

MARITIME REPORTER AND ENGINEERING NEWS



**McAllister Brothers' New 6,000-HP Jabbar
Especially Designed For Docking Huge
Tankers At Ras Tanura In Saudi Arabia**

(SEE PAGE 8)

OCTOBER 1, 1978

ROTTERDAM



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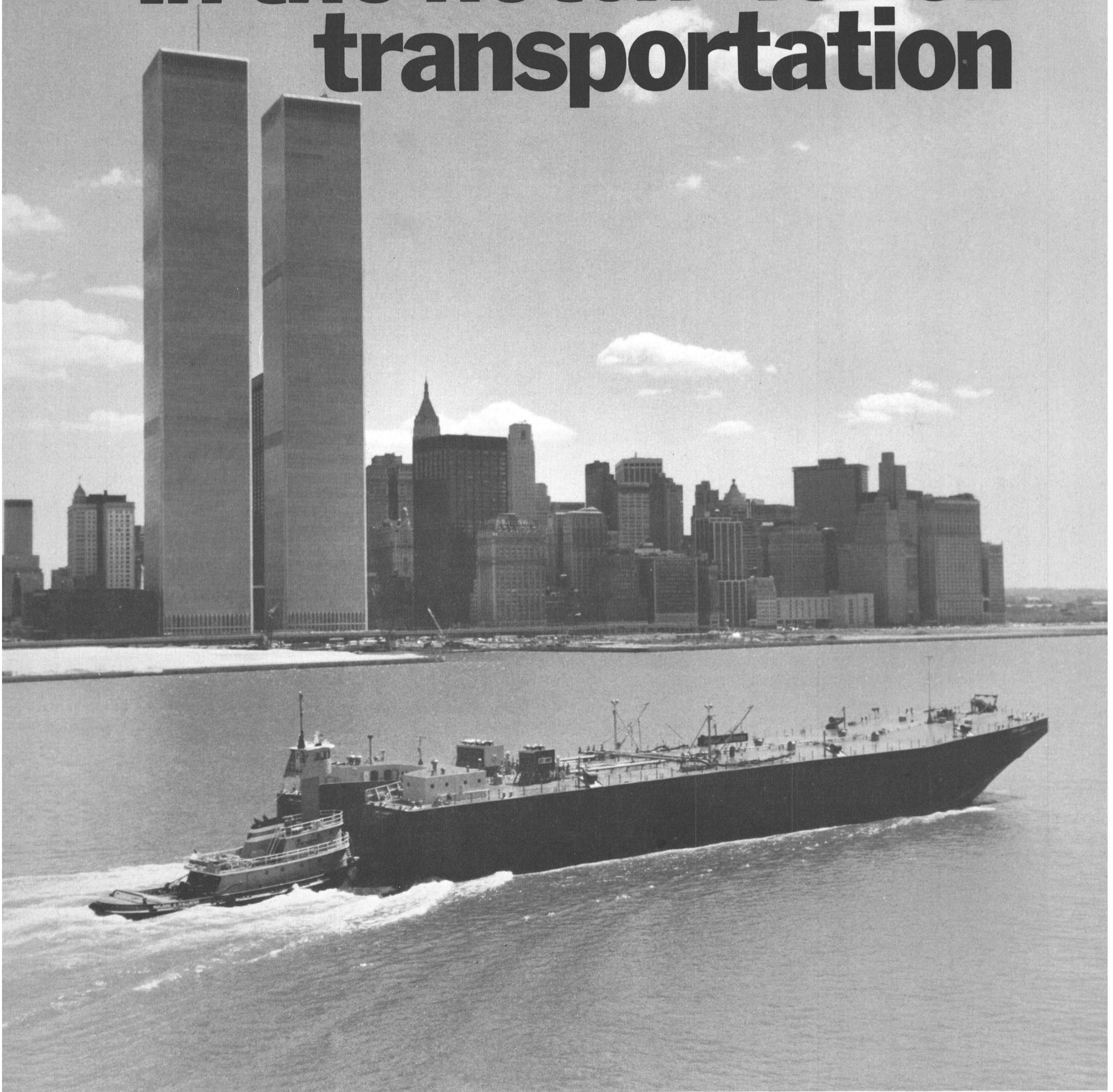
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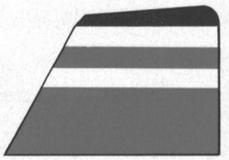


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Shipyards Support Marintec Asia 79

All of Singapore's major shipyards will participate in the Marintec Asia 79 Exhibition in Singapore, June 11-15, 1979.

The exhibition is being held in conjunction with four separate but interrelated seminars, with the common theme of marine transportation.

The participation by both local and other shipyards from throughout the world is seen by Marintec Asia organizer Hugh Stanton as further evidence of the growing importance of the Southeast Asian market for shipbuilding and ships' gear supply.

The Singapore shipyards exhibiting at Marintec Asia 79 are Hitachi Zosen Robin Dockyard, Jurong, Keppel, Mitsubishi, Panasia, Promet, Robin, and Sembawang.

Other exhibiting shipyards include Dixie Dredge Co. (USA), Hyundai Mipo Dockyard (Korea), Hongkong United Dockyards, Kalmar LMV (Sweden), Malaysia Shipyard & Engineering, and Philippines Shipyard.

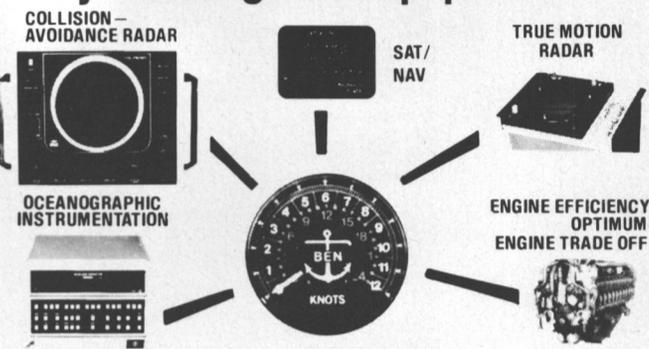
Other shipyards will feature on the national group stands which are being mounted by the U.S. Department of Trade, the Netherlands Council for Trade Promotion, West Germany, and Japan.

The Marintec Asia 79 Exhibition is being held in conjunction with the following seminars: "Shipcare 79" — theme of which is cost-effective ship operation, maintenance and repair; "Seatec II" — devoted to port works and dredging; "Inter Island Shipping" — maritime transportation as a means of economic development, and "Cargo Handling" — improving land-sea interface conditions.

Sponsors of Marintec Asia 79 are: SEDB—Singapore Economic Development Board; IAPH—International Association of Ports and Harbours; SASAR—Singapore Association of Shipbuilders & Repairers; ICHCA—International Cargo Handling Co-ordination Association, and UNESCAP—United Nations Economic and Social Commission for Asia and the Pacific.

For further details, write to Marintec Asia 79, 53-55 Chipstead Valley Road, Coulsdon, Surrey, U.K.

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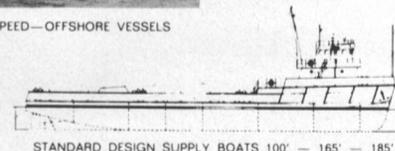
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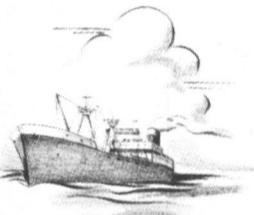
...here are some thoughts on fuel systems that could mean a lot to you

Smooth operation of your fuel system is as critical as any function on your ship. And when you're a thousand miles out of port, you are just as vulnerable as the fellow whose



power plant sits in the middle of the desert — there's just no way any equipment manufacturer's service crew is going to reach you as quickly as you need when you're in trouble. When difficulties arise the only resources you have to rely on are your own.

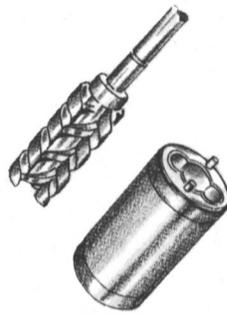
If you're lucky, the people who built your power plant thought about this long beforehand and specified major components of high reliability and maintainability. They understood that the idea of preventive maintenance actually extends back to the equipment manufacturer and starts long before a plant or ship is ever commissioned.



Ask anyone who ever served belowdecks Marine engineers have known this for a long time, which is why you find IMO® pumps specified almost exclusively for engine room and fire room service in commercial vessels and both surface and underwater ships of the U.S. Navy. It's also why you will find that most men in your profession know that IMO pumps are some of the most reliable pieces of equipment you can find anywhere.

There are three basic reasons for reliability—the first is design

The three screws of an IMO pump are generated according to involute geometry, a thread form so precise that oil is moved axially with high volumetric efficiency but without significant metal-to-metal contact between the screws. Nor is there metal-to-metal contact between the screws and their housing. A hydrodynamic oil film supports them in their bores just like journals. Thus, little friction and wear develop *anywhere* in an IMO pump. And because there are no radial bending loads and axial loads are balanced hydraulically, there is little that ever goes wrong with it beyond an occasional seal needing replacement.



The second reason is manufacturing

Rotors in IMO pumps from Delaval are deep-nitrided to R_c 55/60. This heat treatment is entirely different from surface improvement techniques which do not provide a case-hardened surface. Rotors are then thread-ground for maximum accuracy and to compensate for distortion under load. Expedients like lapping can't accomplish this and can even introduce running interference. As for the rotor housing bores, Delaval expends as much care on them as on the rotors. All three bores are broached simultaneously to give consistently accurate clearance and optimum surface. What these fea-

tures all add up to is greater pressure capability, greater margin when handling low viscosity fuels or running at elevated temperatures, and most of all, less wear, longer life, fewer troubles.

A third reason is maintainability

All Delaval IMO pumps recommended for fuel service incorporate replacement rotor housings within a permanent case. If you ever do have trouble with a pump, you don't have to throw out the baby with the bath water. You can do repairs quickly without renewing external casing. (The separate housing within the casing is also an extra safety feature.)

When you are at sea, knowing that fuel in your power plant is moved by IMO pumps gives a man a secure feeling. It's good to know, too, that when you're in port, a local Delaval representative is only as far as your telephone. Call him whenever you want information about any aspect

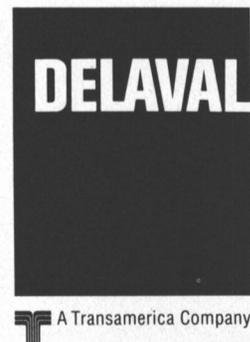


of specifying, using or maintaining Delaval IMO fuel pumps. Or if you want, write directly to IMO Pump Division, Delaval Turbine Inc., POB 321, Trenton, NJ 08602, or call 609: 587-5000.

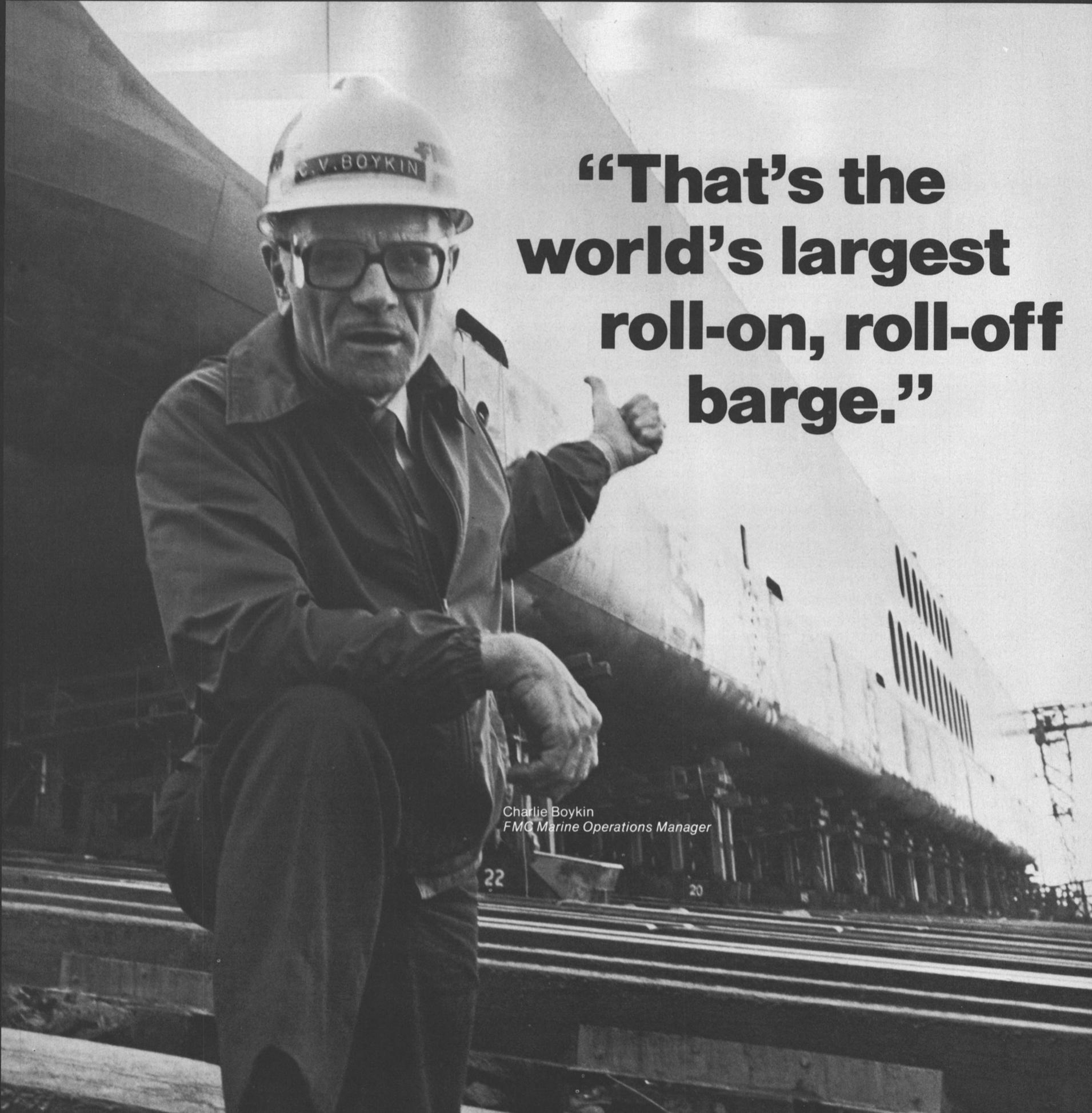
For 46 years Delaval has been making IMO pumps for practically every marine fuel: Bunker C, NSFO, Navy distillate, crude, JP-5, residuals and blends. Delaval IMO pumps have been proven in steam plant burner and transfer service, gas turbine fuel injection, and diesel engine fuel service. That's a long, long record of reliability.

DEL 352A

October 1, 1978



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Large Attendance Apparent For Ship Vibration Symposium

The Society of Naval Architects and Marine Engineers (SNAME) is joining with the interagency Ship Structure Committee (SSC) in the sponsorship of an international Ship Vibration Symposium to be held at the Sheraton National Hotel in Arlington, Va. (Metropolitan Washington, D.C.), on October 16-17, 1978. The registration list promises a large attendance.

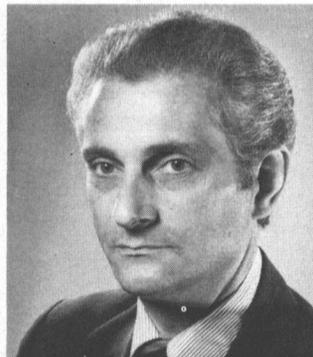
The symposium will bring together representatives of the maritime community, including ship operators, builders, designers, researchers, governmental and classification bodies to discuss all aspects of ship vibration, noise, and hull/machinery incompatibility. It will foster an awareness and appreciation of shipboard vibration and noise problems.

Port Weller Dry Docks Names Waring And Elliott



Brian G. Waring

Duncan Maxwell, president of Port Weller Dry Docks of St. Catharines, Ontario, Canada, a division of Upper Lakes Shipping Ltd., has announced the appointments of two senior staff members. Brian G. Waring becomes vice president, responsible for production, productivity, planning and cost control, and computer systems. Mr. Waring's previous appointments with the company included outfit superintendent, general superintendent, and manager of planning and control.



Alex N. Elliott

Alex N. Elliott has been appointed technical manager, responsible for the administration of the drawing offices and the estimating and design offices, as well as domestic and international marketing. Prior to his appointment, Mr. Elliott was Port Weller's naval architect.

MarAd Approves Title XI Guarantee For Eagle Dredge

Deputy Assistant Secretary of Commerce for Maritime Affairs Samuel B. Nemirow has approved in principle an application by Eagle Dredging Corporation, Suite 3700, One Shell Square, New Orleans, La., for a Title XI

guarantee to aid in financing the construction of one self-propelled hopper suction dredge. Eagle is owned by Bean-Volker Corporation and Royal Adriaan Volker Group B.V.

Avondale Shipyards, Inc., has been selected to build the dredge, with delivery scheduled for the fall of 1980. The dredge will have an overall length of approximately 328 feet and a molded beam of 68

feet. Its full load displacement at dredging draft will be 10,876 long tons, and it will be capable of a speed of 14 knots. Eagle anticipates that the vessel will be employed on Federal dredging projects, varying in duration from a few months to over a year.

The estimated actual cost of the dredge is \$37,937,389; 87½ percent of that amount is eligible for the Title XI guarantee.

Barnacles, sea lettuce, green algae, tube worms. They all have one thing in common. They chew up millions of dollars yearly. Dollars that should have been profits. They're slow death to the efficiency of any ship. Whether it's a bulk ship, tank ship or dry cargo ship. Whether it's a coastal ship or VLCC. And the bigger they come, the faster profits fall. With regularly scheduled SCAMP® underwater hull cleanings, fuel savings alone for VLCC's operating between 12 and 14 knots can be anywhere from \$210,000 to \$340,000 over a 2½ year dry dock cycle. Depending on water temperature, displacement, weather, currents and other variables. Interesting?

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Powered by two General Motors EMD diesels, the tug Jabbar will be employed docking and undocking the largest tankers in the world at ARAMCO's Ras Tanura facility in a remote area of Saudi Arabia.

Built By Main Iron Works, The 6,000-HP McAllister Tugboat Jabbar Will Work In Arabia

McAllister Brothers, Inc. recently accepted delivery of the 6,000-horsepower shipdocking tug Jabbar from Main Iron Works of Houma, La. The tug is on a long-term charter to ARAMCO and will be owned and operated by International Tug Services, a Saudi Arabian joint venture company, in which McAllister is a partner. International Marine Services, a well-known tug operator in the Arabian Gulf, is a partner, as well as the Olayan Group, a successful Saudi Arabian

business family. Sheik **Khaled Olayan** is the chairman of the company.

The tug was designed by McAllister Brothers' engineering staff headed by **Donald C. Hankin**. Design criteria for the tug were developed by Capt. **E.C. Brown** and **Michael Stegenga** of ARAMCO, to handle the largest tankers in the world, currently 550,000 tons, that now call at the ARAMCO Ras Tanura facility in Saudi Arabia. The propulsion systems and the Horton/Kort nozzles were

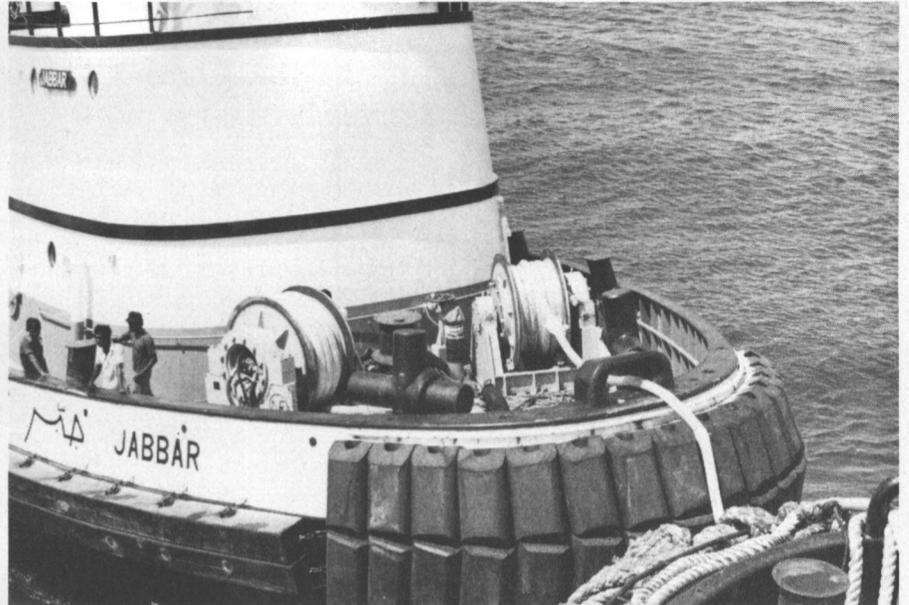
SPECIFICATIONS

General

LOA	126' 0"
Beam	36' 0"
Depth	19' 0"
Draft	17' 6"
Gross Tonnage	195.81
Speed	13 knots
Loaded Displacement	1010 L.T.S.W.
Quarters	6 berths upper deck 8 berths main deck

Capacities

Fuel	100,000 gallons
Lube Oil	1,500 gallons
Hydraulic Oil	700 gallons
Reduction Gear Oil	700 gallons
Fresh Water	8,000 gallons
Potable Water	3,000 gallons
Liquid Foam	3,500 gallons



One of the most important features of the new Jabbar are the newly designed automatic line-handling winches as shown on the foredeck of the tug.

designed by **Clancy Horton** of Wilton, Conn.

The tug's design includes provisions for the difficult task of handling the large tankers during heavy weather, especially during the Shamal season. For this reason, the tug is fitted with two automatic bow winches built by New England Trawler, which hold 250 feet of 11-inch-circumference Samson braided dacron lines and are controlled by the captain from the pilothouse.

In order to provide the thrust necessary to handle these large tankers with adequate safety margins, the tug is equipped with Horton/Kort nozzles. These nozzles give the tug exceptional thrust astern (130,000 pounds), as well as ahead (160,000 pounds). The high maneuverability of the tug is developed by a six-rudder system (two main rudders and four flanking rudders) which are quick acting (seven seconds hard over to hard over).

The tug has been designed primarily to perform as a tractor tug, but local shiphandling customs require the tugs to operate also in the European style; there-

fore, the Jabbar is fitted out with a remote quick-release towing hook supplied by New England Trawler. The unique bow fender system pioneered by ARAMCO and developed by Uniroyal and McAllister for this vessel is extruded low-friction rubber 16 inches by 16 inches by 4 feet long, molded around a steel plate with stainless-steel bolts for fitting on the bow. With this method, bow fenders can be changed by the crew and do not require shipyard or crane service.

The facility at Ras Tanura is situated in a remote area of Saudi Arabia, and for this reason, the tug is outfitted with extensive firefighting and antipollution devices as well as duplicate or complete backup systems for all major functions, such as air-conditioning, generators, hydraulic system, and electrical system.

McAllister Brothers believe that the tug Jabbar is the most powerful tug ever built specifically for shiphandling. The name "Jabbar" means "Powerful" in Arabic, and its new owners feel that it will perform accordingly.



Among others attending trials at the tug's delivery in New Orleans were, left to right: **John Annas**, president of International Tug Services; **Barry Clark**, ARAMCO, Saudi Arabia, and **Brian McAllister**, vice president of McAllister Brothers, Inc.



The new 6,000-hp tug Jabbar is shown utilizing the newly designed bow winches for tractor towing.

EQUIPMENT ON M/V JABBAR
(McAllister Bros. Tug)

Main Engines	Two General Motors EMD 16-645-E7A each rated 2,875 bhp @ 900 rpm
Reduction Gears	Two Falk Model 3040MR 4.962:1 ratio
Generators	Three Detroit Diesel
Propellers	Avondale Shipyards, Inc.
Bow Winches	New England Trawler Equipment Co.
Anchor Windlass	New England Trawler Equipment Co.
Towing Hook	New England Trawler Equipment Co.
Primary Radar	ITT Decca Marine, Inc.
Secondary Radar	ITT Decca Marine, Inc.
VHF Radio	ITT Decca Marine, Inc.
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General Alarm	Hose-McCann Telephone Co., Inc.
Transformers	Square D Company
Evaporator	Maxim (Riley-Beaird, Inc.)
Steering	Sperry Vickers Div. of Sperry Rand Corp.
Fire Pump	Aurora Pump
Fire Pump Engine	Detroit Diesel
Air-Horn	Kahlenberg Bros. Co.
Searchlights	Perko, Inc.
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Stuffing Box	Johnson Corp.

