Trip or distance logging is up to 3,000 nm, time measurement up to 30 hours, or count-down from 12 hours. A count-down beep tone sounds at five minutes, one minute, 30, 20, 10, 5, 4, 3, 2, 1, and 0 seconds.



Raytheon D-600 Digital Depth, Speed and Temperature Indicator.

The green backlit dual display of nearly 3/4-inch-high digits indicates from 0-999, 0-3,000, or 0:00-30:00 time functions.

The D-600 transmitter operates at 120 kHz for greater depth penetration with less susceptibility to "noise pickup."

The Raytheon D-600 is available with either a single-unit transom-mount three-sensor "triducer," or, for through-hull mounting, with two units, one a 120-kHz transducer and one a speed/temperature sensor.

For further information and free literature on the new D-600 Digital Depth, Speed and Temperature Indicator from Raytheon Marine,

Circle 62 on Reader Service Card

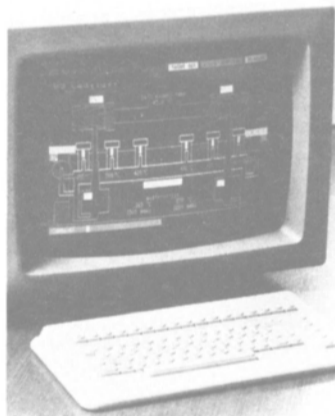
## Siemens Introduces New Shipboard Control System —Literature Available

Shipboard operations can be supervised and controlled using the newly developed Siemens SIGOS 41 Graphic Operation System. At video data terminals, all measured values and conditions needed for shipboard operations are clearly shown in mimic diagrams employing symbols and color change. The system forms a command level over the secondary, self-contained machinery and cargo automation systems.

SIGOS 41 can also be used to trigger control operations and to follow their execution in the visual displays. This permits the number of elaborate control desks to be reduced to a minimum. The system also affords the possibility of establishing hierarchical display structures, thus giving the ship's crew a picture of operations on board, as well as a functional and reliable control level.

The SIGOS 41 system permits an easy and quick selection of displays by operator control, such as with alarm signals. All measured values and signals are displayed in alphanumeric form, as bars or as symbols. Standardized interfaces make it possible to connect up with subsystems, choosing either star or bus coupling. Among other systems, the SIMOS 41 and SIMOS 32 integrated monitoring systems developed by Siemens, as well as SIMATIC S5 series of programmable controls can be connected to the SIGOS 41.

In multi-terminal operation, a maximum of eight display terminals can be connected, meaning that up



Shipboard operation can be supervised and controlled using the newly developed Siemens SIGOS 41 Graphic Operating System.

to eight different process displays can be called, monitored, and controlled simultaneously. In the interactive mode, the process displays can be entirely freely prompted and simply parameterized. System data can be protected by a codeword against unauthorized access. A clear and complete documentation of displays specific to a system is possible by log printout while the process presentation is parameterized. The data are stored in non-volatile memories. The basic software is stored in EPROMS, and the system-related parameters are in magnetic bubble memories.

For further information and free literature,

Circle 64 on Reader Service Card

## Amoco Contracts With MMS For Planned Maintenance System

Marine Management Systems, Inc. (MMS), Stamford, Conn., was awarded a contract to supply their IBM PC-based Planned Maintenance System (PMS) for Amoco Transport Company, according to an announcement made by MMS vice president **Don Logan**. This contract supplements an earlier award to MMS for installation of their Spare Parts Inventory Management (SPIM) system.

PMS, operating on the IBM PC/XT, will be installed on three Amoco tankers and will interface with the SPIM systems currently in use. The system will transfer data between ship and Amoco's Chicago office via satellite.

As a Value Added Dealer for IBM, MMS will provide all the hardware configurations and support for the project. Delivery began in July and will continue through the balance of this year.

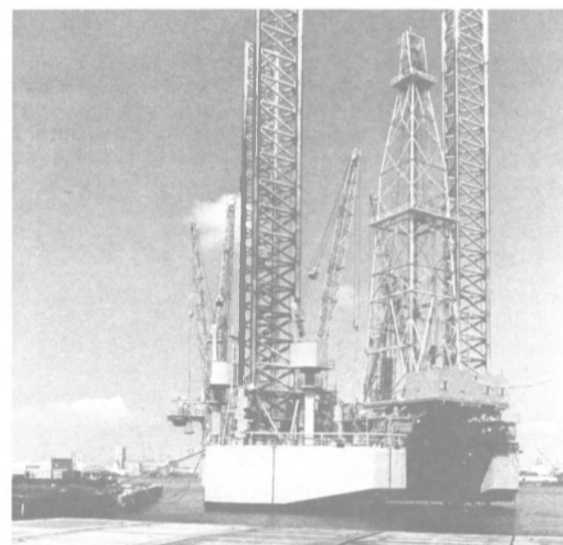
For more information on all computerized management information systems offered by MMS,

Circle 65 on Reader Service Card

## Bay Tankers Wins \$30.7-Million MSC Ship Operations Contract

Bay Tankers Incorporated, New York, N.Y., was recently awarded a \$30,709,896 fixed-price contract for the operation and maintenance of four TAK-R fast sealift ships. Two of the ships will be in Bayonne, N.J., and two in Violet, La. The ships will be maintained in a four day ready-for-sea status to respond to military contingencies. The contract period is five years which began this summer. There were 150 bids solicited and seven offers received. The contract funds would not have expired at the end of the current fiscal year. The Military Sealift Command, Washington, D.C., is the contracting activity (N00033-85-C-4006).

# SAVE ON RIG



# STORAGE! DOCKSIDE GALVESTON!

Servicing and maintaining inactive rigs nearshore is frustrating and expensive. Berthed dockside in Galveston provides the economic edge of 10-minute access to marine services and vendors, work berths only 50 freeway miles from Houston and less than an hour from open sea... and reasonable rates for rigs in ready or make-ready reserve. ■ Compare costs of dockside location vs. nearshore lay-up. You'll save a bundle!

## PORT OF GALVESTON

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Houston Office: P. O. Box 1669, Houston, Texas 77251-1669 / Phone 713/228-9838  
SALES AGENCY:

American Intertrade, 2828 Bammel Lane, Houston, Texas 77098 / Phone 713/993-9412

Circle 16E on Reader Service Card



## Multipurpose Container/Bulk Ships Delivered By Samsung Shipyard

Samsung Shipbuilding & Heavy Industries Co., Ltd. of South Korea is constructing four multipurpose, wider-hatch container/bulk carriers for the Jardine Group of Hong Kong and Gearbulk Ltd. of Norway. The first ship in the series, the Hawk Arrow was delivered in August and will operate in the Far East-Pacific Northwest service. The second, Osprey Arrow, was turned over to her owner in September; the Tern Arrow and Ibis Arrow will be delivered before the end of this year.

The 41,380-dwt Hawk Arrow has an overall length of 615 feet, beam of 95 feet, depth of 55.5 feet, and maximum draft of 39.5 feet. All ships in the series will be classed by Det norske Veritas, including the notations +1A1, "Bulk Carrier (HC/E)," Cont., +MV, EO, NAUT A, and comply with Hong Kong DOT rules for Hawk Arrow and Osprey Arrow, and Norwegian Maritime Directorate rules for Tern Arrow and Ibis Arrow. All four ships meet international rules and regulations for worldwide service concerning crew accommodations, lifesaving, firefighting, radio/navigation equipment, marine pollution, tonnage, noise/vibration, etc.

Main propulsion is provided by a Hyundai/B&W 6L60MCE diesel engine developing 8,400 bhp at 100 rpm derated, driving a SMM four-bladed, fixed-pitch propeller. A bow thruster equipped with a Nagasima electric motor and controllable-pitch propeller is installed. Three sets of diesel generators, each having a set of oil-fired boiler and exhaust gas boiler, provide electric power and steam for cargo handling and for various loads in normal seagoing conditions.

Two sets of 35-ton Mitsui/Paceco, portal type, traveling gantry cranes are installed on the upper deck for handling containers and other cargoes; cantilevers fitted to the main girders provide a 32.8-foot outreach from the side of the ship.

Cargo space is subdivided by two

longitudinal bulkheads and several vertically corrugated transverse bulkheads into seven cargo holds, with ballast tanks in the double bottom and wings. There are three long holds for cement and bauxite, and four short holds for iron ore or other heavy cargoes.

The cargo areas are ventilated by four sets of reversible fans. An air-drying system is designed to dehumidify the empty cargo holds and to keep air at 50 percent relative humidity in tropic conditions.

The spacious and well-designed bridge, which complies with the DnV notation of NAUT (A) for convenience of maneuvering and best visibility, is fitted comprehensively with navigation and communications equipment, including two radars, Loran C, RFD, autopilot, and satellite navigation system. Full bridge control of the main engine is available, making it possible to operate with an unmanned engine room.

### Hawk Arrow Major Suppliers

Main engine	Hyundai/B&W
Engine control console	Aurionica
Propeller (and spare)	SMM
Chain	Hamanaka
Propeller shaft	Hyundai
Main engine remote controls	Hemco
Steering gear	Trosvik
Bow thruster	Nagasima
Boiler	Aalborg
Auxiliary engines	Daihatsu
Generators, main switchboard & purifiers	Taiyo
FW generator & plate coolers	Nagase/Alfa
Air conditioning	Hi-Press
Deck machinery	Norwinch
Gantry crane	Tsuji
Provisions reefer plant	Sabroe
Boat davit	Watercraft
Emergency generator	DEMP
Coatings	Chokwang/Jotun
Valve remote controls	Danfoss
Radar, autopilot & gyrocompass	Decca
Radio	STC Marine
Satcom system	Navidyne
Satellite navigator	Decca

## ELECTRONICS UPDATE

### Racal/Marconi Simulator Built For Finnish Technical Research Center —Free Literature Available

A new, highly sophisticated ship simulator has been developed and built jointly by two British companies for the Finnish Technical Research Center near Helsinki where it will be used for research into ship behaviour and to train deck officers to maneuver vessels in busy island waters.

According to the two developers of the simulator, Racal-SMS Ltd., Chessington, Surrey, England, and Marconi Command and Control Systems Ltd., New Parks, Leicester, England, the unit can provide realistic exercises in anti-collision navigation, pilotage, shiphandling and emergency procedures.

The principal part of the Racal/Marconi simulator consists of a fully equipped ship's bridge, complete with advanced navigational aids and autopilot, together with an instructor's console. Seven color television projectors are used to create images onto the back of a screen which

affords a 240-degree field of vision, giving a "wrap-around" forward panoramic view from the bridge. The view changes as the trainee alters speed and course.

Scenes generated by the Marconi Tepigen visual system (via computer) are based on local topography and also show such things as other ships passing, fog descending and lifting, and wave conditions up to a Force 8 gale.

Various "own ship" types, among them tankers, containerships, and a ferry are available for the simulator. Accurate representation of their different maneuvering characteristics is obtained from realistic mathematical models provided by Britain's National Maritime Institute.

For further information and free literature on the Racal/Marconi simulator and its developers,

Circle 93 on Reader Service Card



### Siemens Offers Brochure On Automatic Remote Control System DIFA 41

Siemens AG of West Germany is offering an eight-page full-color brochure on automatic remote control system DIFA 41 for main diesel engines with fixed propeller.

The text of the brochure explains that the DIFA 41 automatic control system enables direct remote control of the main diesel engine from the bridge and is thus an important precondition for unmanned machinery operation. Commands are given in both the manual and automatic modes using the engine telegraph lever on the bridge. The automatic control system and the engine telegraph are, however, electrically separate.

Control panels on the bridge and in the ECR are used to change over control, for chief limitation and for displaying operating conditions.

The publication illustrates the DIFA 41 with color photos, and gives a system configuration of the DIFA 41 remote control system in conjunction with other systems. Special features of the system are

listed along with a discussion of the advantages during operation.

The DIFA 41 is supplied in a cubicle or in a wall-mounted unit. It comprises plug-in electronic PCBs of the standard Siemens microcomputer system 210 D and the IC systems SIMATIC® C3 and SIMADYN® C. The modules ensure a high degree of noise immunity, according to the company.

A thorough discussion of DIFA 41 functions is included in the brochure along with technical data.