**Hong Kong Owners
Buying Secondhand Ships**

The Hong Kong Trade Development Council reports that Hong Kong shipowners are buying secondhand ships in world markets at the rate of \$60 million worth over the past several months. Since April, owners in the Colony have bought more than 20 ships ranging from the very large crude carriers (VLCCs) and ore-oil carriers to small cargo vessels. In a recent interview, one leading Hong Kong shipowner said that the price his company paid last April for two ore-oil carriers was 75 percent less than what similar vessels would cost today.

The reason given for Hong Kong's strength as a buying power is the fact that its shipowners have generally been able to steer clear of the adverse effects of the world shipping recession that occurred between 1974 and 1977. This was attributed to the "conservative" way they operate their business. According to **Frank Chao**, the president of Wah Kwong and Co. (HK) Ltd. and vice president of the International Shipping Federation, "we always find employment in long-term charter for the ship before we acquire it."

**Swedish Government
May Permit Kockums
To Sell Subs Abroad**

A "positive response" has been received by the shipbuilding company, Swedish Kockums Varv AB, from the government to sell a model of a civilian submarine abroad — the Type 45, according to **Sven Rahmberg**, manager of Kockums Naval Division.

"Kockums has placed offers for submarines in a foreign country, and to sell to that country it is necessary to have a license from the government. The government response has been good, so I think Kockums will get the license," Mr. **Rahmberg** said from Kockums Malmo headquarters.

He would not reveal with which country Kockums placed the offers, but he said that the contract would amount to about 500 million Swedish kroner (4.46 Swedish kroner equals one U.S. dollar), and would mean employment for some 200 persons over a five-year period.

He also would not confirm the exact number of subs involved, but indicated that the contract would call for the sale of between two and three vessels.

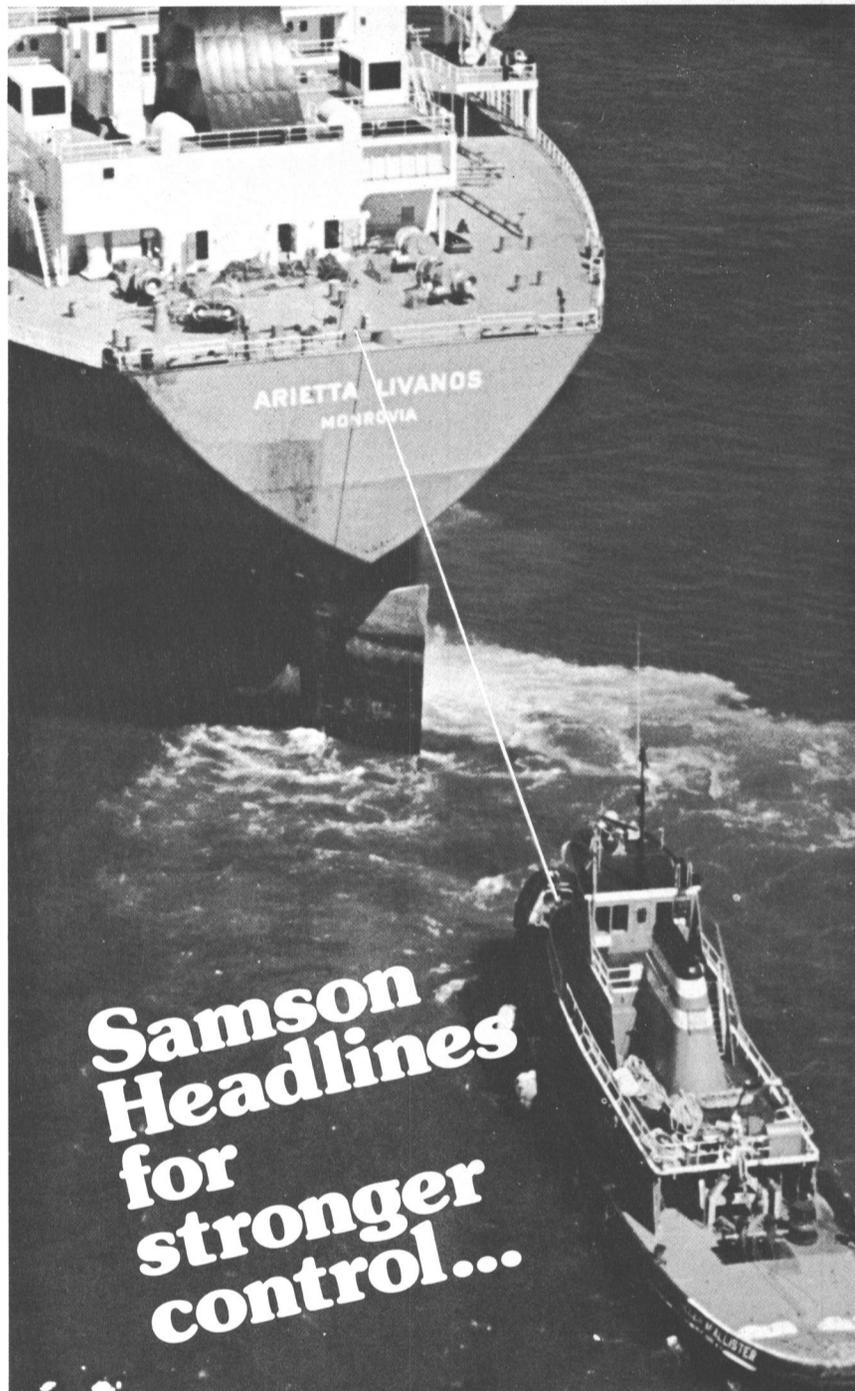
**Asks Title XI Aid For
Construction Of \$14-Million
Drilling Platform**

Southern Marine-A Joint Venture, 900 Corpus Christi National Bank Building, Corpus Christi, Texas, has applied for Title XI financing to aid in the construction of the J Storm X, a mobile jackup drilling platform.

The 275-foot, three-column, mat-type drilling platform, cur-

rently under construction at Bethlehem Steel's Beaumont, Texas, facility, will be contracted for drilling operations in the Gulf of Mexico. Scheduled to be delivered in January 1979, the platform will be capable of operating in water depths of at least 23 feet. It is designed to be towed to drilling locations.

The Title XI guarantee would be for approximately 75 percent of the estimated actual cost of \$14,550,000.



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**Title XI Requested To
Reconstruct Flat-Deck
Oceangoing Barges**

Allied Barge, Inc., P.O. Box 717, Norfolk, Va., has applied for a Title XI guarantee to aid in financing reconstruction of two nonself-propelled, flat-deck, oceangoing barges, the Cindy F and Susan F. The application states

that the Cindy F will be used to carry clean petroleum products from Yorktown, Va., to various Northeast ports, and the Susan F to transport liquid and dry cargoes between the East and Gulf Coasts. Both barges are currently owned by Bulk Food Carriers, Inc., but Allied is negotiating a purchase agreement.

The barges were built by the Seatrain Shipbuilding Corp.,

Brooklyn, N.Y., in 1976. They are approximately 300 feet long, 90 feet wide, and 22 feet deep.

The Title XI guarantee would be for approximately \$2,230,000, or up to 87½ percent of the estimated actual cost of the work. Allied Repair Service, Inc., would perform the reconstruction of the Cindy F; the shipbuilder for the Susan F has not yet been determined.

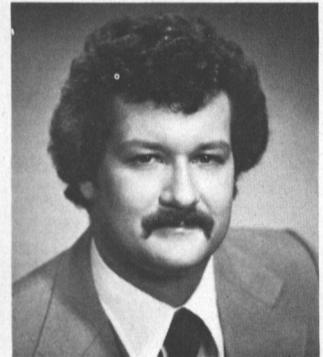
**University Of Michigan
Naval Architects To Hold
Annual Dinner Nov. 16**

The Annual Dinner of the Naval Architecture and Marine Engineering Alumni of The University of Michigan will be held in New York City on Thursday, November 16, 1978, at the Cambridge Room, Lower Concourse of the International Building, 630 Fifth Avenue, between 51st and 52nd Streets. The reception will start at 6 p.m.

Please note that this dinner will take place during the Annual Meeting of The Society of Naval Architects and Marine Engineers on the night before SNAME's Annual Banquet.

Those interested in obtaining tickets for the dinner should contact Lester Rosenblatt of M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013. All Michigan alumni, family and friends are welcome.

Triangle Fleeting Corp.
Names Jeffrey Kindl
VP And General Manager



Jeffrey S. Kindl

Jeffrey S. Kindl has been appointed vice president-general manager of Triangle Fleeting Corp., a wholly owned subsidiary of United Barge Co., it was announced by Robert A. Kyle, president of Triangle Fleeting. United and Triangle are part of the Inland Waterways Division of Pott Industries Inc., St. Louis, Mo., which also includes Federal Barge Lines, Inc.

In his new position, Mr. Kindl will be responsible for the total operation, dispatch and marketing of the fleets and harbor tugs at Reserve, St. Rose, and New Orleans, La. He will be located at Triangle Fleeting Corp.'s headquarters at their new fleet site in Reserve about October 1. Triangle will offer marine services consisting of tug shifting, barge cleaning and topside repairs to the barge industry throughout the New Orleans area.

Mr. Kindl is a 1970 graduate of the University of Missouri, with a degree in business administration. He is a member of the World Trade and Traffic Club of New Orleans, and serves as vice president of the Greater New Orleans Barge Fleeting Association.

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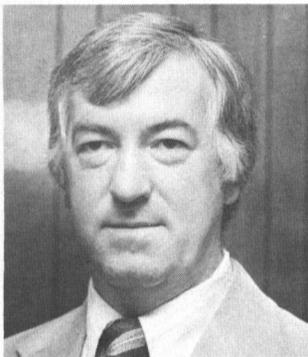
DESIGNERS & PLANNERS, INC. (Naval Architects): New York - Galveston - Washington, D.C.

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National Marine Service Names Glennon Bequette Shipyard Division VP

Glennon G. Bequette has been appointed vice president-business development of the Shipyard Division of National Marine Service Incorporated, D.A. Wright, president of the company announced.

Among his new duties, Mr. Bequette will have the responsibility for expanding the division's diesel engine services in both marine and non-marine industries. He will continue his present supervisory duties regarding the division's purchasing and sales activities.



Glennon G. Bequette

Mr. Bequette joined National Marine in 1963 after several years in other work in the marine field. He has since held a number of supervisory and managerial positions with the company. He remains headquartered at Hartford, Ill., and reports directly to E.E. Ahlemeyer, president of the Shipyard Division and corporate vice president.

National Marine Service is a leading supplier of liquid bulk transportation services on the Mississippi River System and the Gulf Coast. The company's shipyard at Hartford offers full-service facilities for barge and towboat repairs. Its diesel repair services are widely recognized as among the most expert in the United States. Its diesel engine repair crews service the needs of customers in all parts of the world.

PRC Awards Contract To Thunderbolt Marine

Planning Research Company (PRC), under contract to the U.S. Army, recently awarded a sub-contract to Thunderbolt Marine Industries (TMI), P.O. Box 5628, Savannah, Ga. 31404, for repair and modernization of the 100-ton crane barge BD6659, and modernization of the 60-ton crane barge BD6081. The dockside work is being done at TMI's Savannah facility. PRC, out of San Diego, Calif., is acting as the contract administrator for the Army. TMI is the marine division of the Latex Construction Company, headquartered in Atlanta, Ga., pipeline contractors for over 35 years.

Royal Netherlands Orders Three New Freighters From Dutch Shipyards

Maarten L. de Ruiter, managing director of Royal Netherlands Steamship Company (Antilles) N.V., has announced that three new multi-purpose freighters have been ordered from Dutch shipyards for the company's U.S. East Coast Services to the Caribbean and South America. Before

the end of this year, a decision will be taken to order a fourth unit.

The new relatively small but extremely versatile vessels will have a maximum deadweight capacity of 5,090 tons and will be suitable for the carriage of containers, breakbulk cargo or bulk cargoes. Each vessel will be 270 feet long, and 52 feet wide. A Stork-Werkspoor diesel engine of 4,370 bhp will give the ships a

service speed of 13-14 knots. In addition, they will be fitted with a controllable-pitch propeller and bow thruster. The vessels are self-sustaining with gear suitable for handling both 20-foot and 40-foot containers, as well as breakbulk cargo and heavy lifts.

All vessels will fly the Dutch flag and enter Royal Netherlands' services in the course of next year, with the first unit ready in May.

MEMO FROM MARSH & McLENNAN

The river keeps changing all the time. The same goes for marine insurance.

There's one thing you learn quickly when you're involved in barge traffic: the river is full of surprises. As soon as you start taking it for granted—watch out! Much the same can be said about marine insurance. On the surface, it may appear simple and serene—but watch out!

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Continuing insurance programs "the same as always" might be easy—but it could be costly. There may be a better way. Start looking at your needs from a new angle and you may be surprised at what you find.

Marsh & McLennan would like to help you. We know our way around the inland waterways business because we've been in it for over 100 years. Maybe you didn't know it, but we handle more marine business than any other insurance broker.

If all this experience has taught us anything it's this: insurance premiums should not be an expense you pay and kiss goodbye. This cash is a management tool, to be applied in the way it can do the most good for the organization.

By approaching a problem with this in mind we are able to design new programs that may take advantage of self-insurance or that can return a portion of the premium where losses are less than projections. Fresh, bright, innovative ideas that *work for*



you, not just *take from* you.

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And when it comes to fast service, we have a network of offices up and down the rivers, from the headwaters to the Gulf. When the unexpected happens, we're on the spot in a hurry.

We think you'll find many advantages in dealing with the world's leading insurance broker. Not only are our global resources applied to your needs, but our offices everywhere provide the contact points to put them at your disposal.

If you'd like to learn more about how we can help you in any

area of marine insurance, write Jim Wilmers, Marsh & McLennan, Incorporated, 120 E. 4th St., Suite 520, Cincinnati, Ohio 45202. Phone: (513) 721-5557.

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**Gotaverken Plans
To Build 37,000-DWT
Icebreaking Bulker**

Advanced plans for the construction of a 37,000-dwt bulk cargo ship, with an unparalleled capacity to operate in Arctic waters, have been made by the Gotaverken Arendal Shipyard in

Goteborg, West Sweden. The yard recently presented its latest study on the vessel at a recent international symposium, entitled "Ice Problems," in Lulea, northern Sweden.

The vessel, which would be the first built to Class 10, the highest Canadian ice class, will be capable of operating in Arctic waters throughout the year, and its spe-

cially reinforced hull—designed with the help of computers—can theoretically withstand impact with 3-meter-thick ice (about 10 feet). Propulsion will be provided by two steam turbine engines, each generating 20.6 mw (28,000 hp).

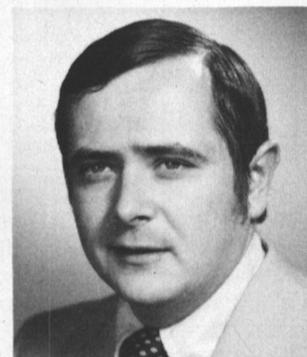
The ship will have an overall length of 154.4 meters (about 507 feet), a beam of 32.23 meters

(106 feet), and a draft of 12.19 meters (40 feet). It will carry one mobile crane—stored in a heated garage when not in use—and one helicopter. Chiefly intended for ore transports from the Arctic, the vessel will also be able to carry the wide range of equipment and other materials needed for the exploitation of the Arctic's resources.

**John J. Bajor Joins
Midland Marine Corp.**

James A. McQuilling, president of Midland Marine Corporation, recently announced that **John J. Bajor** has joined the sales staff in Midland Marine's New York City office. Mr. Bajor will expand their ship repair sales effort under the leadership of Wayne H. Christensen.

Midland Marine acts as exclusive agents in the United States and Canada for a worldwide group of shipyards.



John J. Bajor

Mr. Bajor is a graduate of the United States Merchant Marine Academy and also holds a graduate degree, M.S. in management engineering from Newark College of Engineering. Mr. Bajor has wide experience in the marine engineering field, both at sea and ashore. For the last nine years, prior to this appointment, Mr. Bajor was employed by the marine departments of Exxon, U.S.A., and Exxon International Company in various capacities. His most recent assignment was that of repair superintendent of VLCC-type vessels.

**Military Sealift Orders
Tracor Automatic Omega**

Tracor Instruments has been awarded a contract to install Tracor Automatic receivers on 16 ships of the United States Military Sealift Command.

These receivers will provide worldwide navigation capability.

The Automatic Omega is the latest in marine navigation systems from Tracor, a company having extensive experience in sophisticated electronic systems for navigation and defense.

Headquartered in Austin, Texas, Tracor is also quite active with Satellite Navigators, which are sold and serviced worldwide. For further information, contact Tracor Instruments, 6500 Tracor Lane, Austin, Texas 78721.

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General Electric Credit Buys Its Eleventh Tanker

General Electric Credit Corporation (GECC) announced it has acquired for \$89,980,000 the 165,000-dwt Thompson Pass, a new crude carrier to transport Alaska oil to the U.S.

The vessel will be time chartered to SPC Shipping, Inc., a

subsidiary of The Standard Oil Company of Ohio (Sohio). It will be operated for Sohio by IOT Corporation.

Built at Avondale Shipyards in New Orleans, La., the 906-foot-long vessel can carry up to 1.2 million barrels of oil. It sailed August 25 for Cape Horn, and is expected to arrive at Valdez, Alaska, about October 25.

GECC owns 10 other tankers totaling 1,378,500-dwt with a first cost of nearly \$644 million.

The Thompson Pass was acquired August 23 under a leveraged leasing arrangement whereby GECC invests a portion of the purchase price in a trust which borrows the balance of the vessel's cost from long-term lenders.

A spokesman for the Stamford,

Conn.-based financial arm of the General Electric Company said that although the international tanker market is currently depressed, the demand has been strong for vessels to be used to carry Alaskan crude. Tankers operating between U.S. ports must be American-flag vessels; this has eliminated the bulk of idle worldwide tanker tonnage from consideration.

The Thompson Pass is the third tanker GECC has purchased for long-term charter to Sohio. In the last year, GECC also acquired under leveraged lease arrangements two 165,000-dwt sister-ships to the Thompson Pass—the Atigun Pass and the Keystone Canyon. Both were built at Avondale.

GECC acquired sole ownership of the Atigun Pass and is the joint owner of the Keystone Canyon with Bankers Trust Co.

The new vessel brings the Sohio charter fleet to more than 30 tankers. Sohio owns more than 50 percent of Alaska North Slope crude and one-third of the Trans-Alaska Pipeline System.

Worthington Receives \$2.5-Million Order For Navy Compressors

The U.S. Naval Sea Systems Command has ordered 22 marine compressors worth over \$2.5 million from the Process and Gas Division of Worthington Compressors, Inc., as part of a fleet modernization program.

The 50-horsepower, high-pressure, oil-free units will replace existing equipment aboard older surface ships. Delivery will be during the first six months of 1980 to various U.S. Navy supply depots across the country.

Navy shipboard compressors are used for missile launchings, pumping air banks on tenders, etc.

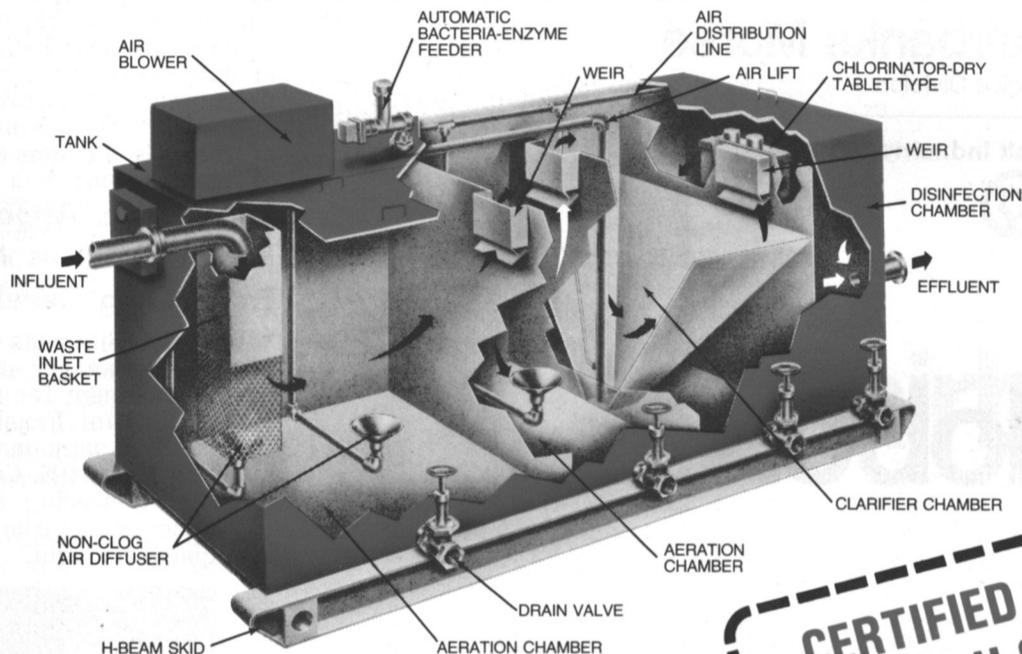
Ship Deliveries Worldwide For 1976 Published By MarAd

The Maritime Administration has published an accounting of worldwide merchant ship deliveries during calendar year 1976, and of the ships under construction as of the end of that year. Listings include breakdowns by vessel type, country of construction and country of registration.

Domestic and foreign shipyards delivered 1,242 new merchant ships totaling 60.4 million deadweight tons during 1976, the report indicates. As of December 31, 1976, there were 2,682 oceangoing merchant-type vessels under construction and/or on order throughout the world, it says.

Copies of the report, "New Ship Construction," prepared by MarAd's Office of Trade Studies and Statistics, are available through the agency's Office of Public Affairs, 3895 Department of Commerce Building, Washington, D.C. 20230.

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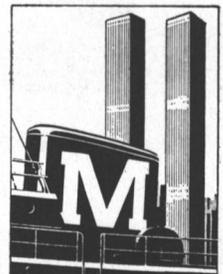
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Chairperson, Member Appointed To Kings Point Advisory Board

Secretary of Commerce **Juanita M. Kreps** has appointed **Vincent Cannaliato Jr.** chairperson, and **Thomas J. Smith** a member of the Advisory Board to the United States Merchant Marine Academy at Kings Point, N.Y.

Mr. Cannaliato, vice president, corporate finance department, Kidder, Peabody & Co., Inc., New York, N.Y., has served as a member of the Kings Point Advisory Board since March 1974. He succeeds **Edward Heine Jr.**, president, United States Lines, who had chaired the board since 1974.

Mr. Smith, who is president, chief execu-

tive officer and a director of Farrell Lines Incorporated, New York, N.Y., was appointed to a three-year term as a board member, replacing **Mr. Heine**.

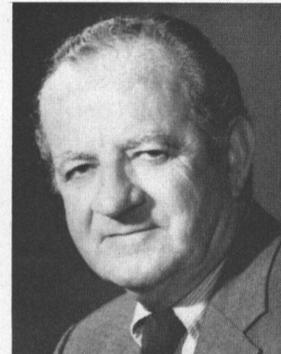
Others currently serving on the seven-member board are **Dr. Irene Carswell Peden**, professor of electrical engineering at the University of Washington in Seattle; **John P. Diesel**, executive vice president and director of Tenneco, Inc., and chairman of the board, Newport News Shipbuilding & Dry Dock Co.; **Herbert E. Brand**, president, Transportation Institute; **Peter Fanchi Jr.**, president, Federal Barge Lines; and **Joe Scroggins Jr.**, economist, Vessel Trading and Traffic Division, Continental Oil Co.

The objective of the board is to examine the course of instruction and management

of the Academy, and advise the Assistant Secretary of Commerce for Maritime Affairs **Robert J. Blackwell** regarding policy and program guidance. The Academy is a four-year accredited institution under the direction of the Maritime Administration, a Commerce Department agency headed by **Mr. Blackwell**.



Vincent Cannaliato Jr.



Thomas J. Smith

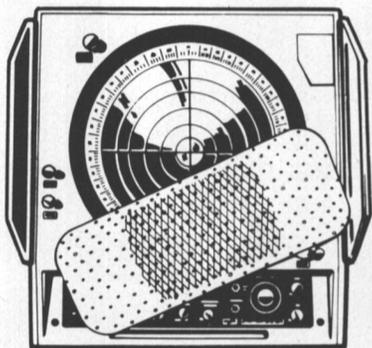
Mr. Cannaliato, a native of Brooklyn, N.Y., and resident of Wyckoff, N.J., joined Kidder, Peabody in 1972 as associate vice president, corporate finance department, specializing in leasing and project financing. He served as a U.S. Army officer in Vietnam, where he received the Bronze Star and other citations.