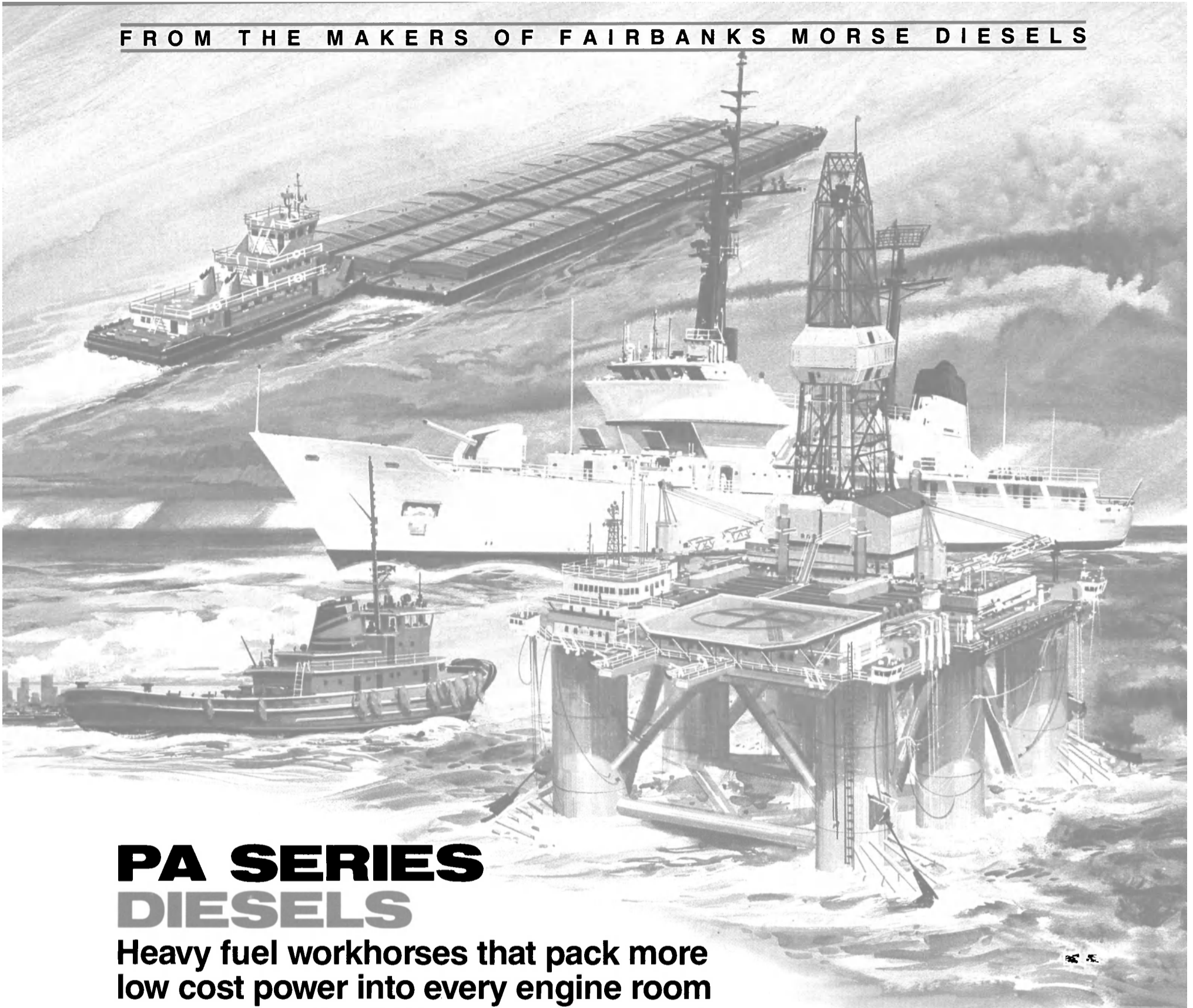
For further literature containing full information,

Circle 74 on Reader Service Card

### Diggs Named Director, Trans-Atlantic Sales At Kerr Steamship

Kerr Steamship Company has named **William P. Diggs** director of trans-Atlantic sales. Mr. Diggs assumes sales and marketing responsibilities for several Kerr services to Europe and Africa including Pacific Europe Express, a joint service of the French Compagnie Generale Maritime and the Dutch Inco-trans.

FROM THE MAKERS OF FAIRBANKS MORSE DIESELS

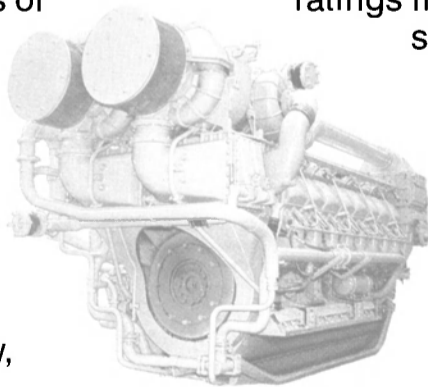


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# GASTECH 85

Nice, France—November 12-15

Gastech 85, the International LNG/LPG Conference and Exhibition, will be held November 12-15 at the new Palais des Congres "Acropolis" in Nice, France. This meeting will be the 11th in the very popular series, and the third to be held in France, a country that has played a major role in the international liquefied gas industry.

This year marks the 20th anniversary of the French LNG program. It is appropriate, therefore, that **Pierre Alby**, president of Gaz de France, will deliver the opening address at the Gastech 85 Conference. His speech will review French LNG achievements, the present state of the industry, and possible future developments. Gaz de France was the first European gas supply company to lay a natural gas grid and, like British Gas, was a pioneer in the movement of LNG by sea with the Arzew-Le Havre service that began in 1965, making it the world's longest-running LNG import program.

The comprehensive Conference

program will feature more than 60 presentations from some 140 authors and panelists in nine sessions. The session headings are: World Gas Supplies; LPG Production and Trade; Safety and Training; Development of Frontier Gas Fields; Transportation, Technology and Operations; Commercial, Documentation and Contracts; Gases as Transportation Fuels; Liquefied Gas Terminals and Storage; and Technical Developments and Materials.

The Gastech meetings have become the leading gathering place for all who have an involvement in LNG and LPG. National flags from more than 50 participating nations will be displayed on the speakers' platform, and more than 2,000 delegates are expected in Nice for the Gastech 85 meeting.

In addition to the Conference, the Gastech meeting includes a major exhibition of LNG and LPG equipment, technology, and services. The display areas in the Pal-





ais des Congres "Acropolis" will be fully occupied by about 100 exhibitors from France, Germany, Japan, the Netherlands, Norway, the U.K., the U.S., and elsewhere, showing the latest advances in engineering for the handling, storage, and transportation of liquefied gases. Many of the stands are part of government-sponsored or -aided group exhibits from several European nations—an indication of the importance of the exhibition and the quality of the Conference delegates who are the principal visitors to the display areas.

The opening session in the Gastech series is traditionally devoted to World Gas Supplies, and the 1985 meeting is no exception. It will, however, feature for the first time a round table panel discussion on the LNG trades. The impressive gathering of speakers will include: **R.A. Al-Thani**, chairman of the executive technical committee responsible for developing Qatar's giant North Field; **M.B. Hashim**, managing director of Malaysia LNG Sdn. Bhd.; **Dr. J.R. McCabe**, project coordinator for the North West Shelf Project Coordination Group, Melbourne, Australia; **B. Bramono**, head of the gas marketing bureau of Pertamina, Indonesia, the world's largest LNG exporter; **M.W.H. Peebles**, director of planning at Shell International Gas, and a well-known forecaster and market analyst in the business; and **K. Sawamura**, manager of Mitsubishi Corporation's LNG project planning team. The panel discussion will be chaired by **Alexis Pastuhov**, former president of Gazocean USA.

Session two of the Gastech series is traditionally devoted to LPG production and trade; this all-day meeting is widely regarded as the most important LPG gathering held anywhere. Attendance at this session has always been high; this year there is every likelihood that it will be particularly high, as the session is to be chaired by His Excellency **Dr. A.H. Taher**, Governor of the General Petroleum and Mineral Organization, Petromin, Saudi Arabia.

**Dr. Taher** is no stranger to this chair at Gastech; he first led the LPG session at the Gastech 79 meeting in Houston, when Saudi Arabia first entered the LPG business on a very large scale. Since then there have been many fluctuations in the market and in LPG production, and all parties involved in the complex world of LPG take the opportunity offered by the Gastech meetings to attempt to bring some measure of stability to the market.

With Japan as the major buyer and an increasing number of producers anxious to conclude sales deals to make up for the restricted volumes now available from Saudi Arabia (the result of Saudi adherence to OPEC's call for crude cutbacks), the LPG session at Gastech 85 should offer a clear message on where the market is heading in the next 12 months or so.

This year a new session has been introduced to the Gastech program. Entitled Development of Frontier Gas Fields: the Technological Challenge, its aim is to bring together a

number of researchers who are looking beyond exploitation of the current proven gas reserves to the day when engineers will need to seek gas beneath the oceans at depths far beyond the present limits, and from Arctic regions and other frontier areas that in the 21st century will have to be opened for hydrocarbon development.

Led by **R. Kvamsdal** of the Kvaerner Group, Norway, this panel will include **P. Fabiani**, deputy manager of advanced technology for Total Exploration-Production, Paris; **Prof. K. Kokkinowrachos**, professor of ocean engineering at the Technical University of Hamburg-Harburg, and head of the Ocean Engineering Division of the Technical University of Aachen; **S. Yoshii**, general director of the technical Research Center of the Japan National Oil Corporation, Tokyo; and **J. English**, special projects manager of Can-Dive Services Ltd., Vancouver, Canada.

Since 1976, the Gastech meetings have been held in two out of every three years. Beginning in 1986 in Hamburg, the meetings will be held in every even year. The organizers believe that this biennial schedule will more readily meet the needs of both delegates and exhibitors, and provide the right "rhythm" for the industry.

### Conference Program Tuesday, November 12

**2:00 pm**—Official opening ceremony: Welcome from Conference Director followed by official opening address by **Pierre Alby**, president of Gaz de France.

### Session One World Gas Supplies

Chairman: **E. Rerolle**, vice president, Chantiers du Nord et de la Mediterranee.

**3:30 pm**—"Marketing and the Natural Gas Industry," by **B.M.C. Fogarty**, Shell International Gas Ltd., London.

**4:00 pm**—"Natural Gas: Which Option for Developing Countries—LNG or the Domestic Market?," by **J.P. Jonchere**, Bureau d'Etudes Industrielles et de Cooperation de l'Institut Francais du Petrole.

**4:30 pm**—"The LNG Trades: Where are they Today and Where are they Going?" A panel discussion by representatives from producers and consumers.

Moderator: **Alexis Pastuhov**, president, AVP Corporation, Newbury Port, Mass.

Panelists:

**R.A. Al-Thani**, deputy managing director, Qatar General Petroleum Corporation.

**M.B. Hashim**, managing director, Malaysia LNG Sdn. Bhd.

**J.R. McCabe**, project coordinator, North West Shelf Project Coordination Group, Melbourne.

**B. Bramono**, head of Gas Marketing Bureau, Pertamina, Indonesia.

**M.W.H. Peebles**, director of planning and finance, Shell International Gas Ltd.

**K. Sawamura**, manager LNG Project Planning Team, Mitsubishi Corporation, Tokyo.

**R. Price**, director, International Energy Organization & Policy Development, U.S. Department of Energy.

### Wednesday, November 13 Session Two LPG Production and Trade

Note: This is an all-day session starting at 9:30 am; there will be a luncheon break 12:30-2:00 pm.

Chairman: **H.E. Dr. A.H. Taher**, Governor, General Petroleum & Mineral Organization, Petromin, Saudi Arabia.

Moderator: **S.M. Boushehri**, Pot-en & Partners (UK) Ltd., London.

Speakers:  
"Production and Marketing Plans of LPG from the North Dome Project," by **E. Al-Mutawa**, acting head of Marketing & Transport Department, Qatar General Petroleum Corporation.

"The Changing Patterns of Gas Seaborne Trades," by **J. Bradley**, managing director, P&O Gas Carriers (UK) Ltd., London.

"The Challenging Role for International Traders," by **R. Boudet**, president, Geogas Enterprise S.A., Geneva.

"The Future of LPG as Ethylene Feedstock," by **D. Butters**, manager-feedstocks, supply and trading, Imperial Chemicals Industries, U.K.

"The Evolution of LPG Supply and Demand in Japan," by **Y. Kanai**, international LPG manager, Mitsubishi Corporation, Tokyo.

"LPG Development in Indonesia," by **Mr. Kartiyoso**, deputy LNG coordinator and LPG coordinator, Pertamina.

"North Sea LPG Supply and Pricing Post-BNOC," by **M.G. Peake**,

(continued)

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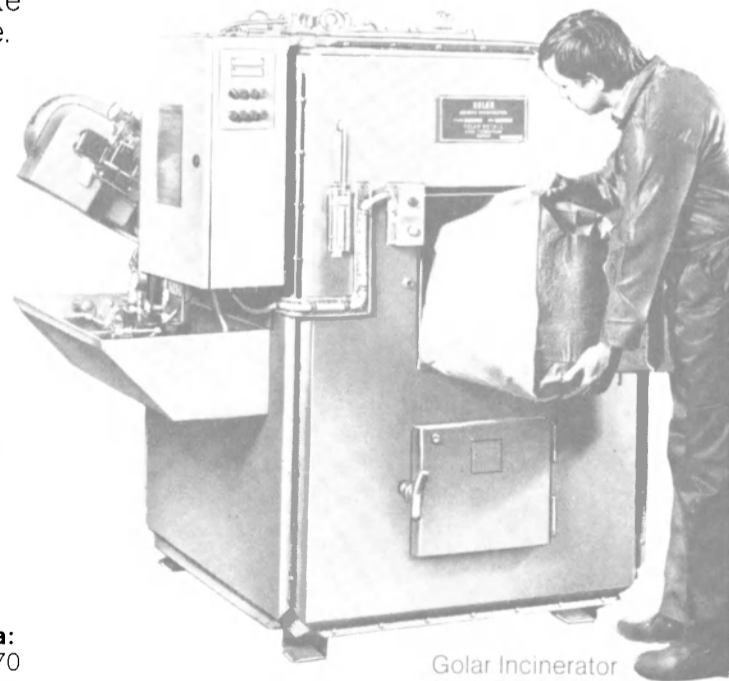
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## GASTECH 85

(continued)

manager-LPG trade & supply, BP Gas International, London.

"Exports of LPG from Venezuela," by **A. Villasmil**, trading manager, Maraven S.A., Caracas.