He holds a B.S. degree from Fordham University and an M.A. degree from Brooklyn College, the City University of New York (both in mathematics), and also is a graduate of the Systems Design Graduate Program, Wharton School of Finance and Commerce, University of Pennsylvania.

Mr. Smith entered the steamship industry as a member of the Clerks and Checkers Local of the International Longshoremen's Association. Employed by Farrell Lines as pier superintendent in 1942, **Mr. Smith** served in a number of capacities, including executive vice president, before becoming president and a member of the steamship company's executive committee in 1968. He was appointed chief executive officer in 1970.

A native of Pittston, Pa., and a resident of Oradell, N.J., **Mr. Smith** attended Josephinum College, Columbus, Ohio, and John Marshall College of Law, Jersey City, N.J.

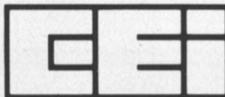
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U.S.-Flag Fleet To Double In The Last Quarter This Century

Waterborne U.S.-foreign trade will increase by more than 130 percent, and the U.S.-flag merchant fleet is expected to more than double both its deadweight tonnage and percentage of market share in the last quarter of this century, a study commissioned by the Maritime Administration (MarAd) indicates.

The report, entitled "Merchant Fleet Forecast of Vessels in U.S.-Foreign Trade," includes a 27-page Executive Summary, a detailed Final Report, and three appendices. It was prepared for MarAd under a \$90,000 contract by Temple, Barker & Sloane, Inc. (TBS), management and economic counselors of Wellesley Hills, Mass. In its introduction, TBS noted the forecast of vessel requirements for U.S.-foreign trade, 1975-2000, was derived from a new methodology, described as much more precise than was ever before possible. The new fleet forecasting procedures were used in conjunction with a MarAd cargo study, "A Long-Term Forecast of U.S. Waterborne Foreign Trade, 1976-2000," released in November 1977.

The fleet forecast is expected to provide important inputs to various segments of the U.S. maritime industry, including steamship companies, shipyards, and port authorities. "In addition," the report said, "Government agencies can use an expanded fleet forecasting capability to help allocate research and development funds as well as gain insight into

the impact of alternative policy decisions."

The importance of this capability as a policy-planning tool is emphasized in connection with the study's projection of substantial growth for the U.S.-flag fleet. In forecasting an increase in the U.S.-flag share from 5.3 percent in 1975 to 11.7 percent in the year 2000, the report noted this projection "was largely the result of forecast increased support for U.S.-flag tankers and dry-bulk carriers . . . Although liner type vessels account for the majority of vessels to be built (during the forecast period), on a deadweight basis they represent a much smaller portion.

"Since the dry-bulk vessel and tanker forecasts are heavily dependent on future Government policy to maintain the projected growth, U.S. shipyard activity to support this construction is very sensitive to assumptions regarding Federal maritime policy."

The foreign trade considered in the forecast includes oceanborn commercial cargoes and military and non-military shipments under U.S. cargo-preference laws, but not military cargoes for the U.S. Armed Forces or U.S.-Canadian commerce moving within the Great Lakes. (Liner trade via the St. Lawrence Seaway and Great Lakes is included.)

In the near future, MarAd's Office of Commercial Development expects to hold an industry briefing to obtain comment and feedback on the study. Specific findings in the study regarding the projected world fleet required for U.S.-foreign trade in this quarter-century include:

- While the forecast indicates that trade will increase over 130 percent, it will be carried by a world fleet only 10 percent larger (based on the number of vessels) than the 1975 fleet serving U.S.-foreign trade.

- There will be an increasing reliance upon more sophisticated liner type vessels in the future. During the next 25 years, the number of partial containerships will increase nearly sevenfold, while the number of full containerships will triple. The number of general cargo ships is projected to decrease over the same period by 60 percent.

- Because of the reliance on super tankers as offshore terminals become available, the total number of tankers required to serve the U.S.-foreign trade actually decreases 15 percent over the forecast period. At the same time, the annual capacity of the tanker fleet more than doubles.

- These shifts toward more sophisticated vessels result in significant changes in the composition of the world fleet . . .

- In every ship type, increasingly larger vessels will be built. The largest increases occur in LNG carriers and tankers which increase in average size by 133 percent and 113 percent, respectively. The smallest increase, 14 percent, occurs in barge carriers. The average increase in deadweight per vessel for the whole fleet is 71 percent.

- The average deadweight of new construction for the world fleet will continue to increase consistent with recent historical growth . . . One exception is tankers, where replacement require-

ments for large numbers of small vessels will cause the average size of tanker construction to drop significantly after 1985.

- Not only are vessels expected to increase in size over the forecast period; they are also becoming more efficient. The average annual increase in productivity is expected to be just over 1 percent. The largest increases are for partial and full containerships at 2 percent and 1.9 percent, respectively, and the smallest increase, 0.2 percent, is for combination carriers.

If the forecast U.S.-flag share levels are achieved, the number of vessels in the fleet would increase by nearly 200. This equates to a 75-percent increase in the number of vessels in the fleet and a 108-percent increase in deadweight. New construction activity will also be high, with a total requirement of 474 vessels or approximately 19 vessels aggregating 2 million deadweight tons per year between 1976 and 2000, TBS said.

Other specific findings in the report regarding the U.S.-flag fleet include:

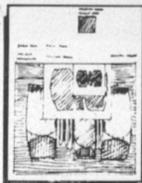
- The U.S. merchant fleet engaged in foreign trade is expected to grow substantially over the 1975-2000 period. The 2000 fleet is projected to be 442 vessels totaling 18,420,000 deadweight tons, compared to 251 vessels in 1975. This growth is a function of both an increase in trade of over 130 percent and an increase in U.S.-flag share from 5.2 percent to 11.7 percent.

- The greatest emphasis in U.S.-flag fleet development is expected to be on non-liner type

(continued next page)

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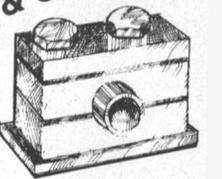


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vessels. The number of these vessels is projected to nearly triple, and on a deadweight basis to increase fivefold.

- The increase in liner type vessels will more closely parallel the growth in trade which results from the U.S. market share, remaining approximately equal to the 1975 U.S.-flag liner shares.

- These shifts in emphasis will result in a significant change in the composition of the U.S.-flag fleet.

- U.S.-flag vessel new constructions are projected to increase over the forecast period. In the 1976-1980 time period, constructions will average about 11 vessels per year. This figure will exceed 25 per year by 2000 if the projected U.S.-flag share is achieved.

- The U.S.-flag fleet reflects a substantially different profile than the world fleet. The differences are most apparent when viewed in the context of liner type vessels (general cargo, partial and full container, and barge-carrying ships) and non-liner type vessels (neobulk and dry-bulk carriers, combination carriers, LNG carriers, and tankers). In 1975, 49 percent of the vessels and 27 percent of the deadweight tons of the world fleet were liner type vessels, while comparable U.S.-flag fleet figures were 82 percent and 64 percent, respectively.

- These differences can be explained by the past emphasis on the liner service in the U.S. maritime policy. The 1970 Maritime Act, which extended subsidy benefits to non-liner vessels, has begun to affect the mix of vessels in the U.S.-flag fleet. This has become apparent in the 1975 U.S.-flag fleet distribution, and is reflected heavily in new construction activity (forecast) from 1976 to 2000.

Copies of the Executive Summary are available upon request to the MarAd Office of Public Affairs, Room 3895, U.S. Department of Commerce, Washington, D.C. 20230. Limited copies of the Final Report, "MERCHANT FLEET FORECAST of Vessels in U.S.-Foreign Trade," are available for review in the same office.

Exxon International Awards Maintenance Contract To Stanwick

The Stanwick Company, a division of The Stanwick Corporation, has been awarded a contract by Exxon International Company to furnish shipboard maintenance and inventory control systems for ships of the Esso Everett-class, comprised of four 37,000-dwt diesel-driven tankers.

The system to be installed will provide a simple, yet effective, method for managing shipboard maintenance and inventory control operations. It will ensure required preventive maintenance actions are performed on schedule in order to minimize unexpected failures, inform Exxon manage-

ment of the current status of maintenance actions and spare parts usage, and permit continuous system operation despite personnel turnover changes. Stanwick's system offers users a low initial implementation cost, operational simplicity with minimum paperwork, plus maximum flexibility for adaption to other ships of an owner's fleet.

According to **Robert Apple**, president of The Stanwick Com-

pany, engineers from Stanwick's Maritime Systems Department and Exxon's Maintenance and Repair staff will establish scheduled maintenance tasks for all maintainable shipboard equipment and prepare the management plan for scheduling, accomplishing, and auditing these tasks. Stanwick will also inventory all shipboard repair parts and furnish a computerized, inventory control program.

The Stanwick Company is prominent in the development and implementation of organized maintenance management systems to maximize "uptime" for today's maritime and offshore industries.

For further information, contact **Bud Kelly**, The Stanwick Company, 3661 East Virginia Beach Boulevard, Norfolk, Va. 23502.

ARMCO ACTION

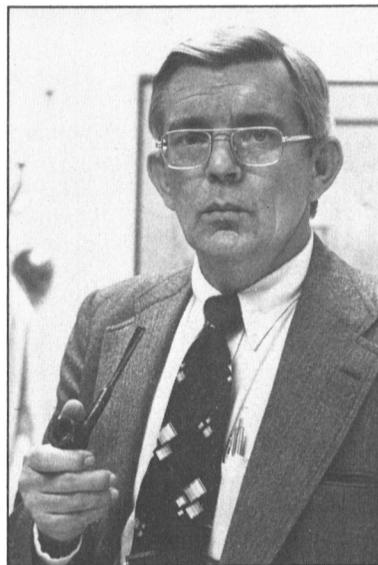
NI-COP Steel: Tough and Weldable

George Kampschaefer speaking for Armco Technical Services - Houston:

"Armco is introducing a tough new alloy steel that will give you enhanced engineering properties along with ease of fabrication. We call it Armco NI-COP.

"NI-COP offers you a unique combination of high strength, ductility, notch toughness and good atmospheric corrosion resistance. But just as important to you, it provides exceptional weldability—and at strength levels up to 95 ksi. Preheat or post-heat of welds is ordinarily not required. You and I know this one feature can greatly reduce fabrication costs.

"How do we get these properties? First, NI-COP is a very low-carbon alloy steel produced to fine-grain practice. Second, its metal-



George Kampschaefer
Manager
Technical Services, Houston

lurgy lends NI-COP to various precipitation-hardening heat treatments. In fact, we offer three heat-treated conditions to give you three distinct combinations of strength and toughness. Or you can specify it as-rolled or solution annealed for easy heat treatment in your own plant during fabrication.

"NI-COP is ideal in very cold temperature applications. It's already been used successfully in structures

and piping components on the North Slope. The alloy is well suited for heavy-duty construction and machinery equipment, offshore platforms as well as other marine structures where the design calls for improved weldability and toughness in cold environments.

"You'll want to learn all you can about this unique alloy steel. It may be the material to bail you out of a critical design problem. You may get more information on NI-COP by sending for your copy of our Design & Application folder. Call any of Armco's Steel Sales Offices with your request. Or contact me at 713/960-5559, Armco Steel Corporation, Dept. H-58, 1455 West Loop South, Houston, TX 77027. I'd like to work with you."



ITC Completes 6,237-Mile Dry Tow To Argentina With Six Oil Barges And Two River Towboats



The towboats and barges, weighing 2,670 tons, were loaded at New Orleans, La., on ITC's submerged barge Seacamel-10.

International Transport Contractors Holland B.V. and its subsidiary in Houston, Texas, obtained a contract from the Interfinancial Corporation, Houston, for the towage of two pushboats and six oil barges from New Orleans, La., to Buenos Aires, Argentina.

Contract negotiations for this transport were conducted by International Transport Contractors (USA) Inc. of Houston, a newly formed subsidiary of I.T.C. Holland B.V., where E.A. Punch has been appointed vice president.

The cargo of two pushboats (108 feet by 30 feet and 86 feet by 31 feet) were transported by local tugs from Lockport, La., and the six oil barges (195 feet by 52½ feet by 11 feet) from Houma, La., to New Orleans. The loading took place in the Michoud Canal adjacent to the New Orleans NASA facility. The tugs and barges, weighing 2,670 tons, were loaded on I.T.C.'s submerged barge Seacamel-10.

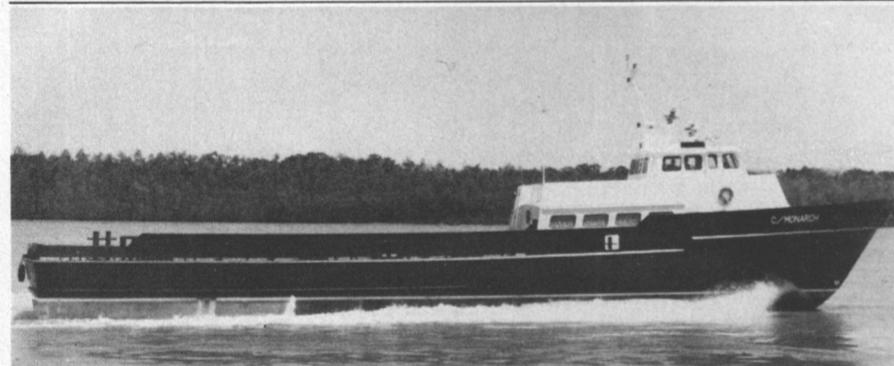
The Seacamel-10 dimensions are 393 feet by 131 feet. The barge is capable of carrying loads of up to 19,500 tons on the 4,500 square meters of deck space.

After the cargo was loaded, the barge was then refloated and the

cargo secured ready for the 6,237-mile voyage to Buenos Aires. With 10,000 ihp at her command, the I.T.C. tug Sinni towed the Seacamel-10 to Argentina. Transit time was 43 days. After delivery, the tugs and barges purchased by the Interfinancial Corporation for Navipar, S.A. were employed to transport crude from Buenos Aires to a refinery in Asuncion, Paraguay.

The activities of International Transport Contractors Holland B.V., Haarlem, Holland, who specialize in heavy ocean transports using submersible barges, and in towage and salvage operations, are rapidly increasing. The I.T.C. fleet now has seven 15,000-ihp oceangoing tugs, three 9,000 to 10,000-ihp ocean tugs, and nine submersible barges of 11,500 to 20,000 tons. Under the guidance of Messrs. Frits Jonkman and L.P.M. Burghowt, managing directors (Holland), I.T.C. has experienced unprecedented growth and development in this specialized area of ocean transportation. In addition to Houston, I.T.C. has also opened offices in Singapore.

The Interfinancial Corporation (Houston), who contracted the sea tow, specializes in the financing of international projects related to the petroleum industry.



SWIFTSHIPS DELIVERY—Jerry Hoffpauir, vice president of Swiftships, Inc., Morgan City, La., has announced the recent completion of the C/Monarch (shown above), owned by PBR Offshore Marine Corporation, also of Morgan City. Roy Haines of PBR stated that the new vessel will be used in the company's Gulf of Mexico operations. The vessel has a total length of 125 feet, a 23-foot 9-inch beam, a depth of 10 feet 4 inches, and a 5-foot 4-inch draft. Her range is 1,450 NM with a top speed of 24 knots. The C/Monarch is powered by two MTU 12V331 diesel engines. The vessel can carry 62 persons, has sleeping accommodations for 20 and a deck space of 40 feet.

NICOR, Inc. To Acquire National Marine Service

C.J. Gauthier, chairman and president of NICOR, Inc., and D.A. Wright, chairman and president of National Marine Service, Incorporated, have announced an agreement in principle under which NICOR would acquire National Marine for 580,000 shares of NICOR's common stock. National Marine would be operated by its present personnel as a NICOR subsidiary.

The transaction is subject to the signing of a definitive agreement and the approval of the shareholders of National Marine.

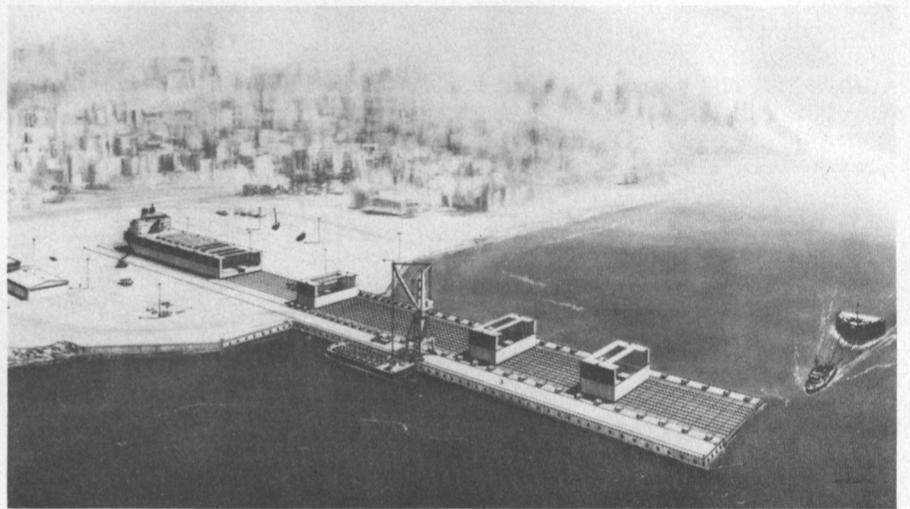
NICOR, through its subsidiaries, is engaged in the exploration and development of gas and

oil properties, contract drilling for oil and gas producers, the acquisition of coal reserves, the purchase, manufacture, storage, distribution and sale of natural gas and other areas of energy-related activities. Its primary subsidiary is Northern Illinois Gas Company.

National Marine is engaged primarily in the transportation of petroleum and chemical products along the Gulf Coast and inland waterways of the U.S. It also maintains facilities for the repair and cleaning of vessels.

Mr. Gauthier said the merger would permit further expansion of the National Marine operations, and would provide NICOR with a viable extension of its energy activities.

Port Weller Dry Docks Plans Shipyard On Lake Erie To Build And Repair Large Ships



Port Weller Dry Docks-Lake Erie assembly facility.

Details of plans for a shipyard facility on Lake Erie to build and repair ships up to 1,100 feet (335 meters) in length have been announced by Port Weller Dry Docks in St. Catharines, Ontario, Canada.

The plans, which require both provincial and federal government assistance, are under discussion with the appropriate ministries of both governments.

Until such a facility is built, Canadian shipyards in the Upper Great Lakes are restricted to vessels 730 feet (222.5 meters) in length by the size of the locks of the Welland Canal.

For the past several years, American shipyards have been building 1,000-foot ships, some of which are now in service, with the result that Canadian shipping is at a competitive disadvantage.

Upper Lakes Shipping Ltd. of Toronto, of which Port Weller Dry Docks is a division, are interested in ordering larger ships than those now being built at Canadian Great Lakes yards. They are more efficient because of their greatly increased cargo capacity, while utilizing the same size of crew, and with only a small increase in fuel consumption.

A new site will be chosen that is reasonably close to the new

industrial complex now nearing completion at Nanticoke. Nanticoke plants, which use large quantities of bulk cargo, include The Steel Company of Canada, Texaco Canada, and Ontario Hydro.

There are obvious advantages to having a repair yard located close by where ships may be dry-docked after discharging their cargoes.

The new facility will include a marine elevating platform which will extend 1,100 feet into the lake at right angle to the shoreline. No elevating platform this size has yet been built, but there are no insurmountable engineering problems involved. It is estimated that the dock will cost \$30,000,000 aside from the cost of land and shore facilities.

The proposal calls for ships' sections to be built at Port Weller Dry Docks in St. Catharines, and towed through the Welland Canal to the Lake Erie site, where they will be joined together. While new ship construction is underway, ship repairs and ship scrapping may be carried on simultaneously at the Lake Erie site.

Detailed studies and planning will be done by Swan Wooster Engineering Ltd. of Vancouver and St. Catharines, who prepared the initial plan.



M/V *Dennis Hendrix* is 180 ft. long, has a 52-ft. beam and a 9-ft. draft. High-alkalinity CAPRINUS R Oil 40 is helping each of her three EMD16-645 E5's dependably deliver 2,800 hp at 900 rpm.

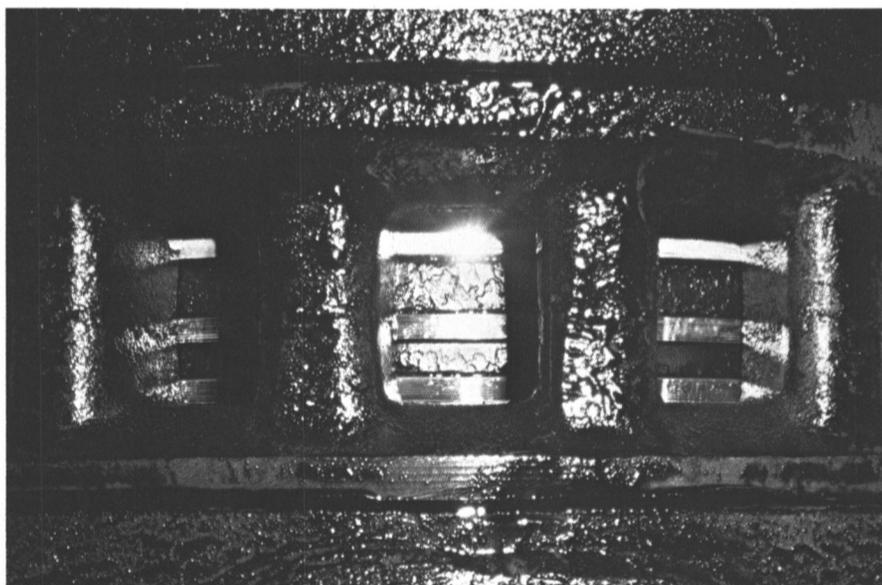
How Shell's CAPRINUS[®] R Oil 40 is helping keep EMD's clean with low wear in the 8,400-hp Dennis Hendrix

High dispersancy and anti-wear properties of Shell's high-alkalinity oil contribute to excellent condition of EMD16-645 E5's after ten months' service.

One of the most powerful towboats on the waterways, the *M/V Dennis Hendrix*, was built by Jeffboat, Inc. It has been in service since July, 1977 for the American Commercial Barge Line located in Jeffersonville, Indiana.

Under her three stacks are three EMD16-645 E5's on Shell CAPRINUS[®] R Oil 40, each rated at 2,800 hp to give the vessel her payload thrust of 8,400 hp.

CAPRINUS R has delivered trouble-free performance for over



Ports are virtually 100 percent open for this cylinder after 5,564 hours on CAPRINUS R Oil 40. Average top ring side clearance .0096 inches. No chipping or scuffing of rings. CAPRINUS R Oil 40 fights deposit buildup and wear, helps lengthen the service life of critical engine parts.

5,560 hours in the port and starboard engines, and for slightly fewer hours in the center engine.

Exceptional cleanliness; low wear

When the vessel docked for a minor mechanical repair, there was an opportunity to inspect her engines. Appearance: excellent. Top decks were clean, free of sludge and lacquer. There were only light carbonaceous deposits in the airbox.

Garland Bradley, Chief Engineer, summed up his impression in one word: "Beautiful!"

Wear levels were equally impressive. Top ring side clearance of port and starboard engine pistons averaged a low .0096 inches. No scuffing or chipping of rings.

Filter life up to 2,776 hours
Filter life is running longer than with the previously used oil — up to 2,776 hours on one of the engines. That's not surprising.

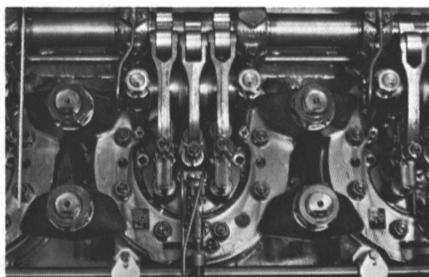
CAPRINUS R Oil's dispersant additive system helps keep contaminants in suspension, prevents heavy deposit buildup on filters. That can mean important savings.

High alkalinity stays on guard

CAPRINUS R Oil *retains* its high alkalinity in extended high-stress service. It neutralizes combustion acids, combats piston and liner wear and the formation of deposits — all at a moderate ash level. Another benefit: CAPRINUS R Oil offers superior resistance to oxidation and viscosity increase over long periods.

Send for our new brochure. See why nearly 100 towboats have made the switch to CAPRINUS R Oil 40! Just write: Shell Oil Company, Manager, Commercial Communications, One Shell Plaza, Houston, Texas 77002.

**CAPRINUS is a trademark and is used as such in this writing.*



After 5,564 hours on CAPRINUS R Oil 40, the top deck of the port engine is sparkling clean; cams polished; heads metal bright. This demonstrates the effectiveness of the high dispersant additive system in CAPRINUS R Oil 40.

Come to  **Shell for answers**

**Butterworth Systems
Receives IMCO Approval**

The line of tank cleaning machines manufactured by Butterworth Systems (U.K. and USA) have received approval, in accordance with the latest IMCO requirements for the design of crude oil washing systems. Effective August 30, 1978, the approval

was made by the United Kingdom Department of Trade and Industry, and certifies Butterworth Systems equipment for use on-board the world's tanker fleet.

The BUTTERWORTH® fixed-in-place tank cleaning machines reviewed by the Department of Trade and Industry are among the first to receive IMCO approval. The machines may be used

for a variety of tank cleaning applications, including water washing as well as crude oil washing (COW).

Included among the machines approved is the LAVOMATIC® SA tank cleaning machine, which features automatic, variable, and/or constant speed controls for highly efficient cleaning in less time, using less washing fluids.

Deck-mounted, this single-nozzle, high-capacity machine is recommended for larger vessels. Its selective arc pattern demonstrates outstanding results in crude oil washing.

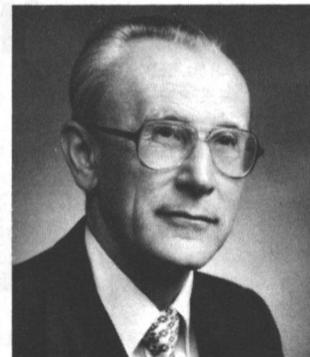
The BUTTERWORTH MP tank cleaning machine, designed for reaching difficult areas in complex tank structures, also meets IMCO requirements. This single-nozzle, high-throughput, fixed-in-place machine can be mounted in any location in any attitude and was specifically designed for installation on tank bottoms, where it will be submerged in the cargo.

Also approved for fixed-in-place applications are the BUTTERWORTH K and SK tank cleaning machines. These twin-nozzle machines clean tanks in the familiar and well-proven "ball of twine" pattern. The SK unit has an effective cleaning range of up to 70 feet, compared to the K machine's 30 feet. In addition, the larger SK machine handles a throughput of 45 to 50 tons per hour, compared with the K machine's throughput of 30 tons per hour.

For full information, including shadow studies required by IMCO, write **Donald Powell**, Butterworth Systems Inc., 224 Park Avenue, Box 352, Florham Park, N.J., USA 07932. In England, write **Terry Thornton**, Butterworth Systems (UK) Ltd., 445 Brighton Road, South Croydon, Surrey CR2 6EU, England.

**Peterson Builders, Inc.
Name Ralph Berg VP**

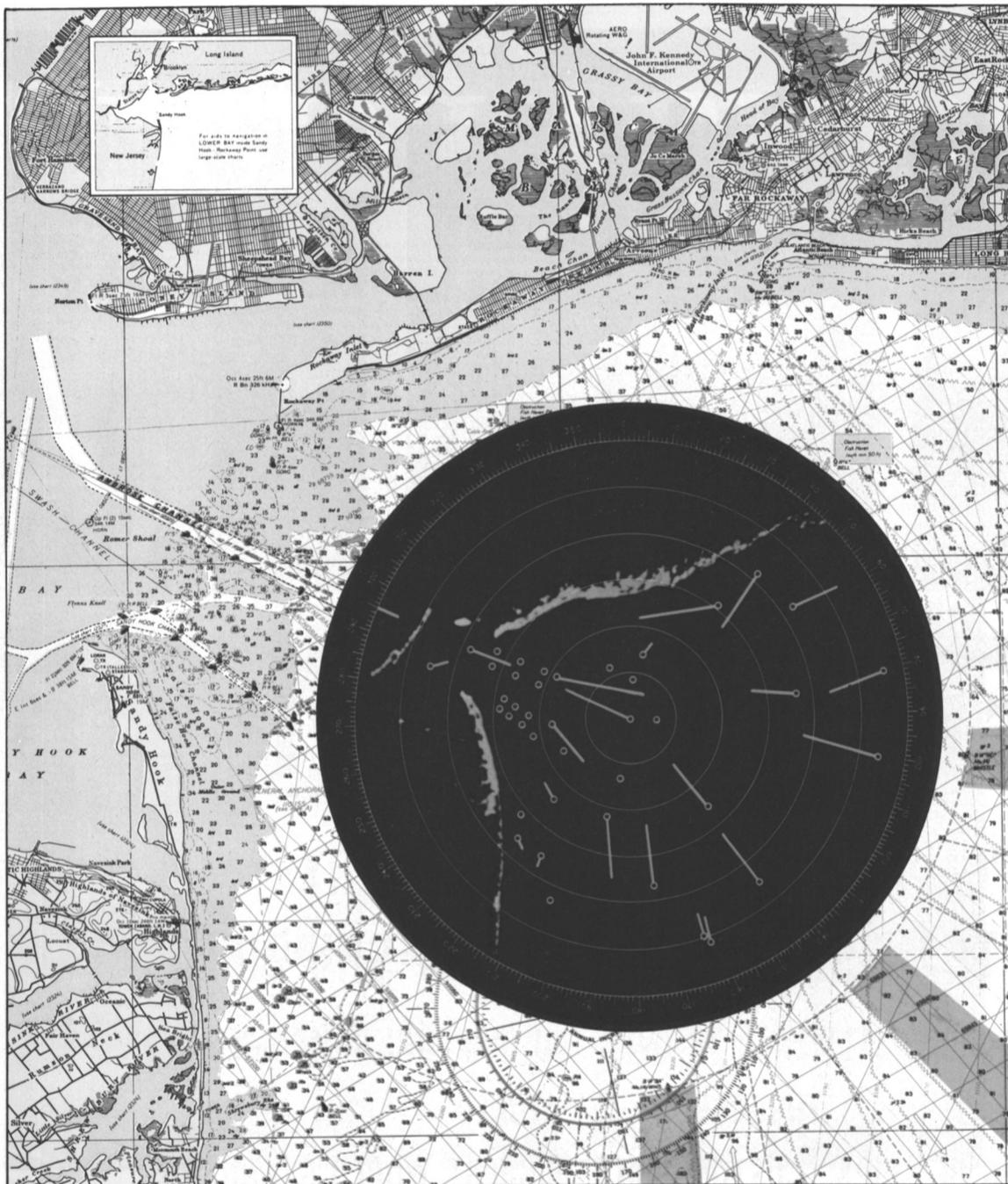
E.L. Peterson, president of Peterson Builders, Inc., Sturgeon Bay, Wis. 54235, has announced the promotion of **Ralph Berg** to the position of vice president of Finance.



Ralph Berg

Mr. Berg started working at Peterson Builders, Inc. on September 12, 1967, as an accountant. In January of 1969, he was elected to the position of assistant treasurer. Mr. Berg still retains this title.

In his statement, Mr. Peterson said: "I think we all appreciate what **Ralph** has done for PBI. His very capable manner and his ability to develop things in a simple, routine manner have earned him the position of a PBI vice president." Planning and scheduling have been added to his responsibilities.



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AIMU Reports On Hull Insurance Market At Annual Conference

The effects of a continued worldwide shipping depression, rising ship repair costs, and the instability in international currency relationships have all played a part in stalling the long-awaited recovery of the world hull insurance markets.

This was the view of **William J. Bradford Jr.**, chairman of the Ocean Hull Committee of the American Institute of Marine Underwriters (AIMU), expressed in his report to the Ocean Hull Committee of the International Union of Marine Insurance (IUMI), which held its annual conference in Vienna last month.

Mr. Bradford reported that one of the root causes for the diffi-

culty facing all marine underwriters is the breadth and depth of the shipping depression, now in its fifth year.

"The financial plight of the worldwide shipping community has been well publicized, and the past year has seen several instances of reorganization, consolidation or disposition of fleets. This state of affairs has resulted in ever-increasing pressure for

reduced insurance costs. Unquestionably, the restructuring of the world merchant fleets will continue."

Cost of Repairs

At the same time, Mr. Bradford noted that hull repair costs have risen to a point where routine maritime accidents are now regarded as major casualties.

Commenting generally in this area, Mr. Bradford reported that the United States Salvage Association (USSA) sees the world ship repair market as disorderly and unpredictable. USSA points out that shipbuilding programs have dropped precipitately during 1977. Further, ship repair volume is off considerably, as well. On the other side, new ship repair facilities have come on line, and some building yards have sought to convert their facilities for repair work. The interaction of these conditions produces the confused market.

Mr. Bradford reported, however, that further observations from the USSA give cause for some hope, in select cases. He noted that income from ship repairs is becoming increasingly important to every country with sizable facilities. Bidding and pre-negotiation can often result in drastically reduced prices, particularly for owners of large fleets. The occasional large bottom damage which has been bid has been seen to result in very significant savings to underwriters.

Still focusing on the cost of repairs as concerns American marine insurers, Mr. Bradford offered data supplied by United States Salvage. Using 1968 United States Atlantic Coast (excluding New York and Boston) levels as base 100, the following increases were developed (1977 increases followed in parentheses by accumulated eight-year increases): Atlantic Coast—8 percent (244 percent); New York/Boston—8.5 percent (296 percent); Pacific Coast—8 percent (294 percent); Gulf Coast—8.5 percent (250 percent), and Great Lakes—6 percent (305 percent).

Currency Problems

Another concern for U.S. Marine Underwriters, according to Mr. Bradford's report, is the instability in international currency relationships, especially with respect to vessels which repair abroad and claim under dollar policies.

"The matter is being watched," he reported, "though our underwriters are not as yet convinced that the dislocations are sufficiently fixed as to warrant action, if indeed any real corrections could be accomplished in the face of present world insurance market conditions."

Although worldwide ocean hull insurance experience continued to be less than satisfactory in 1978, Mr. Bradford noted that the run-

(continued next page)

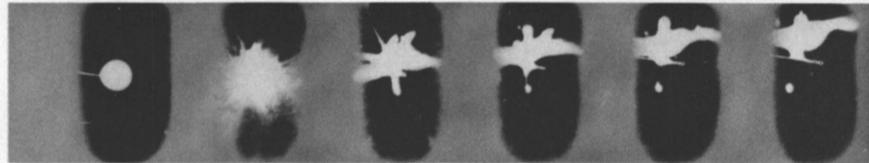
You can improve the performance and economy of marine steam boilers and gas turbines

The Gaulin Corporation offers you a field-proven and highly successful type of Water-in-Fuel Oil Emulsification System which can help you achieve significant improvement in overall combustion efficiency to provide:

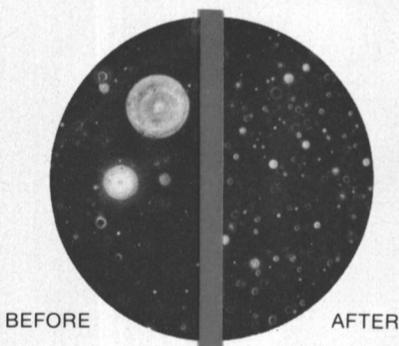
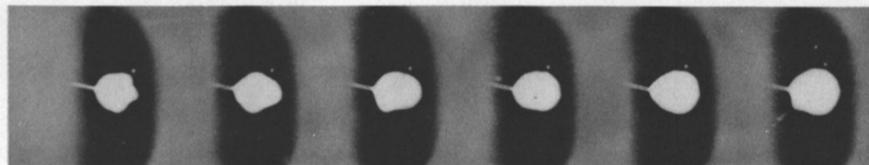
- In Steam Boilers — dramatic reductions in carbon particulate emissions and reduction in excess air
- In Gas Turbines — greatly lowered fuel costs with ability to burn blended fuels

Emulsification of water in fuel oil

Gaulin's Water-in-Fuel Oil Emulsification System utilizes a patented process to break down the normally large agglomerates present in the fuel oil. A very small percentage of water (5-6% H₂O) is added and emulsified as part of the fuel mixture during the homogenization process (much lower amounts of water concentration are used than with such methods as ultrasonic or other light stirring or mixing techniques). The droplets of water become uniformly dispersed in the fuel and average only 1-2 microns in size.



A graphic comparison of the burning of fuel droplets captured by sequential high-speed 16mm cinematography. The frames in the top sequence (5,000/sec.) resulted from burning a 350 μ droplet of water-in-Bunker C fuel oil emulsion. Those views in the lower series (4,000/sec.) record the combustion of a 450 μ droplet of neat Bunker C fuel. (Courtesy of Guggenheim Laboratories, Princeton University)



This before-and-after photomicrograph (1000x) graphically illustrates the superior effects achieved by Gaulin's homogenization of water-in-fuel oil. The control sample (left), a pre-mix of 6% water in #6 fuel oil, is compared with a sample of the homogenized fuel emulsion.

Successful Applications

The Gaulin Water-in-Fuel Oil Emulsification System has proven itself a valuable combustion aid. Here are the facts on just a few recent applications.

Marine Steam Boiler Applications

Gaulin Water-in-Fuel Oil Homogenizers are used for reducing soot blowing from seagoing steam boilers. A Gaulin Water-in-Fuel Oil Homogenizer, operating on two 60,000 lb./hr. steam boilers aboard a container ship, has reduced soot blowing requirements from twice each day to once per passage. Indications are that a 2 to 3% fuel saving has been realized. The improvement in combustion performance was achieved with only 6% water addition.



marine distillate to a much less expensive blend of marine distillate and #6 oil. This conversion was made possible by emulsifying 6% water in the fuel blend. Fuel costs were dramatically reduced and the customer is installing similar systems on all of its sister ships.

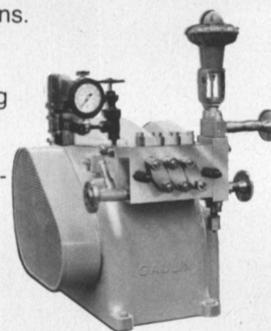
In a land-based combustion environment, a Gaulin Water-in-Fuel Oil Emulsification System (6% water) is operating in conjunction with a 100,000 lb./hr. steam boiler at an automotive plant in Detroit. The customer indicates a 25% reduction in carbon particulate emissions, while improving boiler efficiency by 2-3%.

Learn the facts

Get the full story about the Gaulin Water-in-Fuel Oil Emulsification System and how it may help you. Contact Gaulin at Garden Street, Everett, Mass., 02149. Phone (617) 387-9300.

Marine Gas Turbine Applications

Water-in-Fuel Oil Emulsification Systems slash fuel costs on gas turbines. A Gaulin Water-in-Fuel Oil Homogenizer, incorporated in an automated fuel handling system designed by Seaworthy Engine Systems and installed on a gas turbine-powered container ship, enabled a fuel conversion from



off of domestic underwriting results continues generally satisfactory, due largely to the claims reserving procedures advocated in this market.

If properly employed, he maintained, these procedures virtually assure adequacy of reserves from the outset. The foreign-flag fleets, however, continue to run off very poorly with substantially heavier payments as claims are settled.

Claims Experience

Regarding U.S. hull claims experience during the past 12 months, the largest casualty involved the collision of the sister vessels Venoil and Venpet, off the coast of South Africa near Cape-town.

Other major casualties included two LASH vessels — the Robert E. Lee and the Delta Norte, both hit with equipment failure. Another involved the dry cargo vessel Pioneer Commander stranded during a thick fog in the eastern end of Pentland Firth, North Scotland.

In summing up the U.S. marine hull insurance market's experience during the past 12 months, Mr. Bradford saw American underwriters as continuing their efforts to rebuild and maintain an orderly market. In this effort, he concluded, these underwriters recognize that pressures would be exerted against their hull books, and that the loss of some accounts would follow their decisions not to accept business offered at levels below the margin of their underwriting judgment. This loss of business has indeed been felt, but underwriters are satisfied that it will be recovered in time.

Alario And Associates Named To Represent Shipyard In Greece

NAFSI S.A., located in Piraeus, Greece, has announced the appointment of Alario and Associates, Inc. of 2701 Houma Boulevard, Metairie, La. 70002, as its exclusive representative for U.S. Gulf Coast interests.

Robert J. Alario, president of Alario and Associates, Inc., describes NAFSI as one of the most progressive specialized ship repair companies in the Mediterranean. The yards' capabilities include a fully equipped machine shop for full ship servicing of engines, shafts, rudders, blades and deck machinery; steel works for hull plating and superstructure components, as well as the restoration of stainless tanks; boiler shop for complete boiler repairs, including retubing; electrical shop for the repair of generators, windings, insulation, switchboards and the construction of commutators and distribution boards, as well as the dynamic balancing of rotary parts; pipe works for repair and replacement of piping networks, especially the installa-

tion of heating coils in cargo tanks of oil carriers.

Other services include a carpenter shop, the reconditioning of machinery components, "in situ" works department, LIPS B.V. propeller servicing, an engine diagnostic center and complete industrial works.

For the past eight years, Mr. Alario was chairman of the Offshore Marine Services Association which represents over 90 offshore

marine and related companies. He was formerly vice president of Nolty J. Theriot, Inc., a specialized towing contractor.

Alario and Associates specializes in providing management, financing and capital investment counseling services to individuals and corporations engaged primarily in providing marine services to companies in the offshore petroleum exploration, exploita-

tion, construction and production industries.

The company is also active in general business projects, including real estate transactions, oil and gas ventures and specific business mergers or acquisitions. Alario's representation of NAFSI is an expansion of its services to its many marine-related clients operating in the Mediterranean and Middle East areas.

CASE HISTORY #6:

"Marisat keeps us in touch even in areas of magnetic interference."

Mr. Frank H. Jackson, Jr., Shell Oil Company, New Orleans, adds: "Marisat increases our flexibility by enabling us to modify our geophysical exploration plans on short notice. Also, our technicians have made repairs to complex shipboard data acquisition systems with instructions transmitted via Marisat."



Shell Oil's seismic vessel "Phaedra" equipped with modern Marisat communications.

Clear, fast, reliable, private communications from offshore to onshore are vital to your business. That's why Marisat—the remarkable satellite communication system developed by Comsat General—is vital to your business.

Unlike conventional radiotelegraphy or radiotelephony, Marisat is unaffected by weather or ionospheric disturbances. It offers virtually the same options and values as business connections on dry land: direct voice contact, cost-effective telex, facsimile and data transmission.

Marisat has been in service for two years.

It is used daily by many exploration rigs, drilling vessels, tankers and by the U.S. Navy.

The mobile terminals you need are ready for immediate installation by Comsat General. They are compact, easy to operate, economical, and you can buy or lease them.

To get started right away, call one of these three numbers: In Washington, (202) 554-6070; New York, (212) 757-6307; Houston, (713) 777-1359. Or if you'd like additional information on how Marisat services can be tailored to your needs, write to Art Parsons, Marisat Marketing, at the address below.

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YOUR DIRECT LINE TO THE SEVEN SEAS.

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Hofstra And Webb Jointly Announce New Relationship

A cooperative relationship between two institutions—Webb Institute of Naval Architecture in Glen Cove, N.Y., and Hofstra University—will begin this fall, it was jointly announced by Rear Adm. Charles N. Payne, president

of Webb Institute, and Dr. James M. Shuart, president of Hofstra. Under the new arrangement, the faculty of Hofstra will teach the liberal arts courses offered in the Webb Institute curriculum.

Webb Institute, one of the most highly selective of four-year higher educational institutions in the nation, is the only college devoted solely to ship design. It offers a

degree in naval architecture and marine engineering to a selective group of about 100 men and women, each of whom receives a full scholarship. Students at Webb Institute spend part of each year between semesters in marine industry employment.

"The new arrangement with Hofstra University," Admiral Payne said, "will enable Webb In-

stitute to enrich its offerings by adding a variety of outstanding scholars to its faculty who are specialists in liberal arts fields. Both Webb and Hofstra are devoted to quality education, and we think our new association will be mutually beneficial."

The liberal arts curriculum at Webb, Admiral Payne added, has been rearranged as a result of a joint study by a group of academic administrators from Hofstra and Webb. As a result, he said, the Hofstra faculty will help implement this plan beginning this fall.

"We are pleased," said president Shuart, "that Webb Institute has asked for the teaching services of some of our faculty scholars. The kind of cooperation entailed in this association of two prominent institutions is a useful one for higher education."

Founded in 1899, Webb Institute is located on a 26-acre campus in Glen Cove, N.Y., fronting on Long Island Sound, which was once the estate of Herbert L. Pratt. Admission to the institute is on a rigorously competitive basis. Webb and Hofstra are both accredited by the Middle States Association of Colleges and Schools, and by the Engineers' Council for Professional Development.

Hofstra University, founded in 1935, is located in Hempstead, N.Y. Enrollment in its undergraduate, graduate, professional and continuing education programs totals approximately 11,000 students. Its main units are the Hofstra College of Liberal Arts and Sciences, the School of Education, the School of Business, New College, the School of Law, and the Division of Continuing Education.

Hull And Cargo Surveyors, Inc. Open Fourteenth Office

Hull and Cargo Surveyors, Inc. has recently opened its 14th office, located at Suite No. 754, 7733 Forsyth Boulevard, St. Louis, Mo. 63105.

Robert L. Willis will be principal surveyor of the new office, which will provide service to clients throughout the Midwest and all the inland waterways in that region. Mr. Willis was formerly principal surveyor at the Jacksonville, Fla. office.

Replacing Mr. Willis in Jacksonville as principal surveyor is Ray A. Arceneaux. Mr. Arceneaux joined Hull and Cargo Surveyors in 1973, and since then has served at offices in Houston, Texas, New Orleans, La., and Tampa, Fla.

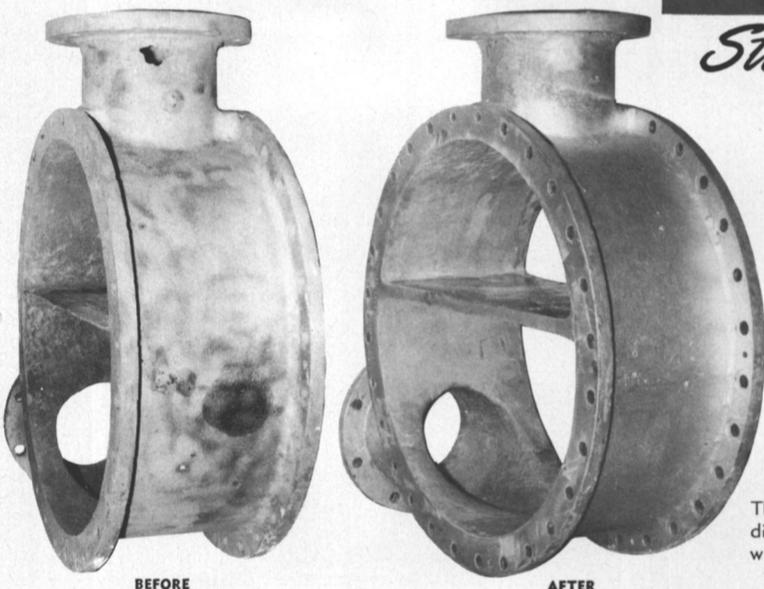
Hull and Cargo Surveyors, Inc. represents underwriters and private interests in surveying and inspecting all types of ocean and inland marine risks.

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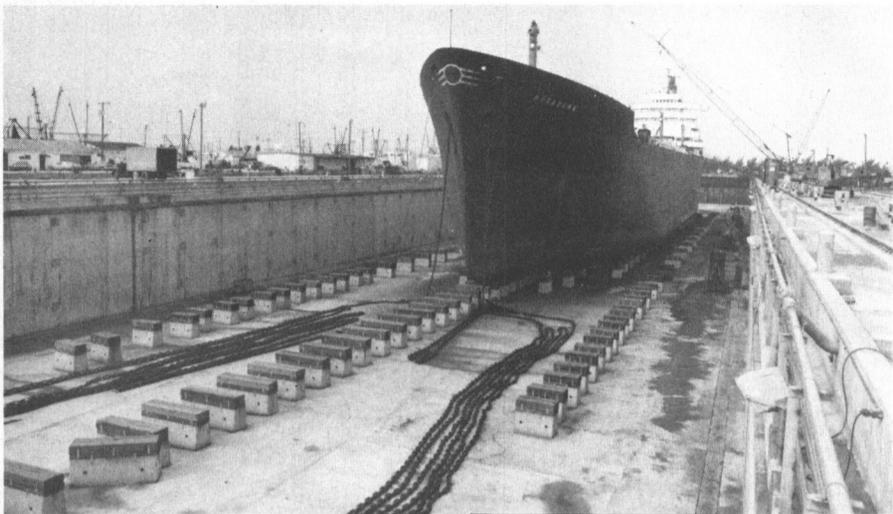
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—Point Durban
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Marketing Corp.
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Scardana Corporation
FRANCE—Marseille
Sogerit
ARABIA—Kuwait
Industrial Services & Supplies Co., W.L.L.