Panelists:

**K.R. Al-Oteiba**, marketing director, Abu Dhabi National Oil Corporation.

**K.A. Harami**, manager-sales, Western Hemisphere, Kuwait Petroleum Corporation.

**F. Anderiz-Cebrian**, director, LPG Supply Department, Butano SA Madrid.

**C.E. Bonnet**, director-gas, Total Group, Paris.

**B. Bramono**, head, Gas Marketing Bureau, Pertamina.

**F.B. Maple**, vice president-corporate planning, Petrolane, Inc., Long Beach, Calif.

**M.K. Faid**, director-gas exports, Sonatrach, Algeria.

**R.J. Foster**, general manager-petroleum marketing, Broken Hill Pty. Company, Melbourne.

**B.W. Kim**, president, Yosu Energy Company, Seoul.

**M. Muhammad**, general manager, International Marketing Division, Petroliam Nasional Berhad, Malaysia.

**T. Nishimura**, manager, Product and LPG Acquisitions Section, Idemitsu Kosan, Tokyo.

**J.E. Sandvik**, senior vice president-refining & marketing, Statoil, Norway.

**O. Shaban**, manager, International Trade Division, General Petroleum & Mineral Organization, Saudi Arabia.

### Session Three Safety & Training

Chairman: **R.C. Gray**, general manager, Society of International Gas Tanker and Terminal Operators Ltd., Bermuda.

**10:00 am**—"Analysis of the LPG Disaster at San Juan Ixhuatepec, Mexico City, 19 November 1984," by **C.M. Pietersen**, TNO-Netherlands Organization for Applied Scientific Research, Department of Industrial Safety.

"Burnout Risk Analysis in Gas Storage Plants," by **M. Huther, M. Zehri, J-P Gilbert, and R. Giribone**, Bureau Veritas, France.

"Development Control Around LPG Installations," by **P.J. Crossthwaite**, health and safety executive, Major Hazards Assessment Unit, U.K.

"Are the Risks in Your Gas Plant Being Properly Managed?" by **J.G. Sellers and C.J. Luck**, Arthur D. Little, Ltd., London.

**12:00 noon**—Discussion of Papers.

**12:30 pm**—Luncheon for Delegates.

**2:00 pm**—"Salvage of Cargo from the War-Damaged 'Gaz Fountain,'" by **J.A. Carter**, Marine Safety Services Ltd., P. & O. Group, London.

**W.J. Yopp**, manager, LPG Department, Mobil Corporation, New York.

**2:30 pm**—"BLEVE Probability of a 100 Te LPG Storage Vessel," by **K.W. Blything**, Safety and Reliability Directorate, UKAEA. "Thermal Radiation from LNG Trench Fires," by **P.A. Croce and K.S. Mudan**, Arthur D. Little, Inc., Cambridge, Mass., and **S.J. Wiersma**, Gas Research Institute, Chicago.

**3:00 pm**—Discussion of Papers.

**3:30 pm**—Coffee Break.

### Session Four Development of Frontier Gas Fields: The Technological Challenge

Moderator: **R. Kvamsdal**, Kvaerner Subsea Contracting A/S, Norway.

**4:30 pm**—Panelists: **P. Fabiani**, deputy manager-advanced technology, Total Exploration-Production, Paris.

**K. Kokkinowrachos**, professor of ocean engineering, Technical University of Hamburg-Harburg & Head, West Germany.

**S. Yoshii**, general manager, Technical Research Centre, Japan National Oil Corporation, Tokyo.

**J. English**, special projects manager, Can-Dive Services Ltd., Vancouver, B.C.

## Thursday, November 14 Session Five Transportation, Technology & Operations

Chairmen: **R.J. Lakey**, Robert J. Lakey & Associates, Houston; and **R.C. Ffooks**, consultant, London.

**10:00 am**—"Design, Construction and Periodical Surveys of Ships for Liquefied Gases—A Classification Society's Viewpoint," by **D. McLean and R.M. Cripps**, Lloyd's Register of Shipping, London.

"U.S. Coast Guard Program for New and Existing Liquefied Gas Ships," by **K.S. Cook and A.L. Rowek**, U.S. Coast Guard, Washington.

"Time for a Collision-Resistant LPG Carrier Fleet," by **F.S. Harris**, consultant, U.K.

**11:00 am**—Discussion of Papers.

**12:00 noon**—"The LNG/LIN Scheme as a Transport Alternative for Northern Norwegian Gas," by **J. Bakke**, Kvaerner R&D Division, Norway, and **R.S. Heiersted**, Statoil, Norway.

**12:30 pm**—Luncheon for Delegates.

**French Containment Systems Defined:**

**2:00 pm**—Technical and Economic Aspects of GT LNG Carriers' Containment System Enhanced by High Standardization and Automated Insulation Processes," by **R. Lootvoet**, Gaz-Transport, France.

"The Low Boil-off Technigaz Membrane System: An Assessment of Safety, Reliability and Operational Economy," by **M. Betille and J.M. Lebreton**, SN Technigaz, France.

**2:30 pm**—Discussion of Papers.

**3:00 pm**—Coffee Break.

**Japanese Developments in LNG Transportation:**

**3:30 pm**—"A New Generation of LNG Carriers for Economy and Operational Flexibility," by **R. Ogiwara, T. Yokawa, Y. Kityama, N. Nakano, and M. Shiraha**, Kawasaki Heavy Industries Ltd., Kobe.

"Future LNG Carriers," by **N. Umekawa, T. Kobayshi, N. Ogawa, and T. Akiba**, Nippon Kokan K.K., Tokyo.

"Design and Actual Service of Cargo-Handling Equipment on an LNG Carrier," by **S. Hata, S. Fukushima, Y. Kobayashi, K. Kawabata, and N. Itoyama**, Mitsubishi Heavy Industries Ltd., Tokyo.

"The IHI SPB LNG System—Application of Advanced Al-alloy Welding Technology," by **N. Iino, K. Minoda, N. Okui, and T. Fujitani**, Ishikawajima-Harima Heavy Industries Co. Ltd., Tokyo.

**4:30 pm**—Discussion of Papers.

### Session Six Commercial, Documentation & Contracts

Chairman: **J.M. Soesan**, consultant, U.K.

**10:00 am**—"Contract Protection of Recoverable Reserves," by **E.A. Massey, Arent, Fox, Kintner, Plotkin & Kahn**, Washington, D.C.

"A New Concept for Gas Tankers Operators—Zero Cost Ships," by **R.J. Stanclift Jr.**, consultant, Convent Station, N.J.

"LPG Pricetag' and the European Market 1984/5," by **K. Potter**, consultant, U.K.

**11:30 am**—Discussion of Papers.

**12:30 pm**—Luncheon for Delegates.

### Session Seven Gases As Transportation Fuels

Chairman: **T.J. Joyce**, T. Joyce Association, Fairfax, Va.

**2:00 pm**—"TNO's Experience with Natural Gas and LPG as a Fuel in Petrol and Diesel Engines," by **P. van Sloten and J.J. Seppen**, Research Institute for Road Vehicles, TNO, Netherlands.

"Research, Development and Demonstration in Canada of Natural Gas as an Alternative Transportation Fuel for Diesel Engines," by **J.S. Heenan**, Transportation Energy Division, Energy Mines and Resources Canada, Ottawa; and **L. Gettel**, B.C. Research, Vancouver.

"Natural Gas: The Ideal Fuel for Diesel Engines," by **E. Bollina and R. Basaglia**, B+B Engineering Srl, Italy.

**3:00 pm**—Discussion of Papers.

**3:30 pm**—Coffee Break.

**4:00 pm**—"The Role Played by LPG as a Fuel for Internal Combustion Engines in the Fight Against Pollution and for the Reduction of Fuel Consumption," by **C. Casacci**, Sprint Auto S.p.A., Italy.

"Environmental Consequences and Advantages when Using Modern LPG and CNG Autogas Systems," by **G. Jager**, Vialle Autogas Systems, Son, Netherlands.

"Field Experience with the HOPT-LP-Gas Injection System—a 60% Reduction in Toxic Emissions," by **E.J. Kronenberger**, V.T.P. Kronenberger GmbH, West Germany.

**5:00 pm**—Discussion of Papers.

### Friday, November 15 Session Eight Liquefied Gas Terminals And Storage

Chairman: **Alexis Pastuhov**, AVP Corporation; and **R.M.L. Vincent**, Gaz de France, Paris.

**10:00 am**—"Optimization of the LNG Regasification System Used in the Gaz de France Terminal at Non-toir de Bretagne," by **J.L. Colonna, B. Lecomte, and S. Caudron**, Gaz de France, Production & Transport Division, Paris.

"Boil-off Gas Recovery by Recondensation in LNG," by **M. Leray**, Gaz de France; **P. Petit**, L'Air Li-

guide; and **H. Paradowski**, Technip, Paris.

**11:00 am**—Discussion of Papers.  
**11:30 am**—"Offshore Loading of LNG: A Review of Methods, Procedures, and Constructions with Emphasis on Safety and Operability," by **R.F. Schrader**, **P.M. Mowinkel**, and **B. Borgaas**, Kvaerner R&D Division, Norway.

"The CHAGAL Offshore Refrigerated LPG Terminal—Latest Developments and Applications," by **P. Branchereau**, Entreprise d'Equipments Mecaniques et Hydrauliques, France; and **E. Bonjour**, Cie. Francais de Petroles, Paris.

**12:00 noon**—Discussion of Papers.

**12:30 pm**—Luncheon for Delegates.

**2:00 pm**—"LPG and LNG Terminals Associated with Underground Storage," by **J.P. Lagron** and **A. Boulanger**, Geostock, Paris; and **W. Luyten**, Distrigaz, Brussels.

"GMS 2000 Project: Building the First LPG Membrane Tank," by **P. Fuvel**, Total-C.F.P.; and **J. Claude**, SN Technigaz.

"Commissioning of a New LPG Storage System in Le Havre using Semi-buried, Pressurized Cylindrical Storage Systems," by **G. Bonnafous**, Temis, Paris; and **A. Devine**, STR, Strasbourg.

**3:00 pm**—Discussion of Papers.

**3:30 pm**—Coffee Break.

**4:00 pm**—"Inside an LNG Storage Tank," by **C.A. Durr**, **D.B. Crawford**, and **S.E. Handman**, M.W. Kellogg Inc., Houston.

"The Cooper Basin Liquids Project: Process Design and Start-up" by **D. White-Stevens**, Santos Ltd., Adelaide; and **D.G. Elliot**, Oil Industry Services Inc., Houston.

"Design and Project Management Aspects of the LPG Facilities at Port Bonython, South Australia," by **J.M. Craker**, **R.S. Dutton**, and **R.M. Scott**, Davy McKee Pacific Pty. Ltd., Melbourne.

**5:00 pm**—Discussion of Papers.

### Session Nine

### Technical Developments And Materials

Chairman: **W. Brumshagen**, managing director, LGA Gastechnik GmbH, West Germany.

**10:00 am**—"The Gaz de France Cryogenic Testing Station," by **J.C. Le Diraison** and **P. Bailleul**, Gaz de France-DETN, Nantes.

"LNG Sampling Measurement Process," by **E. Flesch**, Gaz de France-DETN; and **M. Dourche**, Comsip, Paris.

"Direct Mass Flow Measurement of LPG/LNG," by **L.A. Broomhead**, Brooks Instrument Division, Emerson Electric U.K. Ltd., U.K.

"Improvement of Gas Tanker Operating Efficiency," by **F.R. Olschlager**, LGA Gastechnik GmbH, West Germany.

**11:00 am**—Discussion of Papers.

**11:20 am**—"Stress Corrosion Cracking of 3.5 Ni Steel in Liquid Ammonia," by **V. Lemoine**, **J. Charles**, **G.M. Pressouyre**, and **L. Cadiou**, Societe Creusot-Loire, France.

"Improvement in Weldability in Fe 36% Ni Alloy for Transportation Tanks," by **K. Ohsaki**, **H. Kanazashi**, **T. Kanamura**, and **K. Mukai**, Nisshin Steel Co. Ltd., Japan.

"A Comparison of Various Plastic Materials Concerning their Behavior at Cryogenic Temperatures," by **R. Krause**, G+H Montage GmbH, West Germany.

**12:00 noon**—Discussion of Papers.

**12:30 pm**—Luncheon for Delegates.

### Technical Visits

Delegates to the Gastech 85 meeting will have the opportunity of participating in one of two post-conference technical visits on the French

Mediterranean Coast. Both visits will take place on Saturday, November 16.