**Tampa Ship Repair & Dry Dock Dedicates
New \$23-Million 900-Foot Graving Dock**



Although the new dock can accommodate vessels up to 100,000 deadweight tons, the Pasadena, a 25,000-dwt tanker, was the first vessel to enter the new 900-foot by 150-foot facility.

Tampa Ship Repair & Dry Dock Company recently dedicated its huge new drydock in ceremonies at the Hookers Point location in Tampa, Fla. Florida's Governor Askew gave the principal address prior to the unveiling of a bronze plaque to commemorate the event.

Constructed at a cost of \$23 million, the new graving dock will be the largest on the Gulf Coast and among the largest in the U.S. With an overall length of 900 feet, width of 150 feet and a depth of 26 feet, the new dock will accommodate vessels up to 100,000 deadweight tons and serve more than 90 percent of the ships presently navigating the ocean trade routes.

Complementing an existing 547-foot repair basin, the new facility will create 350 new jobs and have an annual economic impact on the community of \$44,000,000. The facility was financed by the Tampa Port Authority with a \$23-million

special-purpose bond issue.

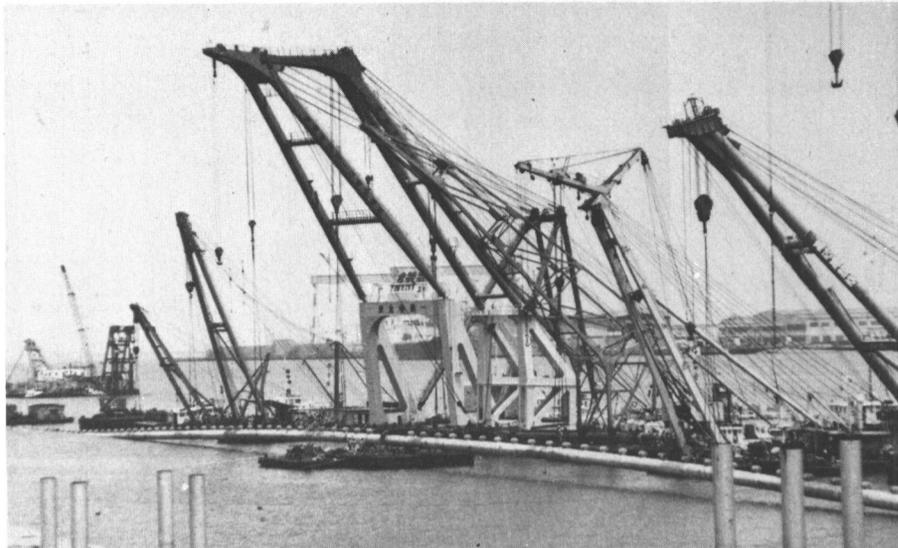
Tampa Ship Repair & Dry Dock Company is a subsidiary of The American Ship Building Company of Cleveland.

American Ship Building is the dominant independent ship construction, conversion, and repair firm on the Great Lakes. It is one of the largest builders of barges and towboats on the inland waterways, and operates the largest ship repair facility on Florida's west coast.

The company also manufactures fabricated metal for the residential and commercial construction industry.

The firm is traded on the New York Stock Exchange — ticker symbol ABG.

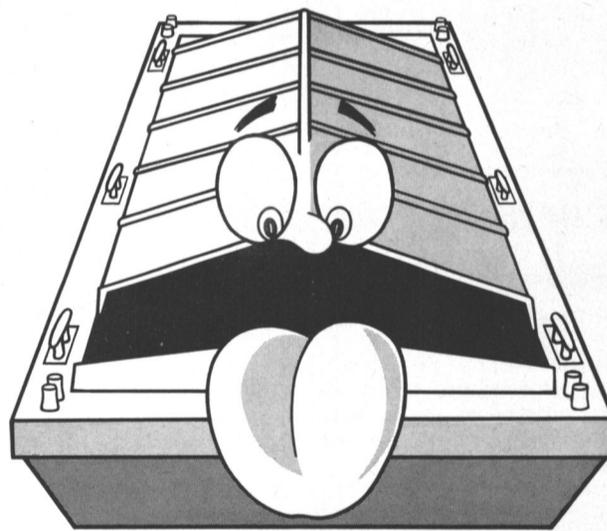
Dalton-Dalton-Newport of Cleveland, Ohio, were the designers and engineers, and Jones-Mahoney Corp of Tampa was the construction contractor.



NKK UNDER-CANAL PIPELINE CONSTRUCTION — The photograph above shows floating cranes and barges being used to install a water pipeline under a 750-meter-wide (about 2,461 feet) canal in the industrial zone of Atsumi Peninsula, Aichi Prefecture, Japan, by NKK. Prior to installation, the pipeline components were fabricated ashore, and final welding was done on the barges. The pipe being laid has a diameter of 900 mm (about 35 inches), and a concrete coating of 100 mm (about 4 inches). NKK (Nippon Kokan) is Japan's number two steelmaker and only integrated steelmaker/engineer-constructor/shipbuilder.



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...Ahhh!**



Port Allen Marine operates a barge cleaning and repair clinic in Baton Rouge with the sole purpose of increasing the operating life of your barges. The experienced professionals at Port Allen Marine can quickly diagnose your barge or boat problem and provide repair of wounds, repair or replacement of diseased parts and transplants where required. We even clean "affected" areas and paint "exposed" surfaces as you require. If you value your barges, call Port Allen Marine. When you see what we can do for your barges, you'll open wide and say ahhh!



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TURBO GENERATOR SETS

1 G.E. 1500 KW A.C. TURBO GENERATORS
 1500 KW — 450/3/1200 RPM — 0.8 P.F. — 2450 amps — 525 PSI — 850° TT — 8145 RPM — 11-stage geared 8145/1200 — type FN4 — 3 1/2" steam inlet. Unit will deliver full power at 440 lbs & 760° TT. OAL 16' 3-3/8" — OAW 6'6" — OAH 7'5 1/4" — wt. 36000 lbs. Almost equal to new. Very little use. With ABS or Lloyds.

2 G.E. 600 KW GEARED TURBO GENERATORS
 450/3/60/1200 RPM — 961 amps — type ATI — 0.8 PF. TURBINE: FSN-FN-20 6-stage — 525 lbs/825°F — superheat 355°/371°F. GEAR: 10033/1200 — RPM 10033 — total — 6390 lbs. steam/hr. steam flow.

3 G.E. 400 KW TURBO GENERATORS
 450/3/60/1200 — 0.8 PF — 641 amps. TURBINE: 6-stage — 10059 RPM — 525 lbs/825° TT — type GE 618N. Steam rate 5100 lbs/hr. — OAL 10' 10 1/2" — OAW 4' 10 1/2" — OAH 5' 5 1/4" — wt. 14,855 lbs.

4 400 KW WESTINGHOUSE TURBO GENERATOR SETS FOR BETH-SPARROWS POINT HULLS 4467 TO 5400; QUINCY HULLS 1600 SERIES
 400 KW (500 KVA) — 0.8 PF — 1200 RPM — 450/3/60. TURBINE: 585 lbs — 840° TT — 28 1/2" vacuum — 9018 RPM — serial 10A4462-3 & 10A4462-4. GEAR: 9018/1200 RPM. A.C. GENERATOR: 500 KVA — 400 KW — 450 volts — 641 amps — 0.8 PF — 3-phase 60-cycle — 1200 RPM — CR 40° — excitation amps 41 — excitation voltage 120. Instruction book 5442. Switchgear available.

5 UNUSED WESTINGHOUSE 60 KW 120 VDC M-20-EH
 120 VDC — 1800 RPM. TURBINE: M-20-EH — 20 lbs dry & saturated — 25" vacuum. 7283 RPM. GEAR: 7283/1800. GENERATOR: 60 KW — 120 VDC — 500 amps — SK — stab. shunt wound.

6 UNUSED 500 KW DELAVAL-WESTINGHOUSE GEARED TURBO GENERATOR
 GENERATOR: Westinghouse 500 KW — 120/240 volts DC — 2080 amps — 1200 RPM — stab. shunt. TURBINE: DeLaval — 730 HP — 440 PSI working pressure condensing. Temperature 740° — 9977 RPM. HELICAL GEAR: 9977/1200 RPM. Serial # of turbine 245204 — weight 22,000 lbs.

TURBINES & ROTORS

BETH-SPARROWS POINT, QUINCY HULLS

7
 1 HP Turbine or rotor — Bethlehem
 1 400 KW Stator only — Westinghouse
 1 HP turbine casing only — Bethlehem
 1 Complete Westinghouse 400 KW turbo generator set
 1 Forced draft motor fan
 1 Anchor windlass — 2 11/16"
 Steering gear motors — 15 HP
 Forced draft fan impeller

WESTINGHOUSE C-25 CARGO PUMP TURBINE ROTOR

8 VICTORY-AP2 MAIN PROPULSION
 Westinghouse AP2 19-stage HP rotor for 6000 HP Victory — serial #4A-2079 — equal to new. Unused surplus AP2 — Victory Ship complete HP & LP turbines
 Allis-Chalmers HP & LP
 Westinghouse LP AP2 with throttle valve
 G.E. HP & LP with throttle valve

9 VICTORY-AP3 MAIN PROPULSION NEW 8500 HP G.E. TURBINES
 Large Victory or C-3
 HP #72271 LP #72272
 10 Boxes spare parts, tools & fittings. With maneuvering valves.

10 8500 HP G.E. — C-3 OR VICTORY
 H.P. — 8-stage — 6159 RPM — serial 62043
 L.P. — 8-stage — 3509 RPM — serial 62042
 G.E.I. 16263

11 VICTORY SHIP AUXILIARY TURBO GENERATOR SET ROTORS
 300 KW 5965 RPM JOSHUA HENDY
 Turbine — 3H-69 Gear — 52269
 Turbine — 3H-52 Gear — 52252
 Turbine — 3H-62 Gear — 52262
 ALSO WESTINGHOUSE 2A & 5A SERIES

— FOR T-2 VESSELS —

12  TURBINE: DORV-325M — 525 KW — 5645 RPM — 435 PSIG — 28" exhaust. REDUCTION GEAR: S-162 — form D — 5641/1200. A.C. GENERATOR: 500 KVA — 400 KW — 440/3/60 — 1200 RPM — 0.8 PF. D.C. EXCITATION GENERATORS: 75/55 KW — form AL — 110 volts DC. With new type amplydines.

13 538 KW WESTINGHOUSE T-2 AUXILIARY GENERATOR — COMPLETE
 TURBINE: 538 KW @ 5010 RPM — 438 PSIG — 750° TT — 28 1/2" vacuum. GEAR: 5010/1200 RPM. A.C. GENERATOR: 400 KW — 450/3/60/1200 — 0.8 PF. DC EXCITER: 32.5 KW — 120 volts (variable voltage) — shunt — 4-pole — DC excitation 5 KW. ALWAYS WELL MAINTAINED BY MAJOR OIL CO.

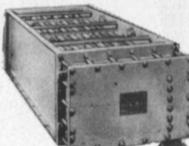
14 T-2 UNUSED G.E. MAIN PROPULSION STEAM TURBINE WITH ROTOR
 10-Stage — 435# — 720° TT — turbine complete with rotor — serial #109166 — 4925/5400 KW — 3600/3720 RPM — 28.5" vacuum.

15 WESTINGHOUSE MAIN PROPULSION STEAM TURBINE WITH ROTOR EX-CHEVRON VESSEL "MACGAREGILL"
 Shrouded — like-new condition. Will sell rotor separately. WESTINGHOUSE MAIN PROPULSION TURBINE EX "Pecos" — unshrouded — serial 2A-7733-2 type A

16 UNUSED G.E. MAIN PROPULSION STATOR
 Type ATB-2 — serial #6978272. 2300/2370 volts — 60/62 cycles — 3-phase — 3600/3720 RPM — armature amps 1237/1315 — 4925/5400 KW — 1.0 PF. Westinghouse stator — from Ex "Pecos"

17 WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE
 We have both types:
 110 KW — 32 KW — 5.5 KW
 110 KW — 28 KW — 5.5 KW

538 KW WESTINGHOUSE AUXILIARY TURBINE ROTORS

18 WESTINGHOUSE T-2 TANKER MAIN GENERATOR COOLERS & MAIN MOTOR COOLERS
 Reconditioned — with A.B.S. Units all ready to ship. Also G.E. Main Generator Coolers

19 G.E. 525 KW AUX. GENERATOR EXCITER ARMATURE
 75-55 KW

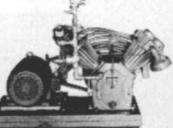
20 NEW STYLE AMPLIDYNE
 5LY148A2 — type A.M. — frame 605

21 AUXILIARY GENERATOR ROTORS
 G.E. aux. generator rotors — DORV-325M — for 525 KW turbo generator sets

22 T-2 MAIN CARGO PUMPS
 Ingersoll-Rand 6GT — 2-stage — bronze — 2000 GPM — 280' head

23 LATEST DESIGN 5-SPEED FORCED DRAFT FAN MOTORS
 G.E. Model 5M505FE-1 — frame 5055 — type M — 440/3/60 — serial S.E.6731807. Controller available. (Complete with fan impeller)

24 T-2 SHIPS SERVICE AIR COMPRESSORS
 Worthington — 5 1/2 x 3 1/2 x 3 1/2 — VA2 — 20 C.F.M. — 100 lbs. — 5 H.P. Motors — 440/3/60 — 1750 RPM.

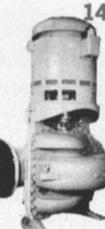
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WESTINGHOUSE DRY TYPE T-2 CARGO PUMP TRANSFORMERS

26  200 KVA — single phase — 60 cycle 2300/450 volts — weight 3720 lbs. each. 4 available.

27 G.E. PYRONOL OIL COOLED TRANSFORMERS
 200 KVA — single phase — 60 cycles — 2300/450 volts — 3 available.

28 MISCELLANEOUS DRY-TYPE TRANSFORMERS
 Lighting Transformers — 15 KW — 450/120 volts
 Galley Power Transformers — 15 KW — 450/220 volts

29 INGERSOLL-RAND 14,000 GPM MAIN CIRCULATOR
 14,000 GPM @ 25' head — model 24UCM — bronze — with 125 HP 440/3/60 580 RPM motor. 26" suction — 24" discharge. Can furnish with Westinghouse type CS frame B-876C or GE type KF vertical motors.

PUMPS

30 BRONZE T-2 TANKER STRIPPING PUMPS
 14x14x12 — 700 GPM at 100 lbs. Same pump available in steel for fuel oil transfer, etc.

31 WESTINGHOUSE 200 H.P. CARGO PUMP MOTORS
 440/3/60 1750 RPM — 40°

32 MISSION TANKER T2SEA2 CIRCULATING PUMP MOTOR
 150 HP — 440/3/60/590 RPM. Frame 6335 — type KF — 204 amps

33 T-2 MAIN ROTOR LARGE G.E. MAIN PROPULSION SCHENECTADY TURBINE ROTOR
 Turbine serial 77418 — reconditioned with certificate. Just out of Beth shop 1970

34 T-2 MISCELLANEOUS, PUMPS ETC.
 10 HP Labour Self-Priming Bilge Pumps • Rudder 13 1/2" Rudder Stocks • Main Injection 3-Way Valve Main Condensate Pumps • Fuel Oil Service Pumps Magnablast Breaker • 1 Set New Bull Gear & Pinion for G.E. 525 K.W. Diesel Gen Model S-162 • 32", 24", 15" Rubber Expansion Joints • Mission Tanker Steering Gear Pumps

35 TURBINE FIRE PUMPS — BRONZE
 Worthington turbine — 440# — 448° — 3500 RPM — 75 HP — 15# back pressure — 750 GPM @ 125 lbs — 6" suction — 4" discharge.

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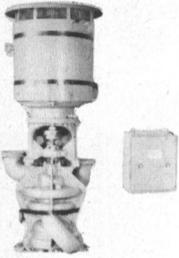
NEW BLACKMER FUEL OIL TRANSFER PUMP

36



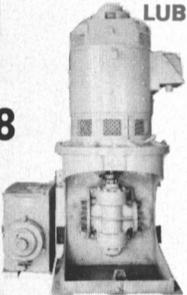
Rotary — 50 GPM — 50 lbs. — 2" — 5 HP — 440/3/60 — with starter & spares

37



UNUSED BRONZE FEED-WATER BOOSTER PUMPS
220/237 GPM @ 144' head — 2-stage — 1750 RPM with 30 HP 440/3/60 motor control & spares. Built for USN

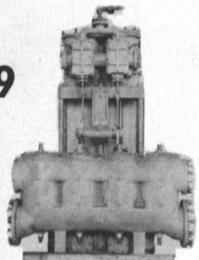
38



LUBE OIL SERVICE PUMP

Quimby-Rotex — size 6D — 500 GPM @ 70 lbs — 6"x6" flange — 720 RPM. MOTOR: Allis-Chalmers — 40 HP — 230 VDC — type EBV-147S — stab. shunt — 148 amps. Complete with starter and rheostat — designed originally for C-1MAV-1 vessels.

39



WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

1400 GPM @ 110 PSI; suction lift 11.5 ft. Steam back pressure 15 lbs. Suction 14" — discharge 10" — steam 2 1/2" — exhaust 4". Overall width 6' 8" — overall height 9' 1 1/2" — depth 3' 9 1/2" — approx. wt. 10,000 lbs.

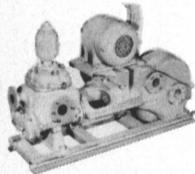
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NEW WORTHINGTON VERTICAL SUBMERSIBLE BILGE PUMP

For emergency use on passenger ships, etc. PUMP: JAS — 264 GPM — 171' head — two 6" inlets — one 5" outlet. MOTOR: 40 HP — 230 VDC — 149 amps.

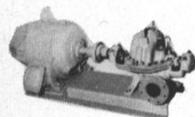
41



MOTOR-DRIVEN GARDNER-DENVER RECIPROCATING BILGE PUMP

50 GPM — 150 PSI — Model ALAXE — serial #106335. 3 3/4" bore — 4" stroke — 2 1/2" suction — 2" discharge. 51" long — 21" wide — 21" high — weight 750 lbs. MOTOR: Diehl — 2.5 HP — 440/3/60 — 1750 RPM — 3.53 amps.

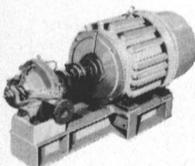
42



GOULD FIRE AND BILGE PUMP

Ex-LST — horizontal centrifugal — bronze — 4" suction — 3" discharge — 250 GPM @ 100 PSI — 2200 RPM. MOTOR: 30 HP — 230 VDC with magnetic starter.

43



AURORA HEAVY DUTY BRONZE FIRE SERVICE PUMP

Single stage — 2 1/2" suction — 2" discharge. 3000 RPM — 250 GPM. 100 lb. head. Impeller diameter 9 1/2". MOTOR: Air cooled heavy duty 25 HP Reliance T type ON-2S-2 1/2 230 VDC — 110 amps — stab. shunt.

DIESEL GENERATOR SETS

44

410 KW ENTERPRISE DIESEL GENERATOR SET

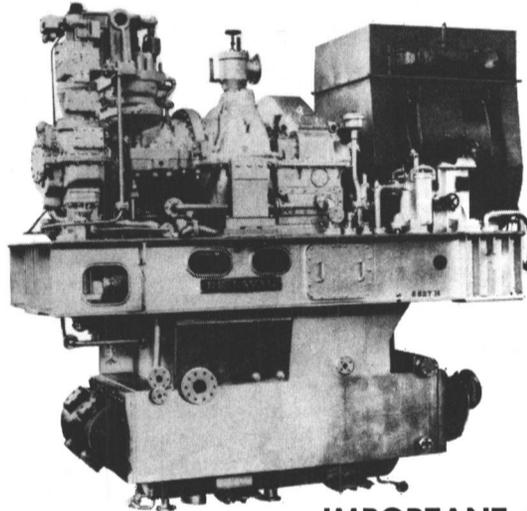
Enterprise DSG-6 6-cylinder diesel engine driving Westinghouse generator. 250 volts DC — 1640 amps — 650 RPM — shunt wound.

MISCELLANEOUS

47

IF YOU'RE GOING TO JUMBO-IZE YOU CAN ECONOMIZE WITH THESE ALLIS-CHALMERS — DELAVAL 1000 KW GEARED MARINE TURBO-GENERATORS

If you are contemplating the new construction of TANKERS, ORE CARRIERS, CONTAINER VESSELS, ETC.



YOU CAN SAVE THOUSANDS OF DOLLARS

with these modern, practically new units — built to highest Navy standards. Send for our free descriptive brochure. You'll be glad you did... and money ahead!

IMPORTANT INFORMATION

DELAVAL TURBINE: 1442 HP — 10019 RPM — Class GJ-N — 9-stage — 10,000 RPM — 1050 PSI — 950°TT — condensing steam rate 10.30 lbs. Typical serial number 652468. DELAVAL DOUBLE HELICAL GEAR: 10000/1200 RPM — Allis-Chalmers — 1000 KW — 450 volts — 3-phase — 60 cycle — 1200 RPM — 0.8 PF — static excitation — totally enclosed air-to-water cooling — temperature rise: Stator 130°C — Rotor 110°C — class H insulation — typical serial number 160615 — type M.A.K.G. Complete with 525 sq.ft. condenser — 190 lbs/hr air ejector — oil coolers — strainer — piping & valves — generator switchgear — static excitation control — voltage regulator. Total weight of unit 40,300 lbs. OAL 12' 9" — OAW 6'. Turbo-generator height 5' 8" — total height of turbo-generator & condenser 12' 8". UNITS IN EQUAL-TO-NEW CONDITION. Originally designed for DLG Guided Missile Frigate Program. Installed only about 2 years, then removed and carefully re-boxed by U.S.N. at Bath Iron Works 1964-65. Navy installed larger units due to increased load requirements.

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EFFECTIVE IMMEDIATELY**

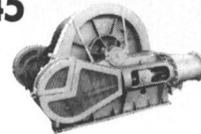
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AUTOMATIC TENSIONING 12X14 STEAM WINCH

45



American Engineering. Drum diameter 24". Will stow 1500 ft of 1 1/2" in 8 layers. Capacity 1st layer: 20,000 lbs/100 FPM — 16,000 lbs/50 FPM. Drum width 2' 6 3/4". Steam inlet 3" — exhaust 4". 8' 4 1/2" wide over cylinders. Base 6' x 6' 3 1/2".

46



16" BRASS PORTLIGHTS

15" and 16" brass portlights. 16" portlights are 3-dog type.

ON METALS CO.

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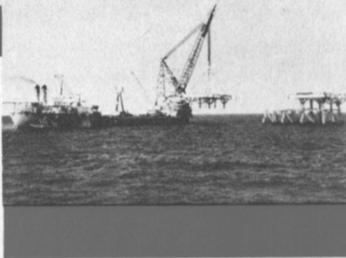
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REPORTER
ENGINEERING NEWS



More Advertisers Use *because thousands more*

THE ADVERTISING LEADER

- A LARGER NUMBER OF ADVERTISERS USED MARITIME REPORTER IN 1977 THAN USED THE NUMBER 2 MAGAZINE, MARINE ENGINEERING/LOG.
- MARITIME REPORTER CARRIED MORE PAGES OF ADVERTISING IN 1977 THAN THE NUMBER 2 MAGAZINE, MARINE ENGINEERING/LOG.
- THE REASON...THESE ADVERTISERS KNOW MARITIME REPORTER IS THE MOST POPULAR MAGAZINE WITH MARINE MEN WHO BUY...REQUESTED BY THOUSANDS MORE MARINE READERS WITH THE FOLLOWING TITLES THAN ANY OTHER MARINE MAGAZINE IN THE WORLD.

THESE ARE THE BUYERS... READERS WITH THE AUTHORITY TO GIVE BUSINESS TO ALL MARINE ADVERTISERS

VESSEL OPERATING COMPANIES, OCEAN, INLAND, HARBORS, OFFSHORE OIL DRILLING, PORT AUTHORITIES (INCLUDING OIL COMPANIES ENGAGED IN OFFSHORE DRILLING, DRILLING CONTRACTORS, CREW/SUPPLY BOAT COMPANIES)

Directors, owners, agents, presidents, vice presidents, managers, secretaries, treasurers, port engineers, superintendents, purchasing agents, port captains, port stewards, naval architects and engineers shoreside

SHIPBUILDING, BOAT BUILDING, DRILL RIG BUILDING AND REPAIR COMPANIES

Directors, owners, presidents, vice presidents, secretaries, treasurers, superintendents, managers, purchasing agents, naval architects and chief draftsmen

PROFESSIONAL MEN

Naval architects, engineers and consultants shoreside

FIRST CHOICE OF MARINE ADVERTISERS AND THOUSANDS

Maritime Reporter...

buyers request it!

**TOTAL CIRCULATION OVER 98% PERSONALLY REQUESTED
...IN WRITING...BY EACH INDIVIDUAL READER**

MARITIME REPORTER has a requested circulation to over 17,500 buying power readers (titles opposite)... thousands more than any other marine magazine in the entire world including...

MARINE ENGINEERING/LOG • MOTOR SHIP • OCEAN INDUSTRY • OFFSHORE • SEATRADE • SEA TECHNOLOGY • WATERWAYS JOURNAL • WORK BOAT •

Here are the reasons your marine advertising belongs in the leading magazine, MARITIME REPORTER... where it works harder... covers your entire market... to produce more sales for you.

LARGEST REQUESTED CIRCULATION TO BUYERS — Worldwide, MARITIME REPORTER is requested, in writing, by thousands more marine men who specify and buy than *any* other marine magazine in the entire world.

LARGEST U.S. REQUESTED CIRCULATION TO BUYERS — Throughout the entire United States... MARITIME REPORTER is requested by thousands more shoreside buyers than *any* other U.S. marine magazine.

LARGEST NUMBER OF ADVERTISERS — In 1977, a larger number of advertisers used MARITIME REPORTER than used the second magazine, Marine Engineering/Log.

MOST ADVERTISING SPACE — In 1977, MARITIME REPORTER carried more pages of advertising (7" x 10") than the second magazine, Marine Engineering/Log.

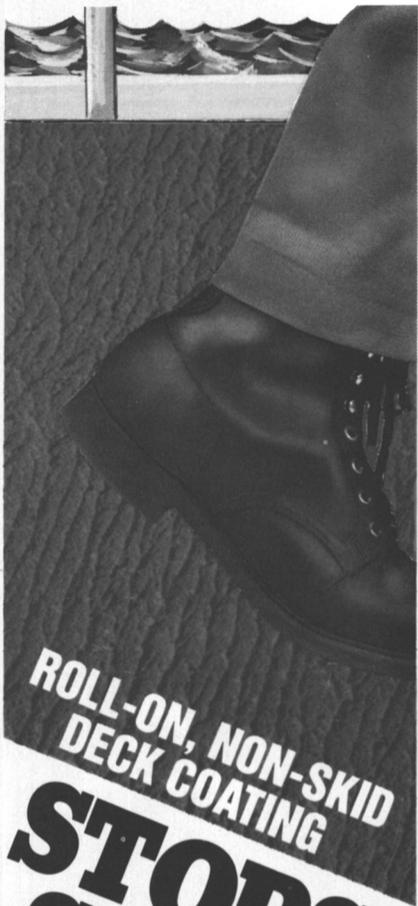
400,000 FREE DIRECTORY LISTINGS — Regular display advertisers in MARITIME REPORTER receive a free listing — company name and address — in the buyers directory section in all 24 issues for one entire year... whether an ad appears in every issue or not. No other marine magazine gives you this continuous sales-building exposure.

LOWEST COST — Why pay more... MARITIME REPORTER's advertising rates are the lowest, cost per buyer, in the entire industry.

MORE BUYING POWER READERS

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**MARITIME
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AND
ENGINEERING NEWS**



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FALLS
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for ships and offshore rigs
Now stop costly slips and falls on ships and offshore rigs with Epoxo, the super-tough non-skid deck coating proven on the flight deck of every U.S. Navy aircraft carrier built since 1960. Now available to the commercial marine market, Epoxo prevents accidents and injuries caused by slippery decks; keeps helicopters from skidding. On decks and landing pads, nothing beats the superior holding power of Epoxo's non-skid surface. Easy to apply, yet so tough and durable it lasts for years.



It Rolls On!
epoxo
non-skid

AMERICAN ABRASIVE METALS CO.
460 Coit Street Irvington, N.J. 07111
Telephone: (201) 373-7060



St. Louis Ship Delivers Second Of Four Supply Vessels To Gulf Mississippi Marine Corp.

Gulf Mississippi Marine Corporation, New Orleans, La., one of the principal operating companies of the Offshore Marine Services Division of Pott Industries, has taken delivery of a new 190-foot by 40-foot by 16-foot, 5,000-hp-class towing/supply vessel.

The Gulf Fleet No. 23 is a combination towing/supply vessel constructed by the St. Louis Ship Division of Pott Industries. It is the second of four offshore supply vessels being built by the division for delivery to Gulf Mississippi during 1978.

The Gulf Fleet No. 23 is the seventh of 13 vessels scheduled for delivery to the Pott Offshore Marine Services Division this year. Vessels scheduled for delivery later in the year include two 180-foot supply vessels; two 95-foot, 2,200-horsepower-class tugs; and two 125-foot, 5,600-horsepower-class tugs.

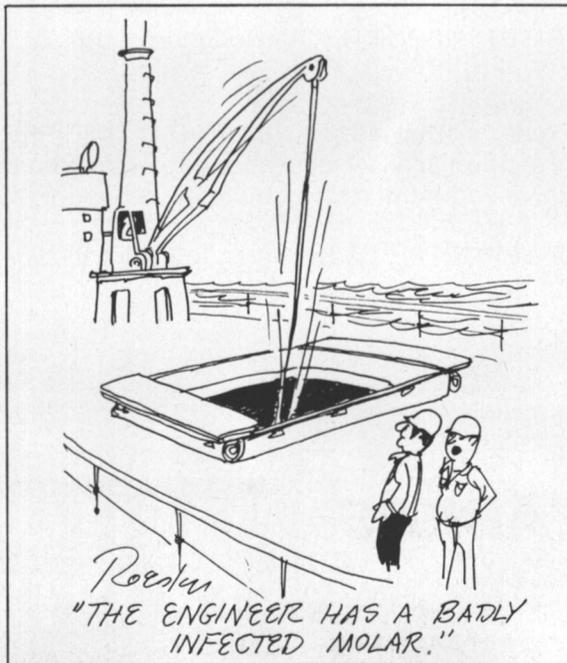
Pott Industries is a wholly owned subsidiary of Houston Natural Gas Corporation (HNG). Houston Natural Gas Corporation's other lines of business include construction and repair of barges and towboats, inland waterways transportation, intrastate natural gas transmission, oil and gas exploration and production, coal mining and production and marketing of industrial gases.

Singapore Marine Conference Set For February 1979

The Institute of Marine Engineers, in conjunction with the Singapore Branch, is organizing a major conference on "Equipment for Specialized Vessels," at the Hyatt Hotel, Singapore, February 6-9, 1979, in conjunction with Asia Marine 79, the international exhibition being organized by the Europort Organisation of Rotterdam, the Netherlands.

Speakers, chosen for their specialist knowledge and international reputation, will present 18 papers during the four days of the conference. Subjects will include hydraulics, gas turbines, specialized vessels, pipe systems and pumping, lower grade fuels, inert gas systems, high pressure air, controllable-pitch propellers, deck machinery, refrigeration, air-conditioning and cryogenics.

Information about the exhibition, conference registration, supporting social and ladies' programs, and packaged air travel arrangements is now available from Expo Travel & Conferences B.V., Wallhaven Z.Z. 3088 HJ, Rotterdam, The Netherlands.



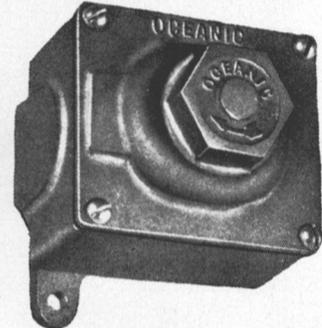
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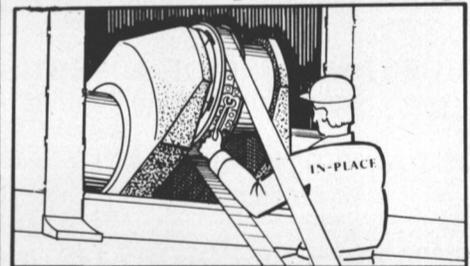


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Maritime Reporter/Engineering News

Help me make it through the day (or night)

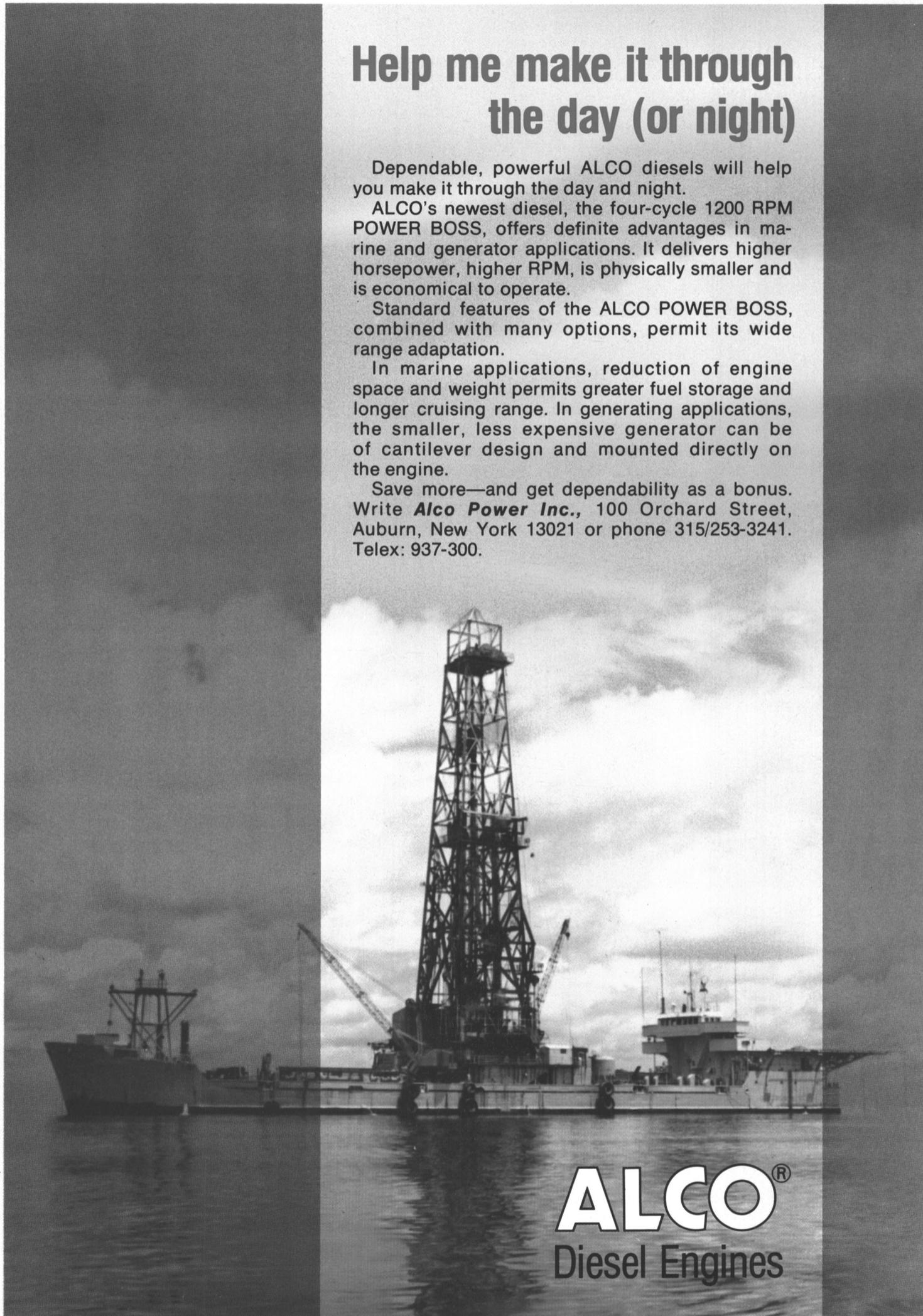
Dependable, powerful ALCO diesels will help you make it through the day and night.

ALCO's newest diesel, the four-cycle 1200 RPM POWER BOSS, offers definite advantages in marine and generator applications. It delivers higher horsepower, higher RPM, is physically smaller and is economical to operate.

Standard features of the ALCO POWER BOSS, combined with many options, permit its wide range adaptation.

In marine applications, reduction of engine space and weight permits greater fuel storage and longer cruising range. In generating applications, the smaller, less expensive generator can be of cantilever design and mounted directly on the engine.

Save more—and get dependability as a bonus. Write **Alco Power Inc.**, 100 Orchard Street, Auburn, New York 13021 or phone 315/253-3241. Telex: 937-300.



ALCO[®]
Diesel Engines

Sperry Division Names Blumberg Marketing Communications Manager

The Sperry Division of Sperry Rand Corporation has named **George P. Blumberg** to the new position of marketing communications manager. He will be responsible for developing marketing materials for Sperry Division products, services, and capabilities,

and will coordinate Sperry participation in worldwide trade shows and exhibitions.

Mr. Blumberg previously was vice president of Adcom International, Ltd., a New York advertising agency which he joined as director of creative services in 1968. Clients he has served include the Naval Air Systems Command, Exxon, the Department of Transportation, the Naval Train-

ing Equipment Center, and the General Electric Company.

Mr. Blumberg earned his bachelor's degree in economics from New York University in 1967, and has also studied at the NYU Graduate School of Business Administration.

The Sperry Division, one of six divisions of Sperry Rand Corporation, designs and develops combat systems, simulators, radar/

sonar equipment, guidance and control systems, marine systems, and transportation systems.

Safe Tank Level Indicating Systems Are 'Solar' Powered

Continuous tank level readings are instantly obtainable on any barge or remotely located storage tank equipped with the new, intrinsically safe, Gems "Solar" Powered Tank Gauging System. Power is generated as needed day or night. A beam of a pocket flashlight illuminates the readout meter face. For meter illumination at night, three fiber-optic bundles are used to pipe light from the solar cell port to the meter face. The self-contained system includes the solar cell, a magnet-equipped float and transmitter assembly, and the readout meter. All electrical components are encapsulated in clear silicon rubber for maximum protection against harsh environments.

Also available as an ullage detector, this unique unit provides a ready and inexpensive means for complying with EPA, OSHA and USCG closed-loading requirements.

For additional information, contact **Mel Brown**, Sales Manager, Delaval Turbine Inc., Gems Sensors Division, Farmington, Conn. 06032.

J.J. Scott Of Sea-Land Named Director Of Mideast Port

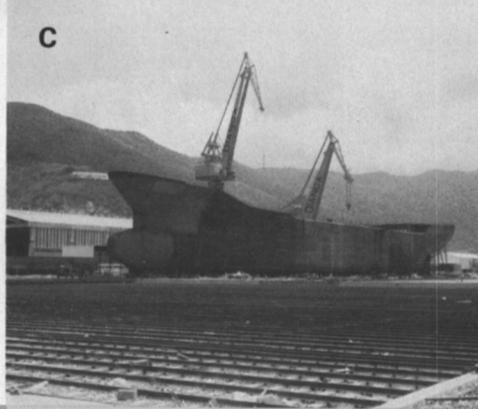
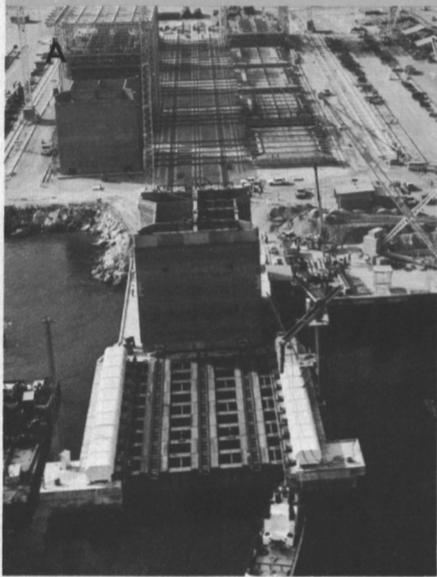
James J. Scott Jr. of Sea-Land Service, Inc. has been named executive director for the Port Authority of Jebel Ali, a new Mideast port due to become fully operational in the second quarter of 1979. Announcement of the appointment has been made by Sea-Land following the signing of a 10-year contract between the U.S. container company and the ruler of Dubai, **Rashid bin Said Al Maktoum**, providing that Sea-Land will provide certain technical services to the newly created port authority.

Mr. Scott will be responsible for Jebel Ali's containerized, break-bulk and liquefied petroleum gas terminals, as well as the operation of the port's tanker berths and other specialized waterfront facilities. A major aim of the authority will be the development of industry in the port district.

Mr. Scott was previously managing director of the Jacksonville (Fla.) Port Authority, and previous to that was engineering director for the South Carolina State Ports Authority.

In his new post, Mr. Scott will report directly to **Bernard E. Czachowski**, Sea-Land's executive vice president-affiliated services, a branch of the company administering all activities not directly involved with containership operations.

SYNCROLIFT® NOW IN 20th YEAR OF PROVEN PERFORMANCE



Unequaled record of performance . . .

- Pearson Engineering is the ONLY company in the world devoted exclusively to the design and supply of shiplift systems.
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Cable: SYNCROLIFT

London Office:
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London W1N 1FS, U.K.
Phone: 323-2855
Telex: 23717

A. DUBAI, UAE: Concrete caissons weighing 4,000 tons launched on Syncrolift.® Assembly line construction in transfer area.

B. LAS PALMAS, CANARY ISLANDS: 27,400 DWT vessel, Cobetas, 183 m. long being transferred to parking area from Syncrolift.®

C. PUERTO CABELLO, VENEZUELA: 30,500 DWT vessel constructed in two sections on land. Each is launched separately on Syncrolift.® and the two sections are welded together in the water.

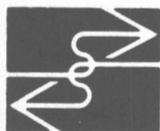
Crewboats by Swiftships. Known world-wide for quality and versatility.

In sizes 42' to 125', or to order, the Swiftships crewboat is specifically designed to carry large quantities of personnel, equipment and supplies. It's gained a reputation as the world's finest, with good reason. The entire construction is first class—geared for a variety of conditions and developed in tune with the offshore industry's trend to operate farther out to sea, in deeper water.

Specifically, the GM, MTU or Caterpillar engines provide for top speeds and maximum maneuverability. Fully outfitted, air-conditioned crew quarters and galley provide for year round comfort in any climate.

Just as important as the quality and versatility of our crewboats, is the way in which we work with our customers. From initial contact through approval of design, operational training for customer personnel, construction and delivery—each step is closely coordinated with our customers. When you buy from Swiftships, you not only buy a quality product but a quality company as well.

Swiftships quality and method have gained a substantial reputation for making a world of difference. *Crewboats, patrol boats, supply boats and utility vessels—built right, priced right.* Write or call for more information. P. O. Box 1908, Morgan City, Louisiana 70380 U. S. A., 504/384-1700 Telex 58-6453



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We're making a world of difference.

Admiral Benkert Elected President Of AIMS

The election of Rear Adm. **William M. Benkert**, USCG (ret.), to be president of the American Institute of Merchant Shipping (AIMS) was announced by **Adrian S. Hooper**, chairman of the board of AIMS and IOT Corporation. Admiral **Benkert** will succeed **James J. Reynolds**, who has been

president of AIMS since the association's formation in 1969.

In making the announcement, **Mr. Hooper** said: "The members of AIMS believe that Rear Admiral **Benkert's** experience will be helpful to the merchant shipping industry as he gives guidance on achieving the safety and environmental goals to which the industry has long been committed."

Admiral **Benkert** was gradu-

ated from the United States Coast Guard Academy at New London, Conn., in June 1943, with a degree in marine engineering. He served on combat duty in the Pacific Area through the remainder of World War II, including several vessel commands.

His sea duty assignments have included command of five Coast Guard vessels operating worldwide engaged in search and res-

cue work, aids to navigation, ocean station weather patrol and polar icebreaking. While ashore, he commanded marine inspection offices. His assignments at Coast Guard Headquarters were as Assistant Chief of the Merchant Vessel Inspection Division, Chief of the Office of Marine Environment and Systems and Chief of the Office of Merchant Marine Safety. In these capacities, Admiral **Benkert** acquired extensive experience in all aspects of commercial vessel safety and attendant pollution prevention.

As president of AIMS, Admiral **Benkert** will head an association whose 27 member companies own or operate over 200 American-flag tankers, chemical, liquefied natural gas and dry bulk carriers in U.S. domestic and foreign commerce.

AIMS is located at 1625 K Street, N.W., Suite 1000, Washington, D.C. 20006.

Mathers Controls Names Walbridge General Manager

Raymond Walbridge has been appointed general manager of Mathers Controls, Inc., 902 N.W. Ballard Way, Seattle, Wash. 98107, according to a recent announcement by **Harold Mathers**, Seattle, president of the firm.



Raymond Walbridge

Mr. **Walbridge** served as Mathers's business manager prior to assuming the general manager-ship, and before that he was a branch bank manager for Seattle Trust & Savings Bank.

Mathers Controls manufactures marine propulsion-control systems and auxiliary control systems for marine operators worldwide, specializing in pneumatic and mechanical systems for tugboats, offshore supply vessels, fishing boats and other workboats.

Stickney Marine Names Dufour Vice President

Norman J. Dufour Jr. has been named vice president, Operations, for Stickney Marine Surveying, Inc., P.O. Box 15650, New Orleans, La. 70175. A graduate of the U.S. Coast Guard Academy, Mr. **Dufour** joined the firm upon his release from active duty in 1976. Ms. **Helen Joffe**, long-time office manager at Stickney Marine, will assume dispatching duties.

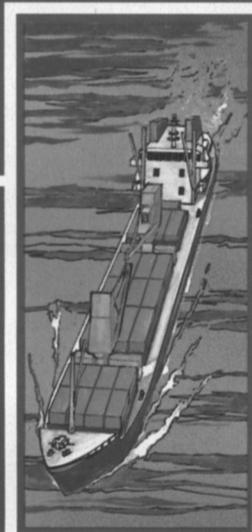
The all-purpose, all-oceans and versatile ships from Equitable.

The most versatile and advanced ships in the maritime industry come from Equitable for operations on all oceans, performing oil and gas offshore work and providing coastwide and harbor transportation and commerce. Vessels for ocean towing, anchor handling and supply. Fast, efficient, and economical vessels that carry people and cargo safely. Let Equitable build the vessel you need for your operation. We'll build it right, and we'll build it on time.



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A wholly owned subsidiary of Trinity Industries, Inc., Dallas, Texas, a manufacturer of industrial, marine and structural products.

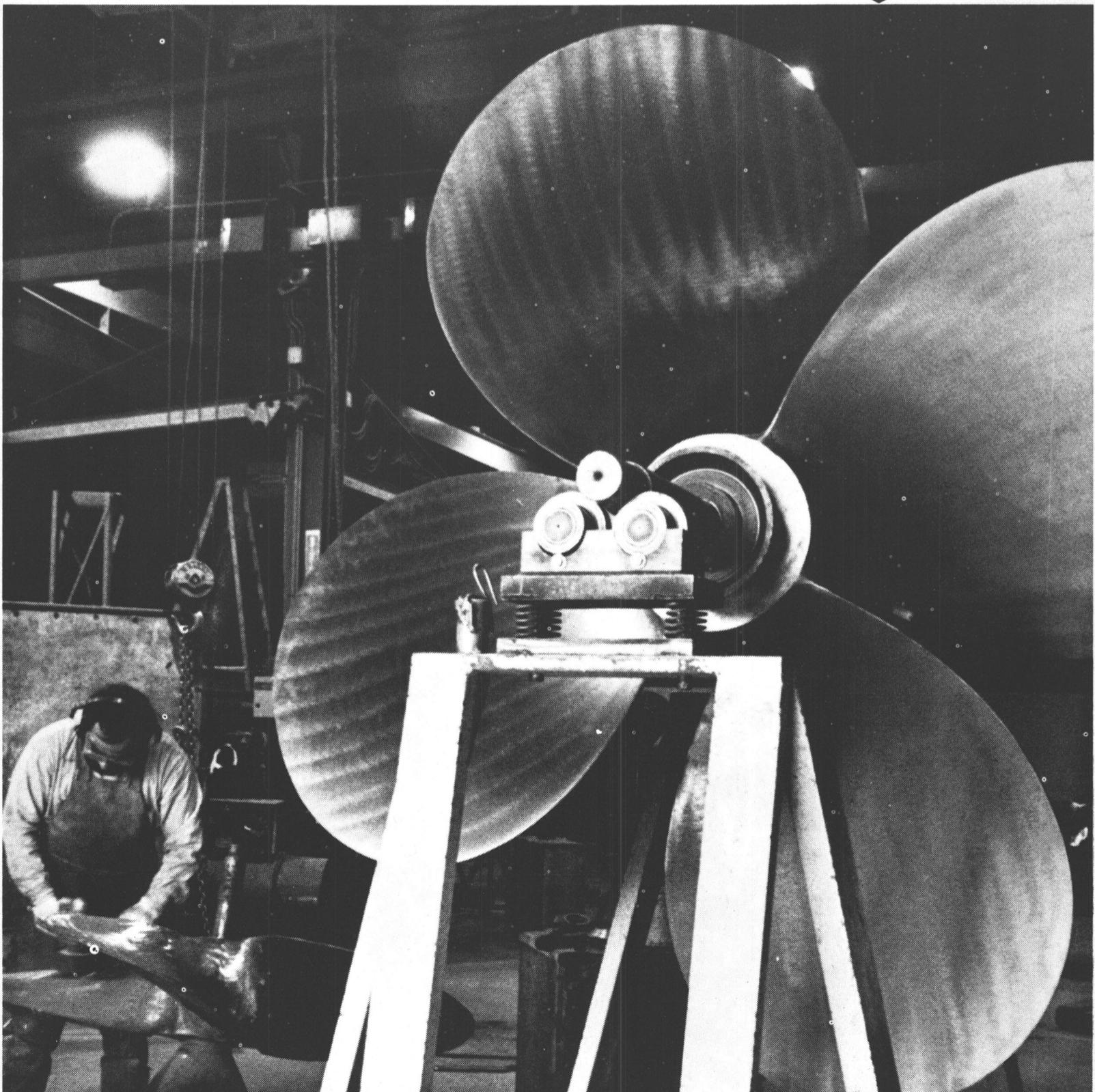


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On balance, you can't buy better[®] than Coolidge.