**Visit 1: Chantiers Navals de La Ciotat.**

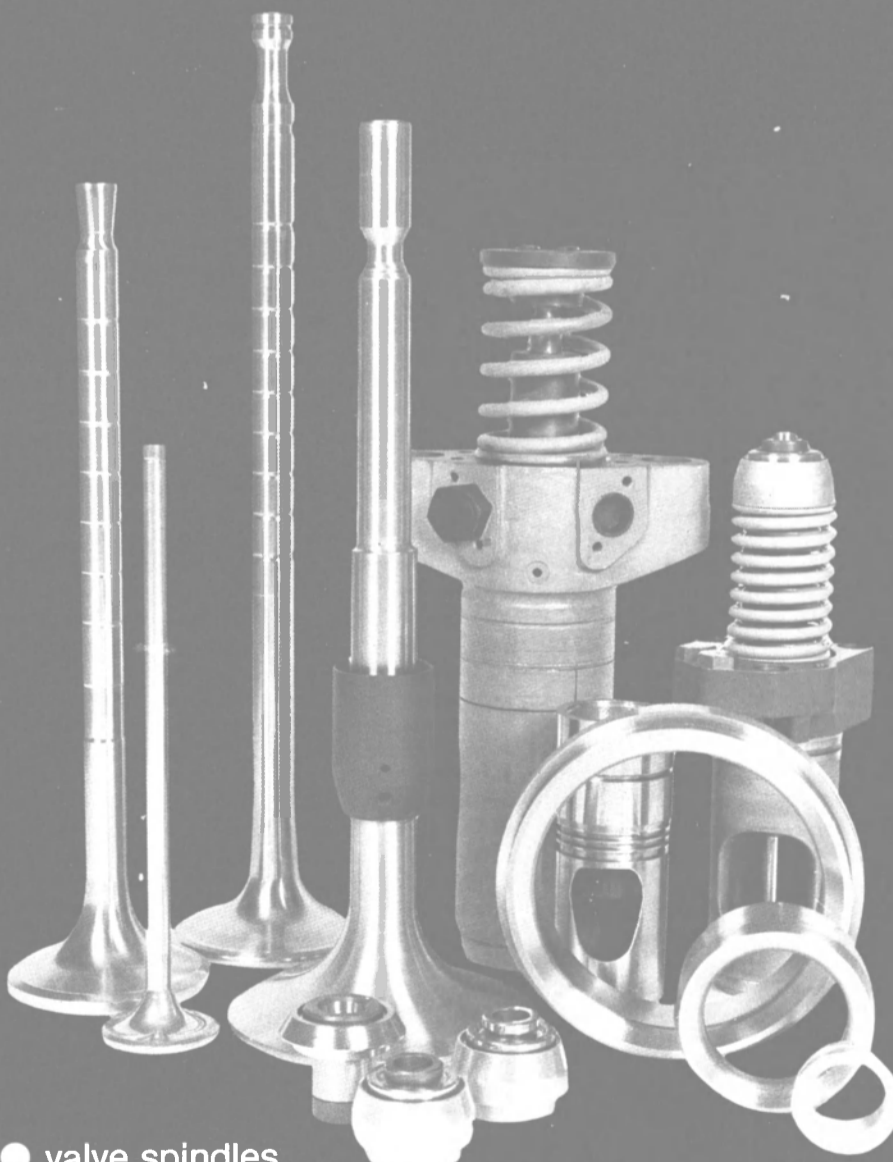
This facility is one of three main shipyards forming the Chantiers du Nord et de la Mediterranee (NORMED) Group, which this year celebrates 30 years of gas ship construction. NORMED has delivered

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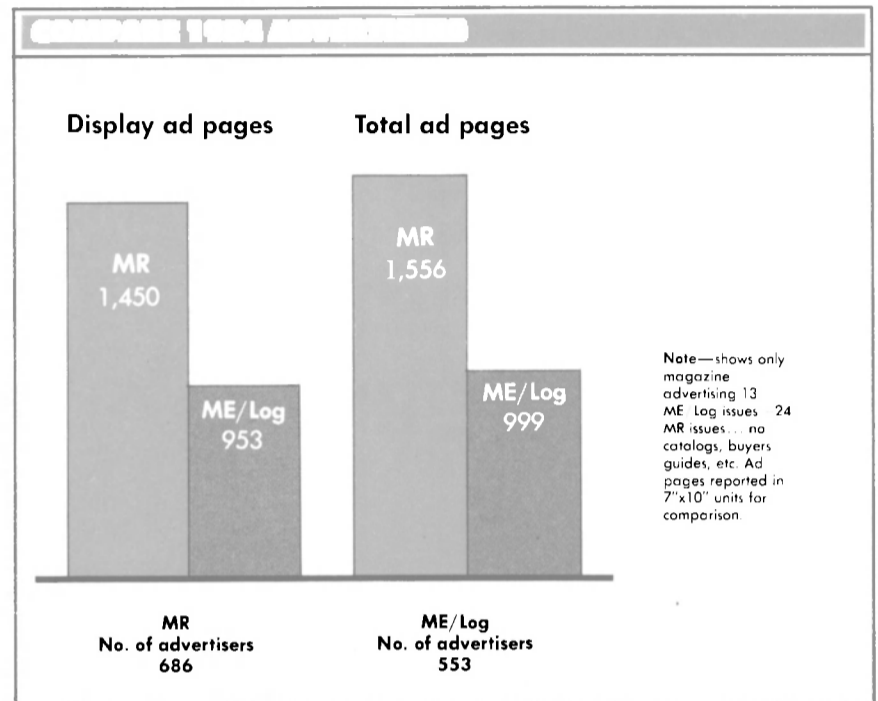
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## GASTECH 85

(continued)

21 LNG carriers with a total capacity of 2.1 million cubic meters, while no fewer than 43 LPG carriers totaling 1.7 cubic meters have been delivered or are under construction. Visitors to the La Ciotat yard will be able to inspect the latest of these, the 81,000-cubic-meter Berge Ragnild, being built for Sig. Bergesen & Company of Sweden. This vessel is a third-generation, double-hull,

perlite-insulated Type A LPG carrier. There will also be presentations on the Technigaz Mk. III and Gaz Transport LNG containment systems.

### Visit 2: Gaz de France LNG Terminal at Fos-sur-Mer.

This terminal near Marseilles was commissioned in 1972 with the aim of regasifying 40,000 million kilowatts per year of LNG originating in Skikda, Algeria, and of supplying the southeastern region of France with natural gas at a pressure of 67.7 bar, surplus gas from the region

being put at the disposal of the national network. This facility was the second French LNG terminal, after Le Havre.

### Gastech 85 Exhibitors

#### French Group Exhibit

AMRI  
Bureau Veritas  
CECA  
Cerec  
Cerlab  
Cryostar-France

FMC Europe  
Gaz d'Aujourd'hui  
Gaz de France  
Gaz Transport  
GTS Industries  
Industrial Valves  
Isotherma  
IVC Sertere  
Masoneilan  
NORMED  
Permal  
Petroles et Enterprise  
Petroles Informations  
Spie-Batignolles  
Spiflex  
Technigaz  
Usinor  
Vallourec

#### British Joint Venture

Alpha Process Controls  
Bestobell Valve & Steam Products  
Brooks Instrument  
The Energy Industries Council  
Insulation & Perlite Services  
Liquid Gas Equipment  
Neotronics  
Orbit Valve  
Shipman & Co.  
Societe of International Gas Tanker & Terminal Operators  
Thorn-EMI Protech  
T.I. Flexible Tubes  
Trufflow

#### German Group

Otto Bosse  
Gafahrliche Ladung  
L.G.A. Gastechnik  
LGI Ingenieur Gesellschaft  
Paul Lindeau  
Marine Service  
Jos. L. Meyer  
Gg. Noell  
O&K Tagebau und Schiffstechnik  
Gebr. Schmeck  
Thyssen Nordseewerke  
Dr. H. Tiefenbach  
Tuflin Armaturen  
VDMA  
VDS  
V.T.P. Kronenberger

#### Japan

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Ishikawajima-Harima  
Kawasaki  
Mitsubishi  
Mitsui  
Nippon Kokan

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J.C. Carter  
M.W. Kellogg  
Pittsburgh-Des Moines

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Cryodynamics  
MIB International  
Pilkington Security Equipment

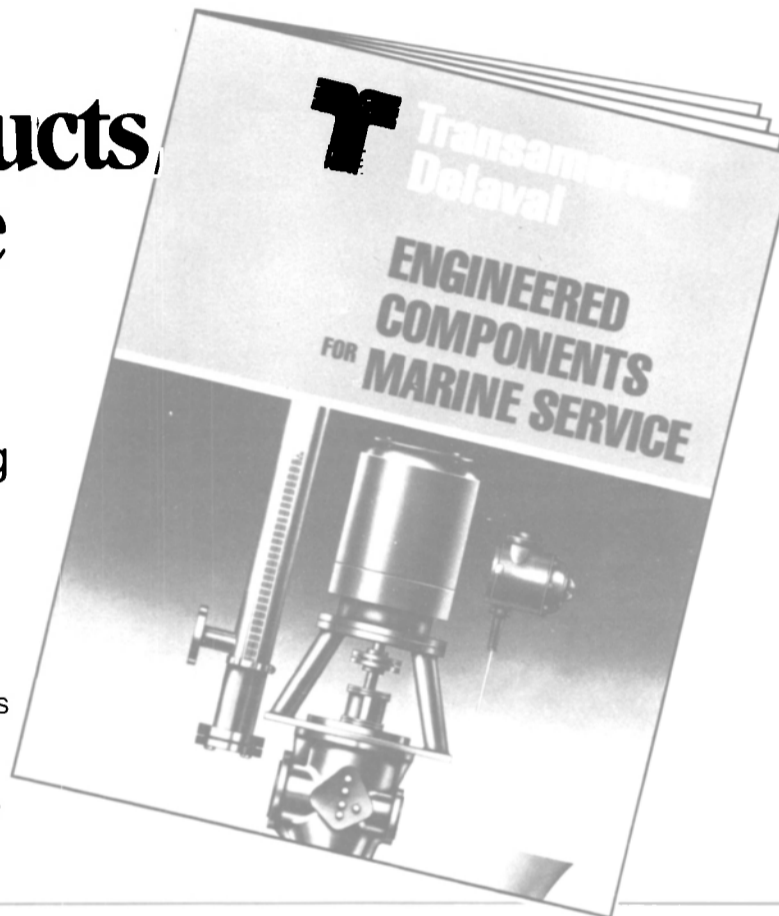
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B&B Engineering, Italy  
Beolwerf, Belgium  
Chemokomplex, Hungary  
Distrigaz, Belgium  
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# Engineered Marine Products from a Single Source.

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Transamerica Instruments Ltd.  
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#### ■ Pressure Switches

Barksdale Controls Division and Delaval Turbine GmbH  
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#### ■ Temperature Switches

Barksdale Controls Division and Delaval Turbine GmbH  
For temperature control... shipboard or offshore.

#### ■ Externally-mounted Liquid Level Indicators

Gems Sensors Division and Weka AG  
For high visibility to replace sight glasses.

#### ■ Liquid Level Switches

Gems Sensors Division and Delaval Turbine GmbH  
Provide single-station, multi-level or externally-mounted monitoring.

#### ■ Manual Check Level Switches

Gems Sensors Division  
Used for closed loading applications.

#### ■ Liquid Level Tank Indicators

Gems Sensors Division and Delaval Turbine GmbH  
For continuous monitoring. Flexible styles for deep tanks, or solar-powered units for use where power not available.

#### ■ Non-electric, Manually-operated Level Indicators

Gems Sensors Division  
For quick periodic tank monitoring using calibrated tape.

#### ■ Sounding Tape

Gems Sensors Division  
Provides accurate, portable ullage level indication.

#### ■ Flow Switches

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Any of the products in this catalog may be supplied from either location shown. Write for your FREE copy of the new catalog or circle the appropriate reader service number.

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ENGLAND  
Telephone: (0256) 20244,  
Telex: 858103 (CECBAS G)  
Circle 201 on Reader Service Card

#### For customers in the U.S. or Far East:

Transamerica Delaval  
Cowles Road  
Plainville, CT 06062-9990 U.S.A.  
(203) 677-1311,  
Telex: 99306  
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Kockums, Sweden  
Moss Rosenberg, Norway  
Smit Ovens, Netherlands  
Sulzer, Switzerland  
Svanehoj Pump, Denmark  
TradeARBED, Luxembourg  
Wartsila, Finland

### Porter Named VP, Raymond Fabricators



W. L. Porter

**W.L. (Les) Porter Jr.** has been named vice president, Raymond Fabricators, Inc., Houston, Texas, a subsidiary of Raymond Offshore Constructors, Inc.

Mr. Porter is responsible for domestic and international fabrication projects and for the operation of Raymond Fabricators' 437-acre yard at Houma, La. The Houma yard fabricates components for offshore facilities for the oil and gas industries.

Mr. Porter, who joined Raymond Fabricators in 1981, was previously division manager for fabrication. His 13 years of employment in the offshore fabrication business have included assignments in the Middle East and Asia. A mechanical engineering graduate of the Georgia Institute of Technology, he is a registered professional engineer in Louisiana and Texas.

Raymond Offshore is itself a subsidiary of Raymond International Inc. of Houston, a worldwide engineering and construction company.

### Merce Industries Awarded Contract To Build Big Self-Unloading Barge

Merce Industries Inc. of Toledo, Ohio, has been awarded a contract for the construction of a 360-foot, self-unloading cement barge for St. Marys Holdings of Detroit. The value of the contract was not disclosed.

Merce leases the former American Ship Building facility in Toledo from the Toledo-Lucas County Port Authority, which purchased the property from Amship in February this year at a cost of \$500,000. The area leased by Merce includes two drydocks, 660 and 545 feet long.

According to Merce president **Henry Merce Jr.**, the contract will provide 75 to 100 new jobs at the facility. Delivery of the barge is scheduled for April 1986.

### Curacao Drydock (USA) Adds Shipyard Agency —Literature Available

Khalkis Shipyard S.A. has appointed Curacao Drydock (USA) Inc. sole agent in the United States.

The shipyard is located in Alvis, near Khalkis in a totally protected area of Evoikos Bay, about one hour drive north of Athens. The company started up in 1973 for the conversion of two refrigerated ships (15,000 dwt) into the luxury cruise liners Daphne and Danae for the J.C. Carras Group.

At present, the yard has two floating docks with capacity up to 48,000 dwt, repair wharves with 50-ton cranes, 100-ton floating crane, and well-equipped workshops for all kinds of repairs.

For more information and color brochures contact **Richard R. Klattenberg** at Curacao Drydock (USA) Inc., 26 Broadway, New York, N.Y. 10004, (212) 943-0122, for ship repairs at Seebeckwerft AG, Bremerhaven; Curacao Drydock Co., Curacao; and now at Khalkis Shipyard S.A., or

Circle 76 on Reader Service Card

### Matson Navigation Orders 3 Mitsui/Paceco Container Cranes For \$10 Million

Matson Navigation Company of San Francisco has ordered three new high-speed container cranes for its terminals. One each will be installed at the Oakland and Los Angeles terminals; these are expected to be in operation by late October this year. The third crane will be installed at Matson's Sand Island Terminal in Honolulu, with delivery scheduled for the fall of 1986. Total cost of the three cranes is expected to be about \$10 million.

The new cranes, largest in the Matson system, have a capacity to lift 40 long tons. They were built by Mitsui Engineering & Shipbuilding in Tamano, Japan, under a licensing arrangement with Paceco, Inc. of Gulfport, Miss., a subsidiary of Fruehauf Corporation.

The gantries are being added to help handle the steadily increasing volume of containers carried by Matson ships in Pacific Coast-Hawaii service, and by NYK vessels and other customers of Matson Terminals, Inc., the company that operates the container yards.

The new cranes were shipped in four large sub-assemblies each aboard an NYK-chartered vessel, the Happy Buccaneer. After unloading the Oakland crane, the heavy-lift ship went on to Los Angeles to unload the second crane at the Terminal Island yard.

For additional information on Paceco container cranes,

Circle 95 on Reader Service Card

### Company Executives Switch Positions

The president and COO of Alexander & Baldwin, Inc., and the president and COO of its subsidiary, Matson Navigation Company, will switch positions this month, according to **R.J. Pfeiffer**, chairman and chief executive officer of both firms.

**John C. Couch**, Matson's president and chief operating officer since January, will become president and COO of A&B, and **Michael S. Wasacz**, who has been A&B's president and COO over the same period, will resume the Matson presidency he held previously from 1981 through 1983.

Mr. Pfeiffer said the changes are in accordance with the company's policy "to seek every opportunity to give our senior executives the opportunity to run as many diverse operations as practicable." Both Mr. Couch and Mr. Wasacz will report to Mr. Pfeiffer in their new positions.

The new assignments were made


possible by Mr. Pfeiffer's consent to postpone his retirement three years beyond his previously planned date of April 1, 1986, at the request of the A&B board of directors.

The principal operations of A&B, headquartered in Honolulu, Hawaii, are in ocean transportation, sugar production and property development and management. Matson Navigation is headquartered in San Francisco, Calif.

### Versatile Pacific Awarded Contracts To Drydock And Refit Two Cruise Vessels

Canadian shipbuilder and ship repairer Versatile Pacific Shipyards, formerly Burrard Yarrows Corporation, has been awarded two cruise ship drydocking and refit contracts.


P&O's Sun Princess will drydock at the company's Vancouver Division in North Vancouver, B.C., and the Fairsky, owned by Sitmar Cruises, will undergo guarantee docking at the Victoria Division on Victoria Island, B.C.



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# FOR MORE INFORMATION ON EQUIPMENT AND SERVICES ADVERTISED IN THIS ISSUE

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ALLISON GAS TURBINE/DIV. GM	GAS TURBINES 350	McALLISTER	TOWING/TRANSPORTATION 313
CANTIRI NAVALI	SHIPBUILDING 181	MARKEY MACHINERY	DECK MACHINERY 301
CAL-VAL CO.	FIRE CONTROL 120	MARKISCHES WERK	DIESEL ENGINE PARTS 270
CMC COMMUNICATIONS	COMMUNICATIONS 130	NATIONAL MARINE SERVICE	MARINE REPAIR 310
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COOPER INDUSTRIES	ENGINE MONITORING 287	NEWPORT NEWS SHIPBUILDING	VESSEL CONSTRUCTION/REPAIR 166
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ENGELHARD	CORROSION COATING 250	THOMSON GORDON	BEARINGS 311
FMC COFFIN TURBO PUMPS	TURBO PUMP PARTS 346	TRIMBLE NAVIGATION	NAVIGATION 330
R.W. FERNSTRUM	GRIDCOOLERS 273	RAMPMASTER	GANGWAYS 243
FRED DEVINE	TOWING/SALVAGE SERVICE 212	SIGMA	OIL/WATER SEPARATORS 231
FRITZ CULVER	SEWAGE EJECTORS 174	TRANSAMERICA DELAVAL	MARINE EQUIPMENT 201/202
GOLAR METAL A/S	INCINERATORS 324	WORLD MARINE TRANSPORT & SALVAGE	TRANSPORT & SALVAGE 220
HBC BARGE	BARGE BUILDERS 277	G.J. WORTELBOER	ANCHORS/WINCHES/CHAINS 321

## Koch-Ellis Pioneers Aerobic Digesting Systems In Wash Water Treatment —Data Available

Koch-Ellis Barge and Ship Service has been pioneering a new program of aerobic digesting systems for on-sight treatment of wash water. Koch-Ellis has worked closely with the Environmental Protection Agency to help set industry waste disposal standards.

The process of aerobic digesting systems sounds at first like bacteria working out, while eating everything. This is partially correct.

This new form of generic technology takes its idea from the old use of the septic tank for waste disposal. Bacteria in the septic tank disintegrates raw sewage.

Scientists created bacteria that consumed oil, which petroleum companies use as a final tank cleaning method.

Now Koch-Ellis, working closely with the EPA, is using aerobic digesting systems in its treatment of wash water from the cleaning of barges and ships that carry petroleum products, chemicals and edibles.

The slurry of wash water leftover after ship or barge cleaning is first put through a clarifier process that separates and recaptures usually 98 percent of the chemicals or oil from the wash water. The problem was that there was some residue left over, plus the wash water lacked oxygen to support life. In the past, the clarified slurry was just dumped.

Koch-Ellis's environmental consultant suggested aerobic digesting as a method of cleaning and adding oxygen to the water.

Leftover wash water is placed in a

special tank with five separate types of bacteria genetically programmed to consume chemical and petroleum waste. Oxygen is added to keep the bacteria alive and replenish oxygen in the water.

The bacteria consume the waste, sink to the bottom of the tank and clean, oxygenated water is siphoned off the top and returned to the environment.

The process is proving to be the most effective method for final wash water cleaning. In addition, the idea is simple and contributes to a safer environment.

For further information about Koch-Ellis Barge and Ship Service and their program of aerobic digesting systems,

Circle 99 on Reader Service Card

## Fibergate Introduces New Line Of Strainer Plates— Free Literature Available

Fibergate Corporation of Dallas, Texas, has introduced a new product line of fiberglass reinforced plastic strainer plates. These FRP sea chest strainers prevent foreign materials from entering the system that takes seawater into the ship for cooling, fire water, ballast, and other shipboard uses.

The strainers are corrosion resistant to 72 different kinds of corrosive salts, many present in seawater. They are impact-resistant with high resilience and are unaffected by objects bumping into them. Electrically nonconductive, the FRP plates are approximately one-fourth the weight of metallic strainers and are said to cost as much as 75 percent less.

For free literature containing full information, prices, etc.,

Circle 90 on Reader Service Card

## Colombo Dockyard Offers Brochure On Facilities And Capabilities

Colombo Dockyard (Pte) Ltd. (CDL) of Colombo, Sri Lanka, is offering a new 12-page full-color brochure on the yard's facilities and capabilities.

The text of the brochure points out that Colombo is in an ideal location, situated at the intersection of sea lanes to the east from the Mediterranean, the Gulf, east coast of Africa, west coast of the Indian subcontinent and the sea lanes to the west from the Bay of Bengal, Australia and the Far East. The shipyard is located inside the Port of Colombo, enabling repairs to be carried out conveniently while discharging cargo or at anchorage during all seasons.

CDL, after heavy investment and comprehensive modernization of ship repair facilities and workshops, is now equipped to offer competitive prices for docking of all ships up to 30,000 dwt, maintenance and repair work, conversions, and newbuilding of smaller ships.

The normal capacity, length, width, height over blocks, and cranes are given for Colombo's three graving docks which are capable of handling vessels up to 30,000 dwt. A 100,000-dwt graving dock is now under construction and is scheduled to be completed by the end of 1985.

The many types of repair and services offered by the yard are listed and explained in the brochure, and the names and addresses are given of representatives of CDL in England, Greece, Hong Kong, India, Singapore, USA, West Germany and the Netherlands.

An outline map of Sri Lanka is included in the back of the publication, showing the location of the

Colombo Dockyard. The map is centered over photos that illustrate the varied and interesting attractions the island has to offer.

For further information and a free copy of the brochure from Colombo Dockyard,

Circle 71 on Reader Service Card

## Literature Offered On Cartridge-Mounted Seal For Viking Pumps

Cartridge-mounted Style 114 Chesterton® Seal from A.W. Chesterton Co., Stoneham, Mass., is expressly designed to convert several series and models of Viking Pumps from mechanical packing to mechanical sealing.

Conversion is easily accomplished by removing the original pump packing and gland. The only modification needed is to machine a counterbore in the stuffing box face 2 1/16 inches O.D. by 1/8-inch deep. On sliding the 114 Seal on the shaft, the counterbore mates with the gland pilot and locates the seal onto the shaft at the proper position. No measuring, centering or adjusting of the 114 Seal is needed.

Conversion to sealing eliminates packing leakage and maintenance adjustments. Better control of slurry fluids is attained with a dynamic O-ring located at the back of carbon holder, minimizing buildup of particles and possible clogging of seal. A static O-ring eliminates any grooving or fretting of shaft. A circulating line port is included in gland for flush applications. All parts are precision set in gland as single cartridge unit. There are no loose components to be mislaid or inaccurately installed.

For free literature containing complete information,

Circle 81 on Reader Service Card



# BUYERS DIRECTORY

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 20 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 477-6700.

## AIR COMPRESSORS

Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127

Squire-Cogswell Company, 3411 Commercial Ave., Northbrook, IL 60062

## AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION

Bailey Refrigeration Co., Inc., 2323 Randolph Avenue, Avenel, NJ 07001

Fiakt AB, Box 8862, S-40272, Gothenburg, Sweden

Stal Refrigeration AB, Butangsgatan 16, S 601 87 Norrköping, Sweden  
Carrier Transicold Division, Carrier Corp., P. O. Box 4805, Syracuse, NY 13221

## ANCHORS AND CHAIN

Baldt Incorporated, P.O. Box 350, Chester, PA 19016

G.J. Wortelboer Jr. B.V., Eemhavenstraat 4, P.O. Box 5003, 3008 AA Rotterdam, Netherlands

## ANODES—Cathodic Protection

American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906

Engelhard Industries Division, 2655 U.S. Route 22, Union, NJ 07083

Federal Harco, P.O. Box 40310, Houston, TX 77240

Thermal Reduction Company, 1 Pavilion Avenue, Riverside, NJ 08075

Wilson, Walton International, Inc., 66 Hudson St., Hoboken, NJ 07030

## BALLASTS

Genstar Stone Products Co., Executive Plaza IV Hunt Valley, MD 21031

## BASKET STRAINERS

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

## BEARINGS—Rubber, Metallic, Non-Metallic

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

Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, OH 44309

Norton Chemplast, 309-150 Dey Rd., Wayne, NJ 07470

Thomson-Gordon Limited, 3225 Mainway, Burlington, Ontario, Canada L7M 1A6

Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

## BLASTING—Cleaning—Equipment

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

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

E.I. DuPont de Nemours & Co., Inc., Starblast Division, Room X39186, Wilmington, DE 19898

Inventive Machine Corp., P.O. Box 369, Bolivar, OH 44612

Key Houston Division of Jacksonville Shipyards, 13911 Atlantic Blvd., Jacksonville, FL 32225

## BOILERS

Combustion Engineering, Inc., 1000 Prospect Hill Road, Windsor, CT 06095  
Industrial Engineering & Equipment Co., 425 Hanley Industrial Ct., St. Louis, MO 63144

Boiler Tube Company of America, P.O. Drawer 517, Lyman, SC 29365

Murray Tube Works, P.O. Drawer 517, Lyman, SC 29365

Senior Green Economizers, P.O. Drawer 517, Lyman, SC 29365

## BOILER CLEANING

Asea Stal, 50 Chestnut Ridge Rd., Montvail N.J. 07645

## BROKERS

Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, LA 70153

ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401

Mowbray's Tug & Barge, 21 West St., New York, NY 10006

Western Maritime, 701 B Street, San Diego, CA 92101

## BRONZES—COMMEMORATIVE

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

## BUNKERING SERVICE

Belcher Company, Inc., 8700 West Flagler, P.O. Box 525500, Miami, FL 33152

Gulf Oil Trading Co., 535 Madison Ave., New York, NY 10022

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

## CARGO HANDLING EQUIPMENT

MacGregor-Navire International, Box 8991, S-402 74 Goteborg, Sweden

MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016

## CASTINGS/FORGINGS

NKS Industria Pesada, Grupo Industrial, Reforma 404, 140 Piso, Mexico, D.F. 06600 U.S. REP.—Lexington Transport (New York) Inc., 551 Fifth Ave., Room 910, New York N.Y. 10017

## CHOCKING SYSTEMS

Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, PA 18936

## CLOSURES—Marine

Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

## COMPUTERIZED INFORMATION SYSTEMS

Marine Management Systems, Inc., 102 Hamilton Ave., Stamford, CT 06902

Maritime Data Network, Ltd., 102 Hamilton Ave., Stamford, CT 06902

Military Contract Information Service, Inc. Dist. by Maritime Reporter/Engineering News, 118 East 25 St. N.Y. N.Y. 10010