Tough, yet readily repairable, stainless steel propellers are a Coolidge strong point. That's because, with more than 60 years of experience, Coolidge knows more about casting stainless than almost anyone. Add the use of the most modern manufacturing equipment to all that know-how and you get the ultimate in stainless propellers. □ Coolidge also claims a world reputation for efficient prop designs. 3-, 4- or 5-blade styles up to 13 ft. in diameter, as well as CP blades, are available in bronze as well as stainless. And Coolidge engineers are prepared to create custom designs to suit your need. □ Coolidge offers fairwaters in stainless or bronze, prop shafting to any specification in bronze, monel, steel or stainless, and a full line of hardware...stuffing boxes, stern bearings, sea fittings and couplings. □ Before you pick your source, add up the pros and the cons...then go with the pros! Contact Coolidge Propeller Company, 1608 Fairview Ave. E., Seattle, Washington 98102. Telephone 206-325-5100.

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Tidewater To Acquire Insurance Firm In Texas

Tidewater Inc., 1440 Canal Street, Suite 2100, New Orleans, La. 70112, has announced that it has reached an agreement in principle with Angelina Casualty Company of Lufkin, Texas, for Tidewater to acquire Angelina for the equivalent of \$3,650,000 in the form of Tidewater common

stock. The exact amount of stock to be offered will be determined under a formula based on the average price of Tidewater stock over a 30-day period prior to the formal offering to Angelina's shareholders and providing for a maximum of 165,000 and a minimum of 145,000 shares of Tidewater stock. Subject to regulatory approval, Tidewater presently intends to acquire sufficient

treasury shares to effect the transaction.

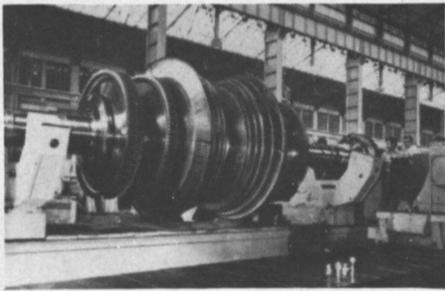
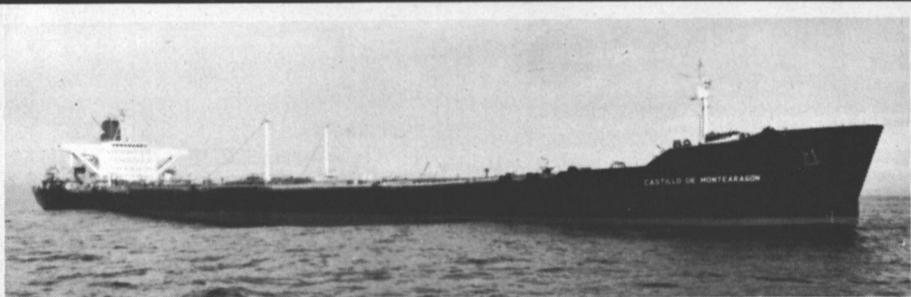
The acquisition is subject to the negotiation and execution of a definitive agreement between the parties and approval by the board of directors of Tidewater Inc., the board of directors and shareholders of Angelina Casualty Company, as well as clearances by various regulatory authorities.

Angelina Casualty Company is

a closely held insurance firm specializing in the underwriting of workers' compensation insurance in Texas. Tidewater Inc. is an oil and gas service firm providing marine support services to the world's offshore oil and gas industry and natural gas and air compression services. The New York Stock Exchange-listed company is also engaged in oil and gas exploration and production, and has interests in insurance and real estate.

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403

Sea Lion Sewage Report Aids Vessel Operators

Sea Lion Enterprises, Ltd. of New York, N.Y., pollution control specialist for marine and industrial applications, have compiled three reports pertaining to marine sewage problems.

The reports are (1) Sizing a Sewage Unit, (2) Quality Construction of a Sewage Unit, and (3) A General Comparison of Various Sewage Systems.

These reports have been utilized by various clients as guidelines in the establishment of sewage systems, tailored to their exact needs.

Thomas E. Aguanno, president of Sea Lion, said the research coalesced by Frederick M. Williams, vice president of the firm, is invaluable for those involved with marine sewage problems.

To obtain your free report, contact Sea Lion Enterprises, Ltd., 19 Rector Street, New York, N.Y. 10006.

Steam Turbine Operating Guide Now Available

The Maritime Administration has released a report which presents procedures, recommendations, and guidelines for tuning marine steam turbine propulsion systems and related auxiliary components. The study, "A Practical Operating Guide for Tuning Steam Turbine Propulsion Systems—Final Report," identifies individual machinery component performance indicators, presents overall cycle performance analysis procedures, and discusses improving plant performance by optimizing operation.

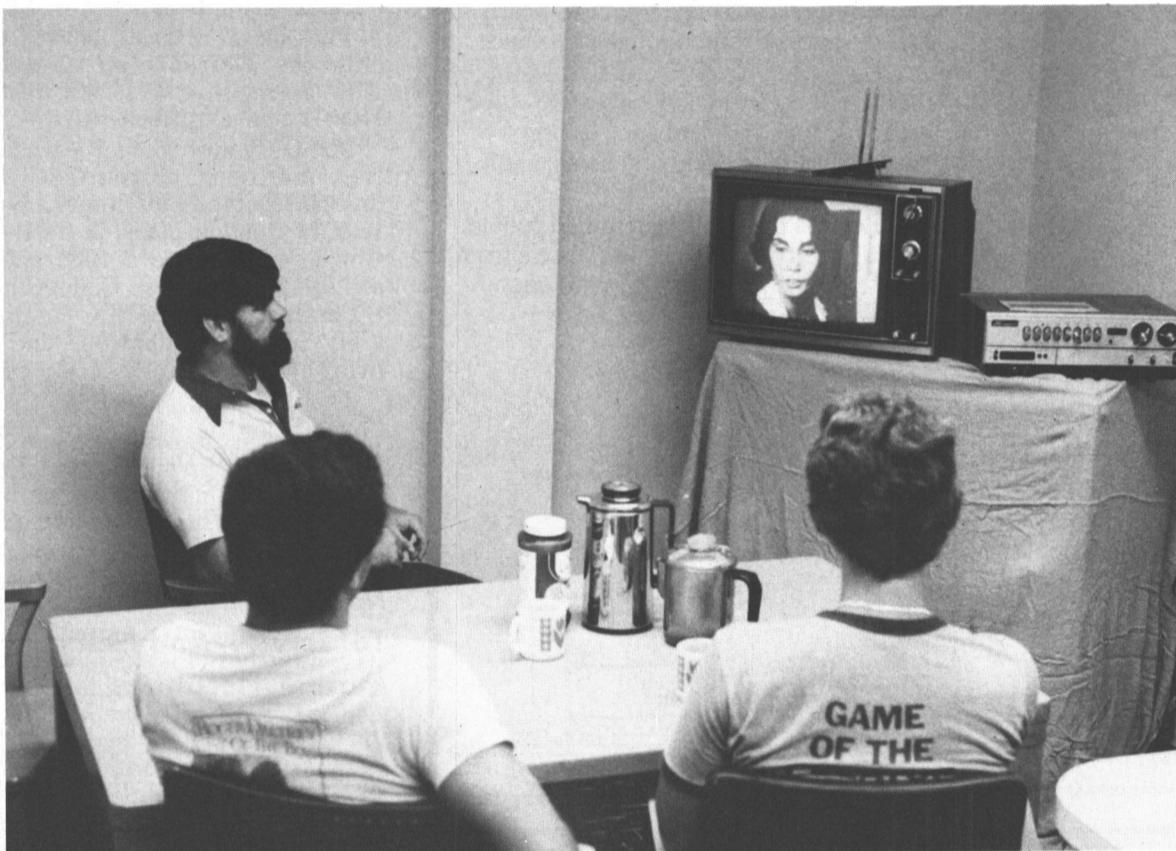
The Guide, which was prepared by Seaworthy Engine Systems, Inc. of Essex, Conn., under an agency sponsored research contract, includes discussion of component energy oriented problem cause, effect, and corrective action matrices, along with various reference curves and typical performance data. It concludes with a section on maintenance and performance analysis of basic shipboard instrumentation types.

The 284-page study is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161. The order number is PB-284590/AS, and the price is \$9.75.

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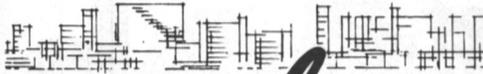
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Mobile, Alabama—Marine Specialty Co.—205-432-0581
New Orleans, La.—Alexander Ind. Inc.—504-525-9042
Norfolk, Va.—William H. Swan & Sons—804-855-4711
Rotterdam, Netherlands—Molam BV—010-76-87-11 (Telex 22161)
Tampa, Fla.—Bonnani Ship Sply.—813-229-6411

Kawaski Delivers Cargo Ship Equipped With Derrick Capable Of Lifting 600 Tons

The Malacca Maru, a heavy cargo carrier employing the world's largest (600-ton) heavy derrick, has been delivered by Kawasaki Heavy Industries to its owners, Kawasaki Kisen Kaisha, Ltd. and Nippon Kisen Kaisha, Ltd.



The derrick on the Malacca Maru can rotate 360 degrees while handling cargo.

In addition to general cargo, the Malacca Maru can transport various types of industrial plants, small vessels, vehicles, other large and lengthy heavy cargo, steel, iron ores, cottons and grains, and a variety of other cargoes.

To assist in loading this variety of cargoes, the oil hydraulic-driven derrick serves No. 2

and 3 hatches, and can rotate 360 degrees while handling a load of 600 tons.

The massive derrick installed on the Malacca Maru was manufactured at Kawasaki's Harima Works in Hyogo Prefecture. It is called the Kawasaki guyleless omnirange rotary-type heavy derrick. It is the fifth of its type that Kawasaki has constructed and the second 600-ton class derrick to be mounted on a ship.

The hoisting, topping and slewing of the derrick is controlled by handles on a remote control unit provided at the No. 1 winch platform. One man can operate the derrick.

To counteract heeling of the hull when the derrick is handling heavy loads, three heeling tanks, each capable of holding 500 tons of seawater, are provided on each side of the vessel. When necessary, the tanks are filled by two heeling pumps that are situated in the ship's engine room and operated through a control unit on the wall of the winch room. The panel indicates the level of the water in the heeling tanks and the heeling angle of the hull.

Strong steel hatch covers are provided on the upper deck of the vessel so that they can be hoisted by the vessel's deck crane and common derrick. Side-folding type steel hatch covers are provided for the No. 2 deck. These are opened or closed by the deck crane and common derrick. The hatch covers of the No. 2 deck can also be used as grain feeders.

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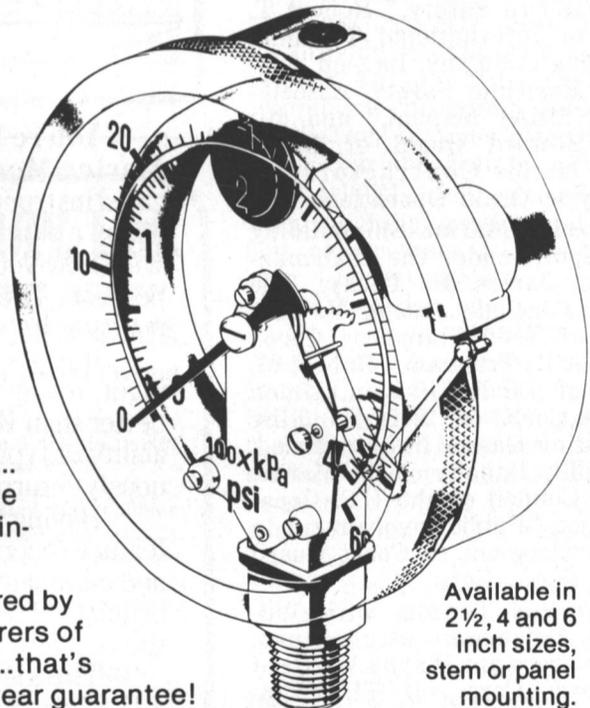
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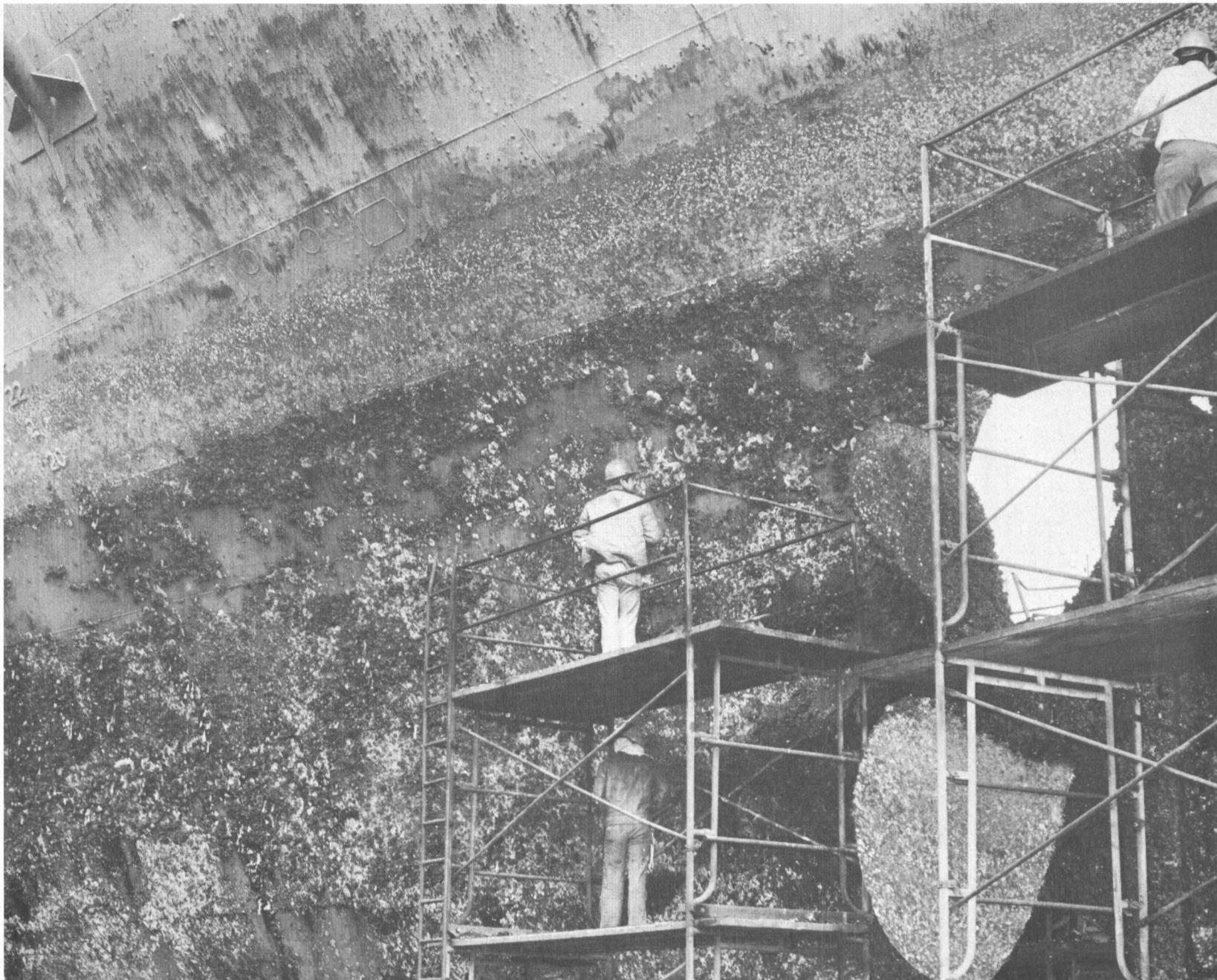
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International Firms Plan Large-Scale Operations In The Beaufort Sea

A joint venture called Arctic Dredging and Construction (ADCON) has recently been formed to engage in large-scale offshore construction projects required for development of oil resources in the Beaufort Sea.

The new organization brings

together the experience, equipment and operational capabilities of four international firms—IHC Holland, Rotterdam; Crowley Maritime Corporation, San Francisco, Calif.; Dredging International, Antwerp, Belgium, and Great Lakes Dredge and Dock Company, Chicago, Ill.

The initial service of ADCON will be the construction of artificial, gravel islands for explora-

tory drilling, production and support facilities.

IHC Holland is a world leader in the engineering and building of dredges and specialized machinery for the marine construction industry. The company's role in the joint venture will be to design the specialized dredging equipment required for Beaufort Sea service.

Crowley Maritime Corporation,

an international marine transportation firm, was the primary transporter of equipment and supplies to Prudhoe Bay for the Trans-Alaska Pipeline project. Northwestern Construction Company, a Crowley subsidiary, has completed a significant number of construction projects in Alaska. Crowley Environmental Services, another subsidiary, provides preventive services for environmental protection and immediate response in the case of offshore pollution emergencies.

Dredging International is one of the world's largest dredging contractors and has over 100 years of operating experience. It has carried out projects on a worldwide basis involving land reclamation, harbor extension, improvement of waterways and canal construction.

Great Lakes Dredge & Dock Company has more than 80 years of experience in international dredging and marine construction. The company is continually developing new techniques for work in exposed offshore areas where unfavorable climatic conditions exist.

Arctic Dredging and Construction will be based in Seattle, Wash.

MSB Approves Subsidy For LNG Spare Parts

The Maritime Subsidy Board has approved subsidy participation for machinery and electric plant spare parts for LNG tankers being built for El Paso Southern Tanker Company, El Paso Arzew Tanker Company, and El Paso Howard Boyd Tanker Company at Newport News Shipbuilding. The spare parts are in addition to those required by regulatory bodies.

The total allowance for the spare parts for the three vessels is \$2,364,000, with the Government's share limited to \$608,493. The action does not affect ship delivery dates.

The approval is in accord with a final rule the Board adopted January 3, 1978, specifying a predetermined limit of the amount of construction-differential subsidy (CDS) for the cost of machinery and electric plant spare parts which are in addition to those required by regulatory bodies. The rule also permits the spare parts to be based ashore.

Matson Promotes Christopher Minus

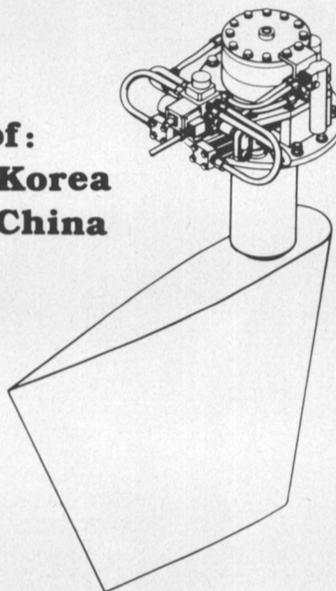
Matson Navigation Company, 100 Mission Street, San Francisco, Calif. 94105, has promoted Christopher Minus to the post of manager of marine operations in Portland, Ore. He succeeds Jack Smoot, who retired after a maritime career of more than 40 years.

Mr. Minus joined Matson in 1973 as marine operations assistant.

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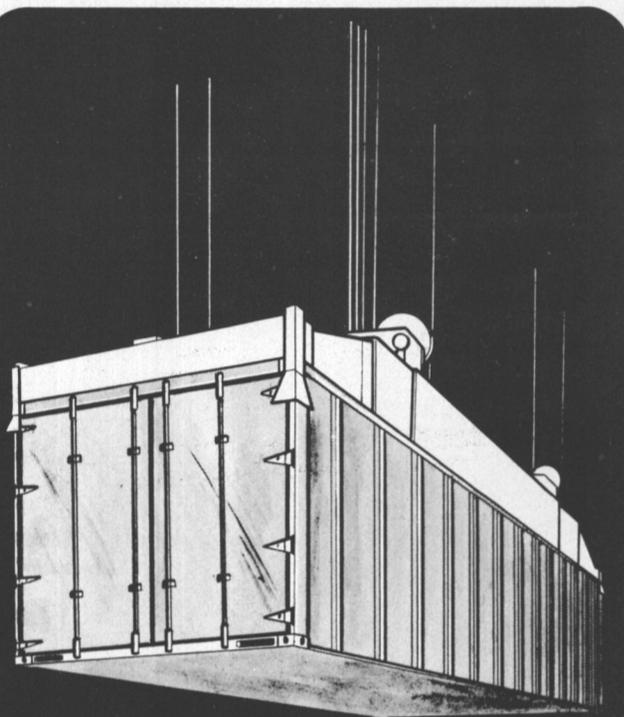
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Brochure Describes Caterpillar Diesels Use In Workover Rigs

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The brochure, "Power Up with Cat 3400 Series Diesel Engines," is available by writing to **Diane M. Bacci**, Caterpillar Industrial Division, Peoria, Ill. 61629.