TIMSCO, 622 Azalea Rd., Mobile, AL 36609

Veson Systems, 29 Broadway, Suite 1002, New York, NY 10006

## CONDENSERS

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

## CONTROL SYSTEMS—Monitoring

American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906

ASEA, Inc., 4 New King St., White Plains, NY 10604

Barringer Research, 304 Carlingview Dr., Rexdale, Ontario, Canada M9W 5G2

Biospherics Inc., 4928 Wyaconda Rd., Rockville, MD 20852

Cooper Energy Services, Mount Vernon, OH 43050

Ergon, Inc., P.O. Drawer 1639, Jackson, MS 39205

Failsafe Motor/Generator Protector, Marine Safe Electronics Ltd., 101 Jardin Dr., Unit 24/25, Concord, Ontario, Canada L4K 1B6

Indikon Corp., 26 New St., Cambridge, MA 02138

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

Leslie Co., 401 Jefferson Rd., Parsippany, NJ 07054

Marine Safe Electronics, 37 Staffern Drive, Concord, Ontario, Canada, L4K 2X2

Pandel Instruments Inc., 2100 N. Hwy. 360, Grand Prairie, TX 75050

Propulsion Systems, Inc., 21213 76 Ave., Kent, WA 98032

Teleflex Inc., 771 First Ave., King of Prussia, PA 19406

Thomas Products Ltd., Flow Switch Div., 987 West St., Southington, CT 06489-1023

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

Valmet Automation A.S., P.O. Box 130, N-3430, Spikkestad, Norway

## CRANE BUMPERS

Kastalon Inc., 4101 West 123rd St., Alsip, IL 60658

## CRANES—HOISTS—DERRICKS—WHIRLIES

Allied Marine Crane, P.O. Box 23026, Portland, OR 97233

Appleton Marine, P.O. Box 2339, Appleton, WI 54913

ASEA Hagglunds Inc., P.O. Box 7949, The Woodlands TX 77380

HIAB Cranes & Loaders Inc., 258 Quigley Boulevard, New Castle, DE 19720

Marine Travelift, Inc., 49 E. Yew St., Sturgeon Bay, WI 54235

J.D. Neuhaus, Hebezeuge, D5810, Witten Heven, West Germany

CMH Heleshaw, Inc., 201 Harrison St. Hoboken N.J. 07030

Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202

## DECK MACHINERY—Cargo Handling Equipment

Markey Machinery Co., Inc., 79 S. Horton St., Seattle, WA 98134

McElroy Machine & Mfg. Co., Inc., Lorraine Rd., Industrial Seaway, Gulfport, MS 39501

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

## DECKING—GRATING

Aligned Fiber Composites, Highway 52, South Chatfield, MN 55923

International Grating, 7625 Parkhurst, Houston, TX 77028

Selby, Battersby & Company, 5220 Whiby Ave., Philadelphia, PA 19143

## DIESEL ACCESSORIES—CYLINDER LINERS

Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511

General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, MA 02360

Haynes Corporation, P.O. Box 179, Jackson, MI 49204

Illman Jones, 1111 Green Island Rd., American Canyon, CA 94589

Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637

Transamerica Delaval Engine & Comp. Div., 550 85th, Oakland, CA

## DIESEL ENGINE—Spare Parts & Repair

Alban Engine Power, Inc., 6455 Washington Blvd., Baltimore, MD 21227

Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021

Caterpillar Tractor Co. 100 N.E. Adams Street, Peoria, IL 61629-2325

Colt Industries Inc. Fairbanks Morse Engine Div. 701 Lawton Ave., Beloit, WI 53511

Cummins Engine Co., Inc., Mail Code 40642, Box 3005 Columbus, IN 47202-3005

Goltens, 160 Van Brunt Street, Brooklyn, NY 11231

Granges Repair Service GMBH, Gutenbergring, 64 D-2000 Hamburg-Norderstedt TX-0215553

Schoonmaker Service Parts Co., Inc., P.O. Box 757, Foot of Spring St., Sausalito, CA 94966

Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637

Sulzer Brothers Inc., 200 Park Ave., New York, N.Y. 10166

Transamerica Delaval Engine & Comp. Div., 550 85th, Oakland, CA

Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647

## ELECTRICAL EQUIPMENT

Midland-Ross Corp., Russellstoll Division, 530 W. Mt. Pleasant Ave., Livingston, NJ 07039

Newmar, P.O. Box 1306, Newport Beach, CA 92663

Sigmaform Corporation, P.O. Box 515, Richboro, PA 18954

Stewart & Stevenson Services, Inc.—MWM, P.O. Box 1637, Houston, TX 77251-1637

Ward Leonard Electric Co., 31 South St., Mt. Vernon, NY 10550

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

## ELECTRONIC SYSTEMS

Marine Electric RPD, Inc., 666 Pacific St., Brooklyn, NY 11217 TX: 125327

## EMULSIFICATION SYSTEMS

Cleanodan A/S, N. American Agents, American United Marine Corp., 5 Broadway, Route 1, Saugus, MA 01906

Cove Shipping, Inc., Wall Street Plaza, New York, NY 10005

S/S Research & Development Inc., 1050 State St., Perth Amboy, NJ 08862

Todd Marine Systems, 61 Taylor Reed Place, Stamford, CT 06906

## ENGINE TEST EQUIPMENT

General Thermodynamics Corp., P.O. Box 1105, 210 S. Meadow Road, Plymouth, MA 02360

## EQUIPMENT—Marine

American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94083

ASEA Hagglunds Inc., P.O. Box 7949, The Woodlands TX 77380

Band-It Division, Houdaille Industries, Inc., P.O. Box 16307, Denver, CO 80216

Beaver Tool Co., 1525 SE 29th St., Box 94717, Oklahoma City, OK 73143

Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202

Thomas Coudon Associates, 6655 Amberton Dr., Baltimore, MD 21227

Fitz-Wright Suits Ltd., 17919 Roan Pl., Surrey, B.C., Canada V3S 5K1

Genstar Stone Products Co., Executive Plaza IV, Hunt Valley, MD 21031

Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127

Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, NY 10550

Maritime Power Corp., 200 Henderson Street, Jersey City, NJ 07302

Raytheon Service Co., 100 Roesler Rd., Suite 103, Glen Burnie, MD

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

Viking Life Saving Equipment, 3305 N.W. 37th Street, Miami, FL 33142

Waterman Supply Co., Inc., 2815 E. Anaheim Street, P.O. Box 596, Wilmington, CA 90748

## EVAPORATORS

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

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

Atlas-Danmark Marine & Offshore, Baltorpvej 154, KD-2750 Bllerup, Copenhagen DENMARK

Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130

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

## FANS—VENTILATORS—BLOWERS

American United Marine Corp., 5 Broadway, Rte. 1, Saugus, MA 01906

Hartzell Fan Company, 901 Downing Street, Piqua, OH 45356

Joy Manufacturing Company, 338 So. Broadway, New Philadelphia, OH 44663

Jon M. Liss Associates, Inc., 411 Borel Ave., P. O. Box 5554, San Mateo, CA 94402

## FASTENERS

Hardware Specialty Co., Ships Division, 48-75 36th St., Long Island City, NY 11101

Sales Systems Limited, 7006, 700 Florida Ave., Portsmouth, VA 23707

## FENDERING SYSTEMS—Dock & Vessel

InterTrade Industries, 15301 Transistor Lane, Huntington Beach, CA 92649

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

Seaward International, Inc., 6269 Leesburg Ave., Falls Church, VA 22044

## FILTERS

Dahl Manufacturing, Inc., 2521 Railroad Ave., Ceres, CA 95307

Parker Filter Division, 16810 Fulton County Road, #2, Metamora, OH 43530

## FINANCING—Leasing

Gulf Western Leasing Corp., 1500 City West Blvd., Suite 300, Houston, TX 77047

JMJ Marine Investors, P.O. Box 51509, New Orleans, LA 70151

## FIRE PROTECTION, DETECTION & ALARM SYSTEMS

Walter Kidde, Walter Kidde Dr., Wake Forest, NC 27586

## FUEL OIL/ADDITIVES—Analysis & Combustion Testing

Ferrous Corporation, 910-108th N.E., P.O. Box 1764, Bellevue, WA 98009

Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127

McTigue Industries Inc., 1615 9th Ave., Bohemia, NY 11716

## FURNITURE

Bailey, Carpenter & Insulation Co., 2323 Randolph Avenue, Avenel, NJ 07001

Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

## GALLEY EQUIPMENT

Insinger Machine Co., 6245 State Rd., Philadelphia, PA 19135

## GANGWAYS

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

## HATCH & DECK COVERS—Chain Pipe

MacGregor-Navire International, Box 8991, S-402 74 Goteborg, Sweden

MacGregor Navire U.S.A. Inc., 135 Dermody St., Cranford, NJ 07016

Mock Manufacturing Inc., 777 Rutland Rd., Brooklyn, NY 11203

## GAUGES

Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062

## HEAT EXCHANGERS

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

Industrial Engineering & Equipment Co., 425 Hanley Industrial Ct., St. Louis, MO 63144

Meco (Mechanical Equipment Co., Inc.), 861 Carondelet Street, New Orleans, LA 70130

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

## HOLD LINERS

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

## HULL CLEANING

Aurand 1270 Ellis Street, Cincinnati, OH 45223

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

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

Petroferm Marine, Route 2, Box 280, Amelia Island, FL 32034

Phosmarine Equipment, 21 Bd. de Paris, 13002, Marseille, France

Seaward Marine Service, Inc., 201 N. Union Street, Alexandria, VA 22314

Seaward Marine Service, Inc. 5409 Beamon Rd., Norfolk, VA 23513 TX: 710-881-1182

Seaward Marine Service, Inc. 424 West 8th Street, National City, CA 92050

Cunningham Marine Hydraulics Co. Inc., 2030 E. Adams St. Jacksonville, FL 32202  
Jered Brown Brothers Inc., 1300 Coolidge, P.O. Box 2006, Troy, MI 48007  
American General/Levin Corp., 445 Littlefield Ave., So. San Francisco, CA 94080  
Goltens, 160 Van Brunt St., Brooklyn, NY 11231  
Rosan, Inc., 2901 West Coast Hwy., Newport Beach, CA 92663

#### METALS

Bayou Steel Corp., P.O. Box 5000, Laplace, LA 70068

#### MINING

Rocky Mountain Energy, 10 Longspeake Dr., Box 2000, Broomfield, CO 80020

#### NAME PLATES—BRONZE—ALUMINUM

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

#### NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

ACB Industries, 3400 Camp Street Suite 100, New Orleans, LA 70130  
Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202  
Aero Nav Laboratories, Inc., 14-29 112 St., College Point, NY 11356  
American Hydromath Inc., Box 2450, Danby-Pawlet Road, Pawlet, VT 05761  
American Systems Engineering Corp., P.O. Box 4265, Virginia Beach, VA 23454

Amirking Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, MD 20015

Art Anderson Associates, 148 First St., Bremerton, WA 98310

B.C. Research, 3650 Westbrook Mall, Vancouver, B.C. Canada V6S 2L2

Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130

C.A.C.I., Inc., 1815 No. Fort Myer Dr., Arlington, VA 22209

C.D.I. Marine Co., 5520 Los Santos Way, Suite 600, Jacksonville, FL 32211

C.T. Marine, 18 Church Street, Georgetown, CT 06829

Phillips Cartner & Co., Inc., 203 So. Union St., Alexandria, VA 22314

Century Engineering, Inc., 32 West Rd., Towson, MD 21204

Childs Engineering Corp., Box 333, Medfield, MA 02052

Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, MA 02026

Crane Consultants Inc., 15301 1st Ave., So. Seattle, WA 98148

C.R. Cushing, 18 Vesey St., New York, NY 10007

Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129

Designers & Planners, Inc., 1725 Jefferson Davis Highway, Suite 700, Arlington, VA 22202

ECO Inc., 1036 Cape St. Claire Center, Annapolis, MD 21401

Encon Management & Engineering Consultant Services, P.O. Box 7760, Beaumont, TX 77706

Capt. R.J. Fearson & Associates, P.O. Box 983, Tampa, FL 33601

Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, NY 11050

Gibbs & Cox, Inc., 119 West 31st Street, New York, NY 10001

John W. Gilbert Associates, Inc., 66 Long Wharf, Boston, MA 02110

The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104

Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480

Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107

Hamilton Cornell Associates, Box 188, Snug Harbor Station, Duxbury, MA 02331

J.J. Henry Co., Inc., 40 Exchange Place, New York, NY 10005

Hi-Test Laboratories, Inc., P.O. Box 226, Buckingham C.H., VA 23921

HydroComp, Inc., 10 Cutts Road, P.O. Box 865, Durham, NH 03824

Intramarine, Inc., P.O. Box 53043, Jacksonville, FL 32201

R.D. Jacobs & Associates, 11405 Main St., Roscoe, IL 61073

Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, MD 21227

James S. Krogen & Co., Inc., 3333 Rice St., Miami, FL 33133

Rodney E. Lay & Associates, 13891 Atlantic Blvd., Jacksonville, FL 32225

Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063

John J. McMullen Associates, Inc., 1 World Trade Center, New York, NY 10048

McLear & Harris, Inc., 28 West 44 Street, New York, NY 10036

Fendall Marbury, 1933 Lincoln Drive, Annapolis, MD 21401

Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, OH 44114

Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, NY 11746

Marine Technical Associates, Inc., 95 River Rd., Hoboken, NJ 07030

Maritime Design, Inc., 2955 Hartley Rd., Jacksonville, FL 32217

George E. Meese, 194 Acton Rd., Annapolis, MD 21403

R. Carter Morrell, 715 S. Cherokee, Bartlesville, OK 74003

NKF Engineering Assoc., Inc., 8150 Leesburg Pile, Vienna, VA 22202

Nelson & Associates, Inc., 610 Northwest 183rd St., Miami, FL 33169

Nickum & Spaulding Associates, Inc., 2701 First Ave., Seattle, WA 98121

Northern Marine, P.O. Box 1169, Traverse City, MI 49685

Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, LA 70114

PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117

Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, FL 33156

S.L. Petchul, Inc., 1380 S.W. 57th Avenue, Fort Lauderdale, FL 33317

Q.E.D. Systems Inc., 4646 Witchduck Rd., Virginia Beach, VA 23455

M. Rosenblatt & Son, Inc., 350 Broadway, New York, NY 10013 and 667 Mission St., San Francisco, CA 94105

Sargent & Herkes Inc., 611 Gravier St., New Orleans, LA 70130

Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, FL 33316

SEACOR Systems Engineering Associates Corp., 19 Perina Blvd., Cherry Hill, NJ 08003 (Publications Division at Cherry Hill location)

STV/Sanders & Thomas, Inc., 1745 Jefferson Davis Hwy., Arlington, VA 22202

Seaworthy Systems, Inc., 28 Main St., Essex Ct. 06426; 17 Battery Place, N.Y. N.Y. 10004, P.O. Box 205, Solomons, MD 20688

Seaworthy Electrical Systems, 17 Battery Pl. N.Y. N.Y. 10004

George G. Sharp, Inc., 100 Church St., New York, NY 10007

Simmons Associates, P.O. Box 760, Sarasota, FL 33578

R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235

J.F. Stroschein Associates, 666 Old Country Rd., Garden City, NY 11530

Richard R. Taubler, Inc., 610 Carriage La., Dover, DE 19901

Thomas Coudon Associates, 6655 Amberton Drive, Baltimore, MD 21227

Timisco, 622 Azalea Road, Mobile, AL 36609

Tracor Hydronautics, Inc., 7210 Pindell School Rd., Laurel, MD 20707

Thomas B. Wilson, Associates, 1258 North Avalon Blvd., Wilmington, CA 90744

#### NAVIGATION & COMMUNICATIONS EQUIPMENT

Atkinson Dynamics, Section 6, 10 West Orange Ave., South San Francisco, CA 94080

British Telecom International, The Holborn Centre, 120 Holborn, London EC1N 2TE

CMC Communications Inc., 5479 Jetport Industrial Blvd., Tampa, FL 33614

COMSAT World Systems, 950 L'Entant Plaza, S.W., Suite 6151 Washington, DC 20024

A/S Elektrisk Bureau, P.O. Box 98, N-1360 Nesbru, Norway

Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080

General Electric Company, Mobile Communications Division, Lynchburg, VA 24502

Harris Communications (RF Communications), 1680 University Avenue, Rochester, NY 14610

Henschel, 9 Hoyt Drive, Newburyport, MA 01950

Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631

ITT Mackay, 441 U.S. Highway #1, Elizabeth, NJ 07202

Japan Radio Co., Ltd., Akasaka Twin Tower, 17-22, Akasaka 2-chome, Minato-ku, Tokyo 107, Japan U.S. Rep: 405 Park Ave., New York, NY 10022

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

Kongsberg Vopenfabrikk, Norcontrol Division, P.O. Box 145, Horten 3191, Norway

Krupp Atlas-Elektronik, 1453 Pinewood St., Rahway, NJ 07065

Micrologic, 20801 Dearborn, Chatsworth, CA 91311

Nav-Com, Inc., 9 Brandywine Drive, Deer Park, NY 11729

Navigation Sciences Inc., 6900 Wisconsin Ave., Bethesda, MD 20815 TX: 705999

Perko Inc. (Lights), P.O. Box 6400D, Miami, FL 33164

Racal Marine Inc., 1 Commerce Blvd., Palm Coast, FL 32037-0029

Radio-Holland USA, Inc., 6033 South Loop East, Houston, TX 77033

Raytheon Marine Co., 676 Island Pond Road, Manchester, NH 03103

Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914

Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061

Robertson Autopilot, 400 Oser Ave., Hauppauge, NY 11738

S.P. Radio A/S, DK 9200 Aalorg, Denmark

Sperry Corporation, Great Neck, NY 11020

Standard Communications, P.O. Box 92151, Los Angeles, CA 90009

Telesystems, 2700 Prosperity Ave., Fairfax, VA 22031 USA

Texas Instruments, Inc., P.O. Box 405, 3438, Lewisville, TX 75067

Tracor Instruments Austin Inc., 6500 Tracor Lane, Austin, TX 78725

#### OILS—Marine—Additives

Exxon Company, U.S.A., Room 2323 AH, P.O. Box 2180, Houston, TX 77701

Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001

Gulf Oil, New York District Sales Office (Domestic), 433 Hackensack Avenue, Hackensack, NJ 07601

Gulf Oil Trading Co., 535 Madison Ave., New York, NY 10022

Mobil Oil Corp., 150 East 42 Street, New York, NY 10017

Texaco, Inc. (International Marine), 135 East 42nd St., New York, NY 10017

#### OILY WATER ALARMS/MONITORS

Biospherics, Inc., 4928 Wyaconda Road, Rockville, MD 20852

#### OIL/WATER SEPARATORS

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

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

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

Centrico, Inc. (Westfalia Separators), 100 Fairway Court, Northvale, NJ 07647

Hamworthy Engineering Ltd., 10555 Lake Forest Blvd., Suite 5F, New Orleans, LA 70127

Hyde Products, Inc., 810 Sharon Dr., Westlake, OH 44148

NALCO Chemical Co., 2901 Butterfield Road, Oak Brook, IL 60521

Oil Recovery Systems, Inc., 1420 Providence Hwy., Norwood, MA 02062

Peck Purifier Sales Co., 3724 Cook Blvd., Chesapeake, VA 23323

Sigma Treatment System, Merry Meadows RD 1 Box 70, Chester Springs, Pa 19425

#### PAINTS—COATINGS—CORROSION CONTROL

American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111

Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754

Dampney Company, Inc., 85 Paris St., Everett, MA 02149

Devoe Marine Coatings Co., P.O. Box 7600, Louisville, KY 40207

Drew Ameroid Marine, One Drew Chemical Plaza, Boonton, NJ 07005

E.I. DuPont De Nemours & Co., Inc. Nemours Bldg., Rm. N-2504-2, Wilmington, DE 19898

DuPont Co. MPS, Room X40750, Wilmington, DE 19898

Esgard, Box 2698, Lafayette, LA 70502

Farboil Company, 8200 Fischer Rd., Baltimore, MD 21222

Hempel Marine Paints, Inc., Foot of Currie Ave., Wallington, NJ 07057; 6868 NorthLoop East, Suite 304, Houston, TX 77028; P.O. Box 10265, New Orleans, LA 70181

International Paint Company, Inc., 2270 Morris Avenue, Union, NJ 07083

Jaegle Paint Company, Inc., 1012 Darby Road, Havertown, PA 19083

Jatun Marine Coatings Inc., 175 Penrod Court N&O, Glen Burnie, MD 21061

Magnus Maritec International Inc., 150 Roosevelt Pl., P.O. Box 150, Palisades Park, NJ 07650

Products Research & Chemical Corp., 5454 San Fernando Rd., Glendale, CA 91203

Selby Battersby & Co., 5220 Whitby Ave., Philadelphia, PA 19143

#### PIPE-HOSE—Cargo Transfer Clamps, Couplings, Coatings

Amermarine International, P.O. Box 9205, Dundalk, MD 21222

Deutsch Metal Components, 14800 S. Figueroa St., Gardena, CA 90248

Hydro-Craft Inc., 1821 Rochester Industrial Dr., Rochester, MI 48063

Knights Pipe Inc., 5309 Industrial Road, Pascagoula, MS 39567

Tioga Pipe Supply Co. Inc., 2450 Wheatseaf La., P.O. Box 5997, Philadelphia, PA 19137

#### PLASTICS—Marine Applications

Hubeva Marine Plastic, Inc., 390 Hamilton Ave., Brooklyn, NY 11231

Norton Chemplast, 309-150 Dey Rd. Wayne NJ 07470

#### PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines

Amarillo Gear Co., P.O. Box 1789, Amarillo, Texas 79105

Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043

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

Bergen Diesel Inc., 2110-10 Service Rd., Kenner, LA 70062

Boston Metals Co., 313 E. Baltimore St., Baltimore, MD 21202

Bermeister & Wain Alpha Diesel A/S, DK-1400 Copenhagen K, Denmark

Caterpillar Engine Division, 100 N.E. Adams, Peoria, IL 61629

Colt Industries Inc. (Fairbanks Morse Engine Div.), 701 Lawton Avenue, Beloit, WI 53511

Columbian Bronze Corporation, 216 No. Main Street, Freeport, NY 11520

Combustion Engineering, Inc., Windsor, CT 06095

Coolidge-Stone Vickers, Inc., 56 Squirrel Rd., Auburn Hills, MI 48057

Daihatsu Diesel (USA) Inc., 180 Adams Ave., Hauppauge, NY 11788

Deutz Corp., 7585 Ponce de Leon Circle, Atlanta, GA 30340

Elliott Company, 1809 Sheridan Ave., Springfield, OH 45505

George Engine Company, Inc., Lafayette, LA

General Motors, Electro-Motive Division, LaGrange, IL 60525

Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, NY 11231

Isotta Fraschini S.p.A., c/o Italian Aerospace Industries (U.S.A.), Inc., 1235 Jefferson Davis Hwy., Suite 500, Arlington, VA 22202

KHD Canada Inc., 180 Rue de Normandie, Boucherville, Quebec J4B 5S7, Canada

Lips Propellers, 3617 Koppens Way, Chesapeake, VA 23323

M.A.N.-B&W Diesel, 2 Ostervej, DK-4960 Holeby, Denmark

MTU of North America, One E. Putnam Ave., Greenwich, CT 06830; 10450 Corporate Dr., Sugarland, TX 77478; 2945 Railroad Ave., Morgan City, LA 70203; 180 Nickerson St., Seattle, WA 98109; 1730 Lynn St., Arlington, VA 22209

MWM-Murphy Diesel, 12 Greenway Plaza, Suite 1100, Houston, TX 77046

Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507

Mitsubishi Kakoki Kaisha LTD, Mita Kokusai Bldg. 4-28 Mita 1-chome, Minato-ku Tokyo 108 Japan

National Marine Service Louisiana, Inc., 222 Bayou Rd., Belle Chasse, LA 70037

North American Marine Jet P.O. Box 1232 Benton, AR 72015

Omnithruster Inc., 9515 Sorensen Ave., Santa Fe Springs, CA 90670

Penske GM Power, Inc., 600 Parsippany Road, Parsippany, NJ 07054

Inland Water Propulsion Systems, Inc., 580 Walnut St., Cincinnati, OH 45201

Propulsion Systems, Inc., 21213 76 Ave. So., Kent, WA 98032

SACM (Societe Alsacienne De Constructions Mechaniques De Mulhouse) 1, Rue De La Fonderie, Boite Postale 1210, 68054 Mulhouse Cedex, France

Schottel of America, Inc., 8375 N.W. 56 St., Miami, FL 33166

Skinner Engine, Co., P.O. Box 1149, Erie PA 16512

Stewart & Stevenson Services, Inc., P.O. Box 1637, Houston, TX 77251-1637

Sulzer Brothers, Dept. Diesel Engines, CH-8401 Winterthur, Switzerland

Tech Development Inc., 6800 Poe Ave., P.O. Box 14557, Dayton, OH 45414

Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621

Transamerica DeLaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, NJ 08650

Ulstein Maritime Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3

Ulstein Trading Ltd. A/S, N-6-65, Ulsteinvik, Norway

J.M. Voith GmbH Dept. WERUNG, Postfach 1940 7920 Heidenheim/Brenz, West Germany

Voith Schneider America, 159 Great Neck Rd., Ste. 200, Great Neck, NY 11021

Volvo Penta of America, P.O. Box 927, Rockleigh, NJ 07647

WABCO Fluid Power, an American-Standard Company, 1953 Mercer Rd., Lexington, KY 40505

Wartsila Power Inc., 5132 Taravella Rd., P.O. Box 868, Marrero, LA 70072

Waukesha Engine Division, Waukesha, WI 53187

#### PUMPS—Repairs—Drives

Allweiler Pump Inc., 5410 Newport Dr., Rolling Meadows, IL 60008 TX:

### 3-Component Design Now Lets Users Build Own Liquid Flow Monitoring And Control System

A three-component design is now available from Transamerica Delaval Inc. to permit users to build their own system for monitoring and controlling liquid flow.

The heart of this flow system is a sensing unit that is available in four versions. Included are: sensors for flow velocities from 1 to 50 ft./sec.; one version for high temperatures and pressures, and for corrosive fluids; another type for electrically conductive fluids and slurries; and the fourth version is an in-line microsensor for low flow rates.

To complement the sensors are a broad range of indicators and controllers which can be calibrated to specific pipe sizes. These can be remotely mounted up to 200 feet away from the sensor without signal amplification.

Matched installation fittings complete the system and assure correct flow sensor positions. These include saddle, steel weldolet, galvanized tees and PVC fittings.

These components provide a reliable method of flow monitoring since they permit a user to customize a three-component system to fit specific requirements.

For further literature containing full information,

Circle 87 on Reader Service Card

### Siemens Wins \$1.1-Million Contract For Control Systems—Literature Available


Siemens has been awarded a \$1.1-million contract by Bay Shipbuilding Corp. of Sturgeon Bay, Wis., to supply the centralized control system for three containerhips being built for Sea-Land Service, Inc. of Menlo Park, N.J.

The contract includes delivery of control consoles for the engine control rooms and wheelhouses, as well as the new Siemens Simos 41 alarm and monitoring system employing the latest in microprocessor technology and color graphics.

The contract was placed with the Siemens-Allis Marine Department, South Plainfield, N.J.

For free literature from Siemens containing full information on the company's equipment, etc.,

Circle 96 on Reader Service Card



**ANCHORS WINCHES CHAINS**

**G.J. Wortelboer jr. B.V.**

Eemhavenstraat 4 Telephone: 10/292222  
P.O. Box 5003 a.o.h.: 1892/6970  
3008 AA Rotterdam Telex: 28393 GJWNL  
Netherlands

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Engineer with 30 years domestic and international marketing, sales, and engineering experience, with the past five years specializing in marine Diesel engines, seeks new opportunity in line or consulting capacity.

Box 1016 MARITIME REPORTER/ENGINEERING NEWS  
118 East 25 Street New York, N.Y. 10016

Cantieri Navali Riuniti, Via Cipro, 11, 16100 Geneva, Italy  
Chesapeake Shipbuilding Inc., 710 Fitzwater St., Salisbury, MD 21801  
Conrad Industries, P.O. Box 790, Morgan City, LA 70380  
Coast Iron & Machine Works, 5225-7th Street E., Tacoma, WA 98424  
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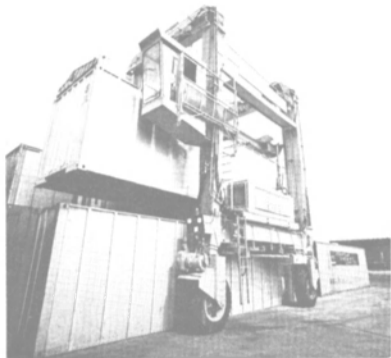
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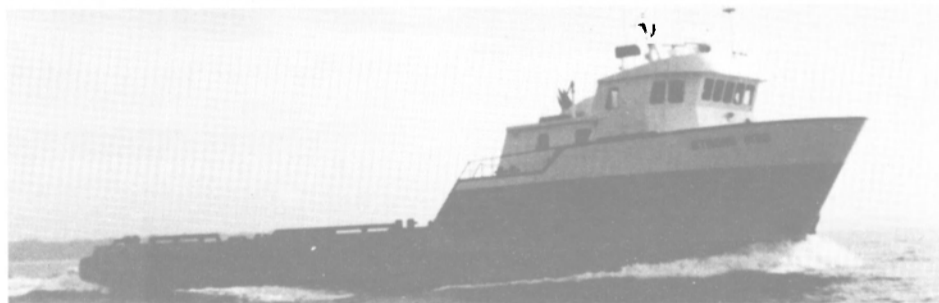
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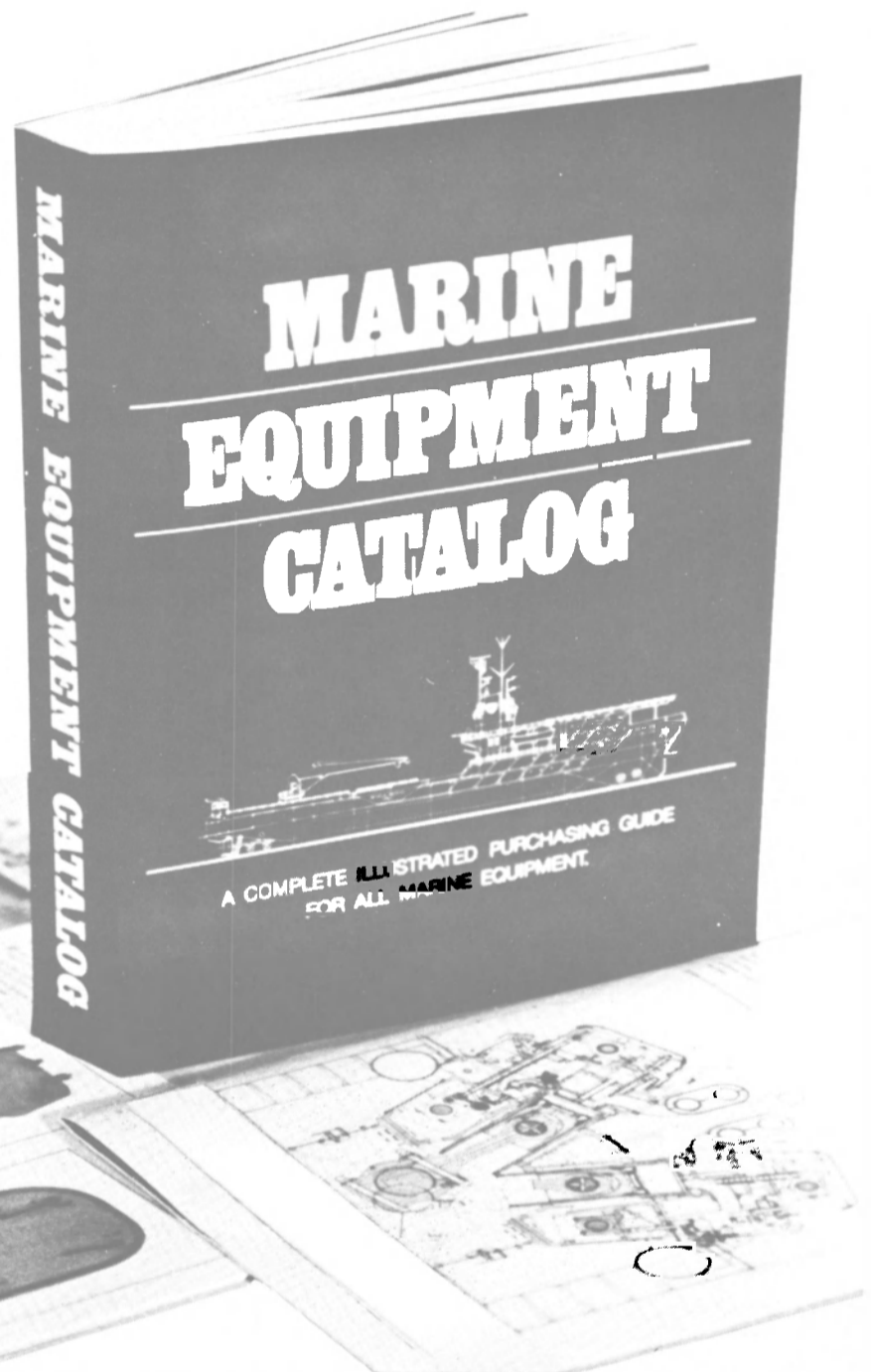
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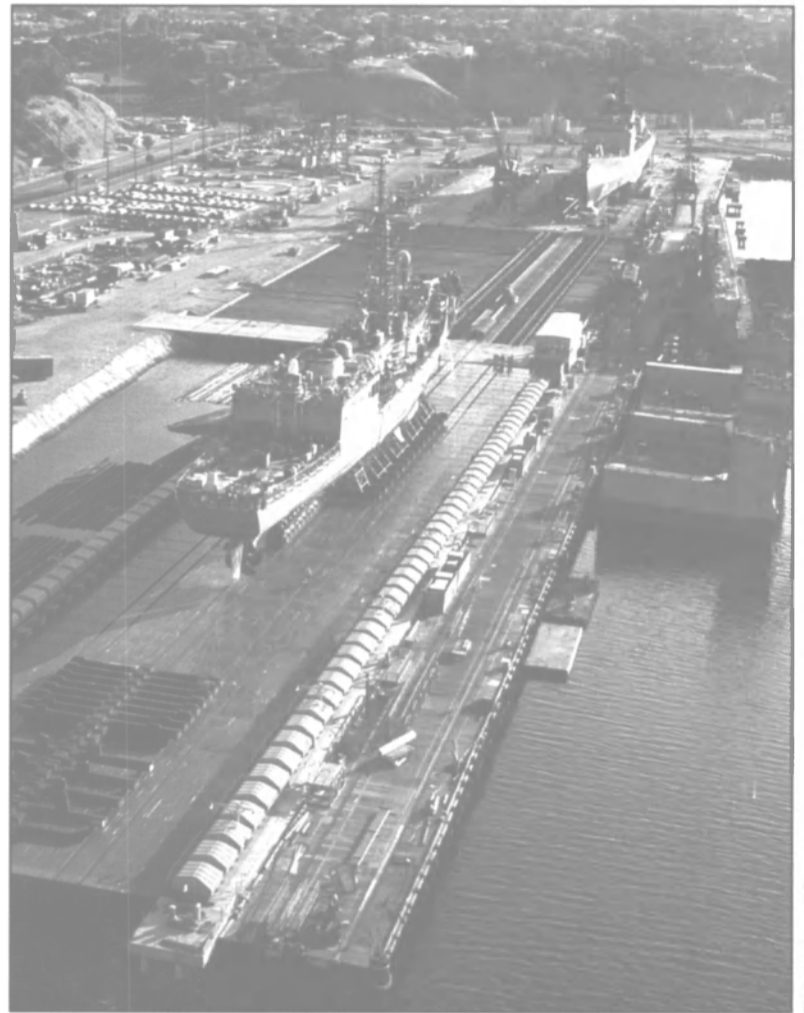
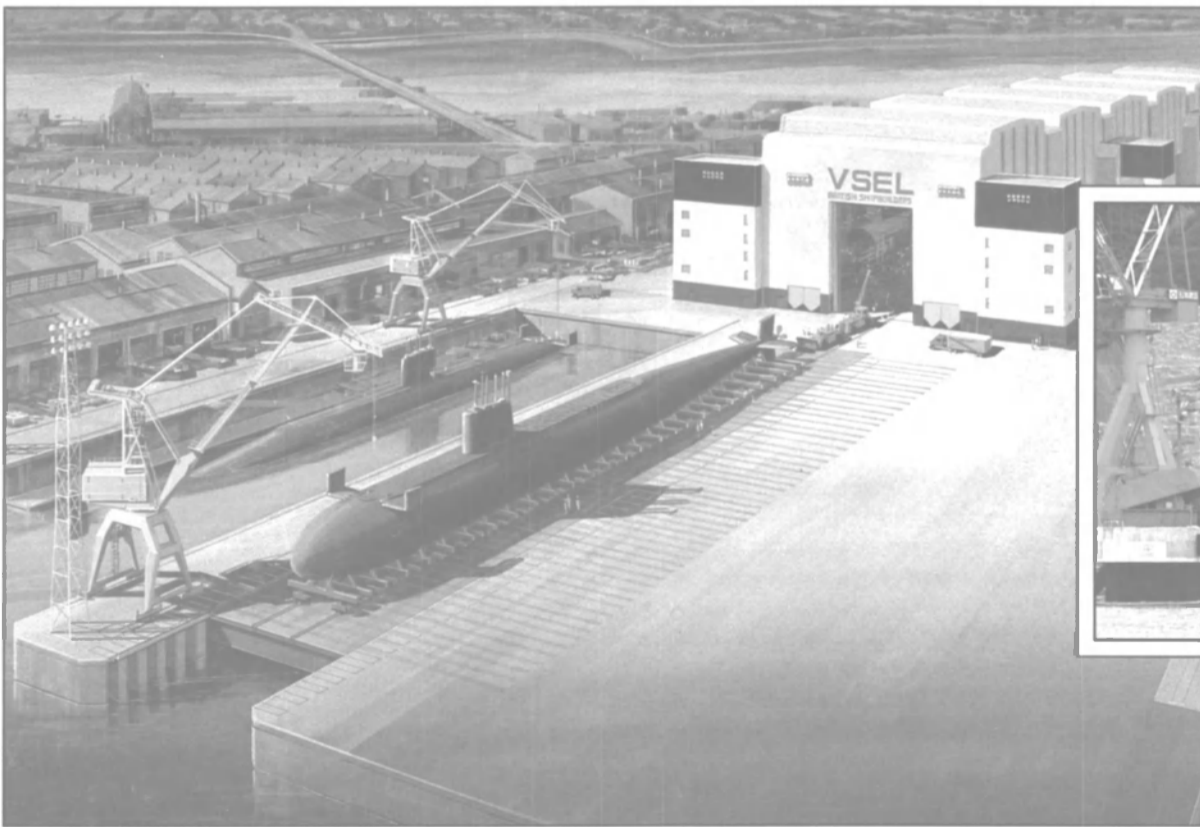


Photo by Joseph Ernest



The highest capacity per metre shiplift in the world – 200 tons per metre for launching concrete caissons at Yunotsu, Japan.

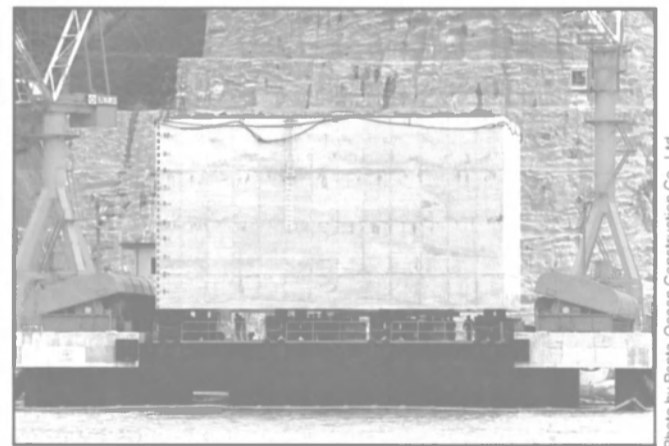


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