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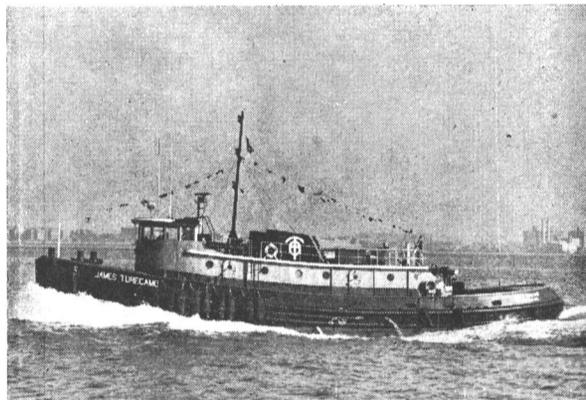
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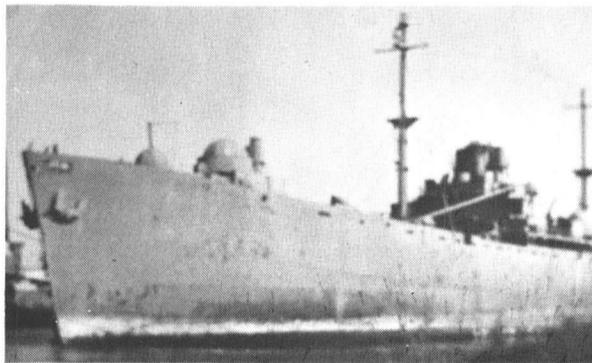
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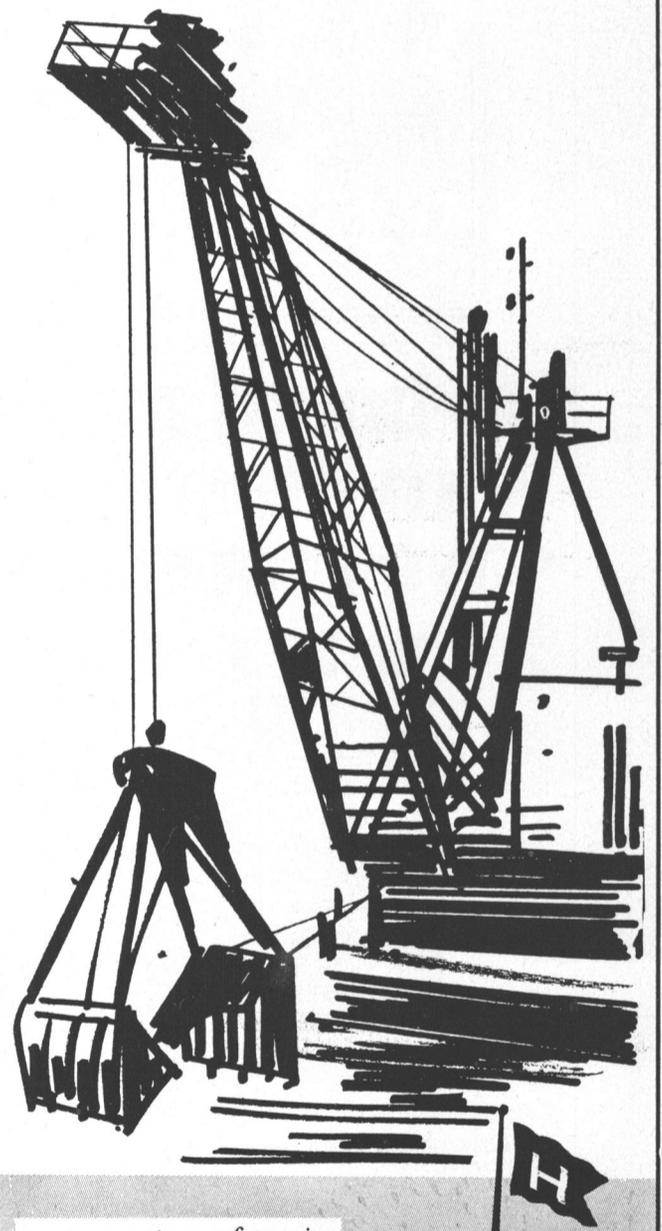


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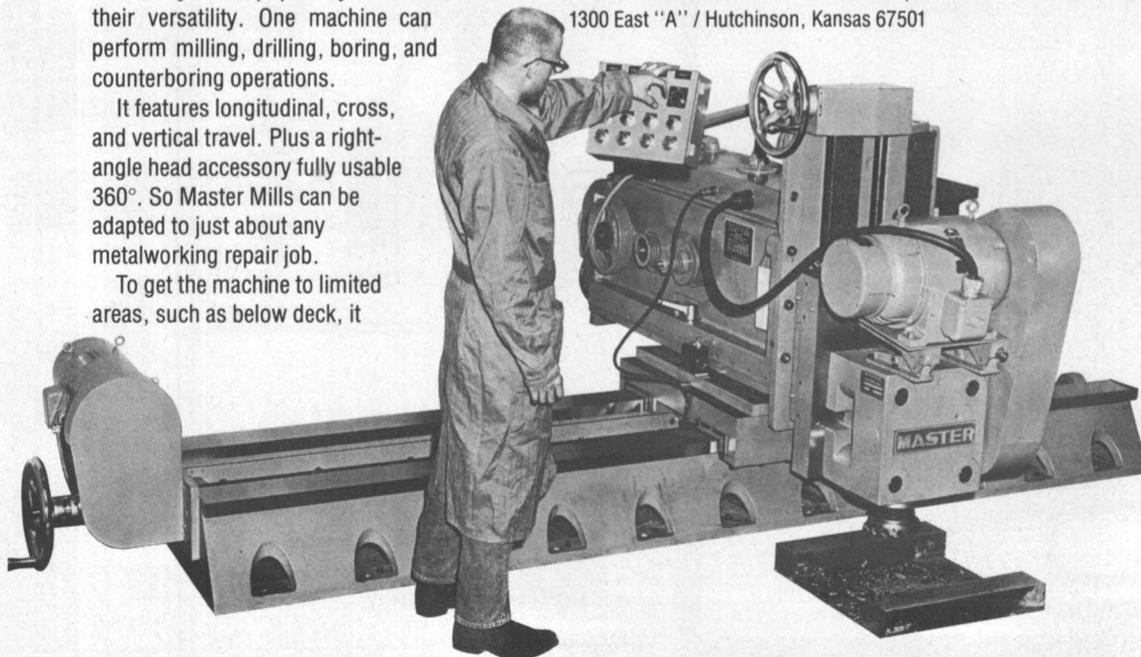
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New Abex/Denison Bulletin Describes Pressure Valves

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Maritime Reporter/Engineering News

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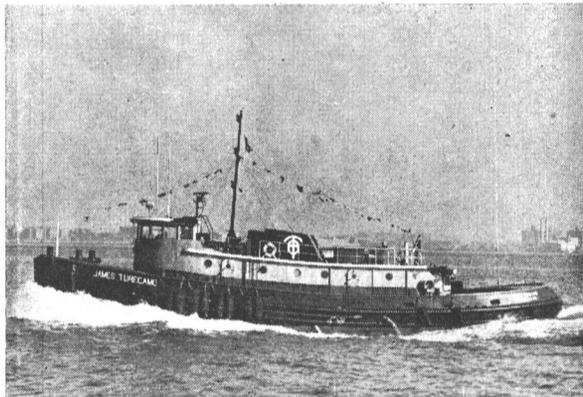
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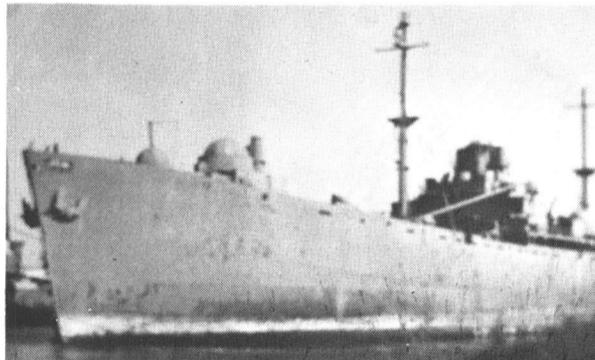
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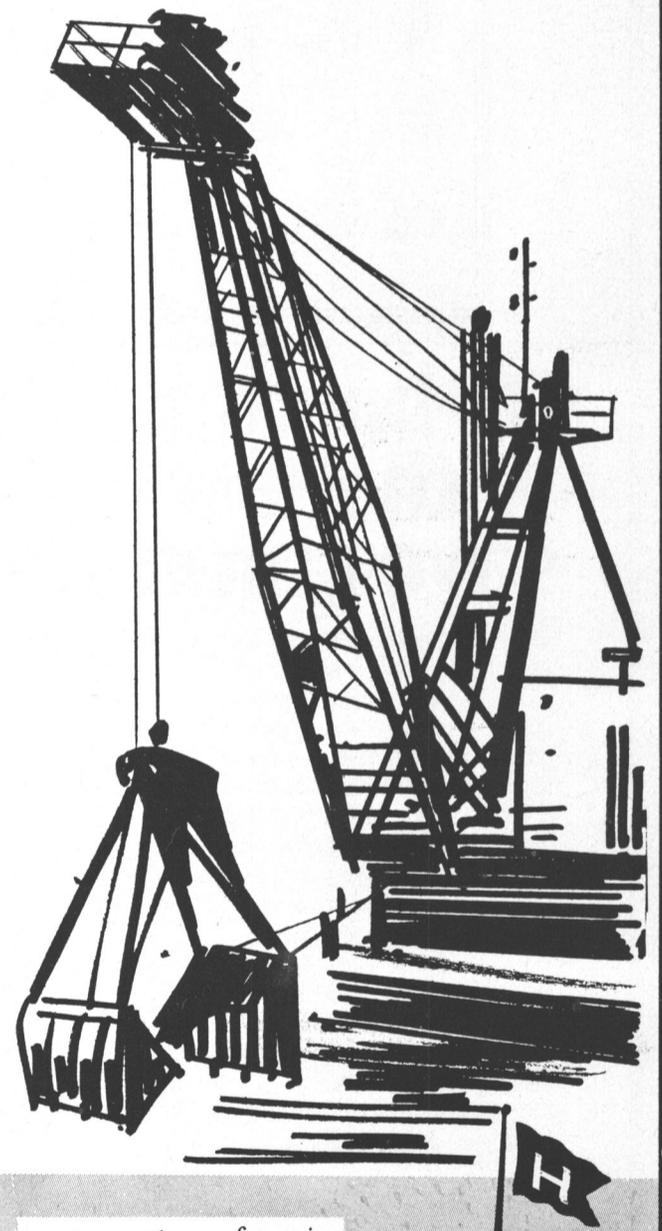


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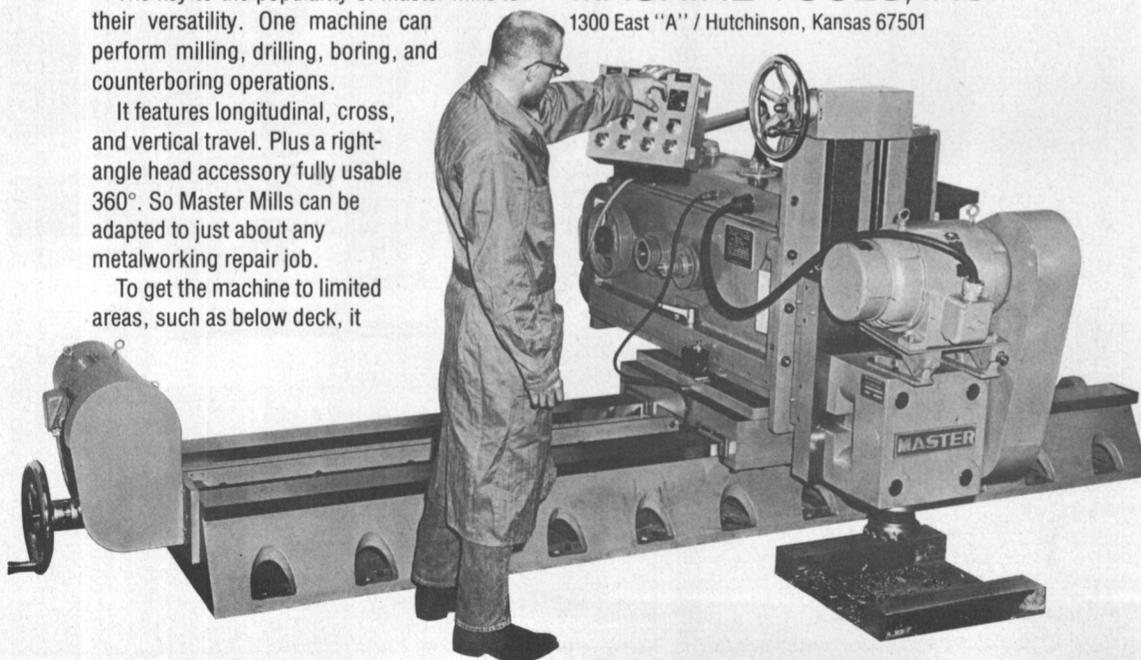
To get the machine to limited areas, such as below deck, it

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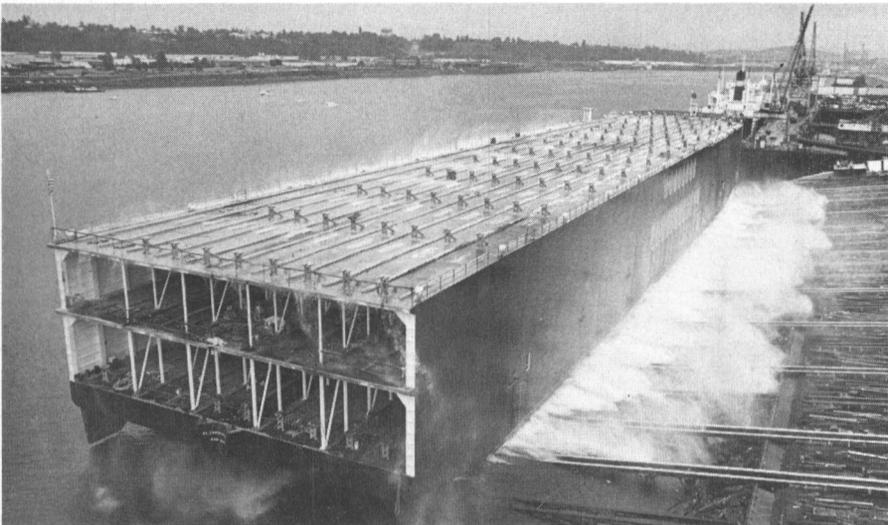
For more information and illustrated case histories of how shipyards have used Master Portable Mills, write us.

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FMC Launches Another World's Largest Barge



The El Conquistador has a three-deck capacity for 374 forty and forty-five-foot truck trailers.

The Marine and Rail Equipment Division of FMC Corporation, Portland, Ore., launched the second in a series of the world's largest roll-on / roll-off (ro / ro) barges on September 9. **John E. Carroll**, FMC Division president, said: "The triple-deck truck trailer barge will be delivered within two weeks to her owners, Crowley Maritime Corporation, San Francisco." Christened El Conquistador, the barge will be operated in the Caribbean by Trailer Marine Transport Corporation, a Crowley company.

In a traditional ceremony, **Mrs. Thomas B. Crowley**, wife of **Thomas B. Crowley**, chairman and president of Crowley Maritime Corporation, christened the El Conquistador by breaking a bottle of champagne against the steel hull. Seconds later, the 580-foot-long, 57-foot-high barge slid sideways into the Willamette River, reaching a speed of about 20 miles per hour before it struck the water at the end of FMC's side-launch ways.

The El Conquistador, and a sister barge delivered by FMC last April, will be operated between Trailer Marine Transport's home ports, Jacksonville and Miami, Fla., and San Juan, Puerto Rico. All three decks on the barges are designed to be loaded with truck

Passenger Liner's Fast Repair At Northwest Marine Iron Works

Northwest Marine Iron Works of Portland, Ore., has placed the Veendam, a Holland-America passenger liner, back into service in less than two weeks, following an accident suffered in Alaskan waters.

The passenger liner, which runs between Vancouver, British Columbia, Canada, and Alaska, was repaired under an approximate \$500,000 contract by Northwest Marine Iron Works, after it hit a pinnacle.

Approximately 90 feet of bottom plate was replaced on the starboard bow of the Veendam.

trailer rigs simultaneously from a tri-level loading ramp in each port.

Based in San Francisco, Calif., Crowley is a major international marine transportation firm. In recent years, FMC has built several barges for Crowley, including large oil barges, deck cargo barges, and a sister barge to the El Conquistador, the La Reina.

The Marine and Rail Equipment Division of FMC is a manufacturer of two types of transportation equipment in Portland — a wide variety of marine equipment and railroad freight cars. The parent company, FMC Corporation, headquartered in Chicago, Ill., is a major producer of machinery and chemicals for industry and agriculture, with 1977 sales of \$2.29 billion. Worldwide, the company has more than 43,000 employees located at 127 manufacturing facilities in 32 states and 13 foreign countries.

The principal particulars of the El Conquistador are: length overall, 580 feet; beam, 105 feet; depth, overall, 57 feet; draft, light (estimated), 4 feet 10 inches; draft, loaded (summer loadline), 10 feet 11 $\frac{1}{8}$ inches; displacement (maximum), 16,000 short tons, and cargo capacity, 374 forty and forty-five-foot truck trailers.

The 615-foot-long vessel required a 23,000-ton lift.

Northwest Marine Iron Works' ability to handle heavy vessels will be enhanced substantially early next year when the Port of Portland's new 81,000-ton drydock goes into operation. The drydock, which stretches 990 feet long and 185 feet wide, will be the largest drydock on the West Coast when completed.

Northwest Marine Iron Works has a major role in outfitting of the new drydock when it arrives from Japan this fall, as it is responsible for installation of de-watering pumps, major electrical work, utility line connections, access equipment and touch-up painting under a \$2.6-million contract.



MONARK'S 38' ALL-WELDED ALUMINUM WORKBOAT — MonArk's 38-foot diesel-powered workboat recently delivered to the United States Geological Survey is powered by twin 671 Detroit Diesel engines. The boat normally operates on a 12-hour shift, six days per week, and is used as a geophysical and oceanographic survey boat. The vessel contains electronic and mechanical equipment for work in both protected areas and in coastal waters and features a fully enclosed cabin with a raised pilothouse and a flush deck aft. Specifications are as follows: length overall, 36 feet; beam, 11 feet; molded depth, 4 feet 5 inches; cabin length, 8 feet (excludes pilothouse); cabin width, 8 feet 6 inches, and aft deck length, 16 feet. Further information and a color catalog can be obtained by writing to **Anne Robirds**, MonArk Boat Company, P.O. Box 210, Monticello, Ark. 71655.

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For more information, clip this ad to your letterhead and mail to Armco Inc., Dept. A-118, Box 600, Middletown, Ohio 45043.



Advanced Materials Division

MacGregor's Novel Solution To Quay Height Variation

The Claymore, a ro-ro passenger/vehicle vessel capable, when fully loaded, of carrying up to 527 passengers and 47 cars or six 40-foot trailers and 24 cars, was recently launched from Robb Caledon's Leith, Scotland, yard. When

delivered to her owners, Caledonian Macbrayne of Gourock, Scotland, she will supplement that company's sizeable fleet which services the large number of Scottish islands with passengers, vehicles, freight and mail.

The Claymore, a stabilized vessel of 450 dwt and 77 meters (about 253 feet) overall length, is fitted with MacGregor ro-ro

equipment of a type which represents a rather unusual yet simple solution to the problem of the wide range of quay heights met with at the various Scottish island ports of call. It includes (a) a stern ramp and (b) a hoistable platform or cargo-lift embodying turntables (one port, one starboard), access to which is via side ramps, one on each side of the vessel.

In its lowest position, the platform is flush with the cardeck, entry to which, when quay height permits, is via the stern ramp. Often however, the quay height may not permit stern access; then vehicles will drive on to the cargo lift—raised to the appropriate height—via a side ramp from either port or starboard, depending upon the side the vessel is moored. Platform with vehicle then descends to cardeck level, the turntable is manually operated to point the vehicle longitudinally, and the vehicle driven off and parked.

Operation of the platform is by hydraulic jigger winch, and of the side ramps by two hydraulic cylinders. Duplicated, joystick-type controls for both ramps and platform are located adjacent to the forward port and starboard platform guide and support pillars. Indicator lamps show the "in" and "out" condition of side ramps, the position of the platform and the direction of its travel. Interlocked safety limit switches are provided on all movements plus, for warning purposes when the system is energized, revolving indicator lamps and a klaxon operable during raising and lowering.

The MacGregor hydraulic stern ramp provides a 3.83-meter-wide (about 12½ feet) vehicle way and is comprised of an inner and outer leaf with a single finger flap, giving total length of over 7.5 meters (about 25 feet). It is suitable for a twin-axle loading of 13.5 tons per axle.

Operation of both inboard and outboard sections of the ramp is by hydraulic cylinder, and control is by joystick situated adjacent to the ramp.

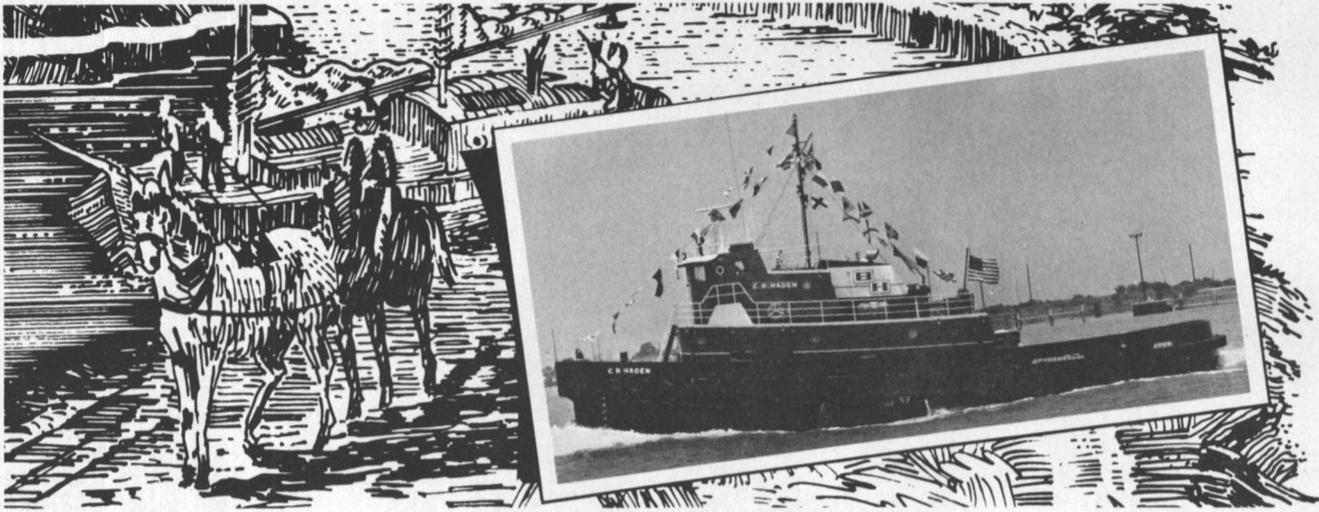
Power for both stern ramp and lifting platform/side ramps is supplied from the same power pack. Briefly, this hydraulic pump station comprises three main pumps, all mounted on a common tank and powered by a 68-hp 1,500 rev/min motor.

Maxon Marine Delivers Self-Unloading Cement Carrier And Crane Barge

MAXON MARINE INDUSTRIES, INC., Tell City, Ind., has just completed a new crane barge for GREATER CINCINNATI MARINE SERVICE, Cincinnati, Ohio.

This barge is 110 feet by 50 feet by 7 feet, and is the fourth hull Maxon has built for Greater Cincinnati. Greater Cincinnati now has 21 barges in their fleet to better serve the construction industry.

Also, Maxon recently completed a self-unloading cement barge 290 feet by 50 feet by 12 feet for River Cement Company in St. Louis, Mo. This is the fourth barge of this type Maxon has built for this company.



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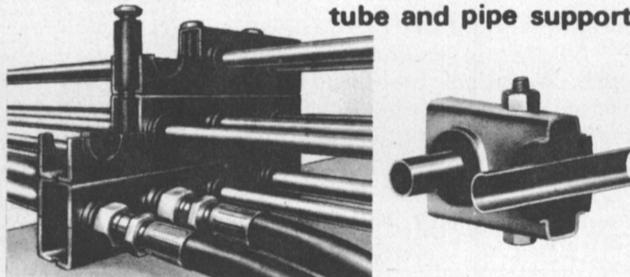
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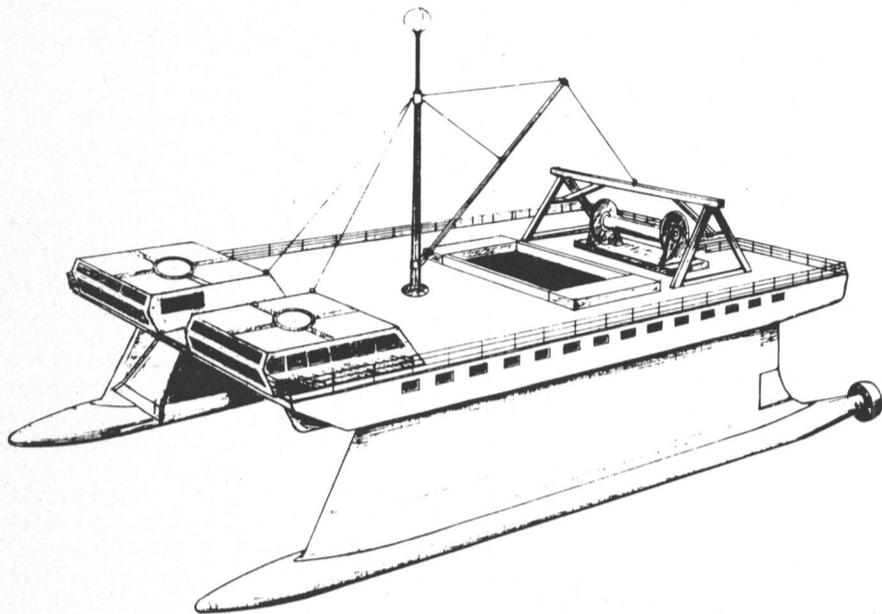
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Hawaii Firm Announces Plans To Construct A Stable Semi-Submerged Fishing Vessel (SSFV)



A rough sketch of the new semi-submerged fishing vessel (SSFV) which will have a high degree of stability in open sea waves up to 20 feet.

SEACO, Incorporated, 146 Hekili Street, P.O. Box 1171, Kailua, Hawaii 96734, has announced plans to design and construct an advanced type of fishing craft for use in the rough waters around the Northwest Hawaiian Islands. The 300-ton vessel will be 100 feet long and similar in concept to the U.S. Navy's Stable Semi-submerged Platform, SSP Kaimalino. The Kaimalino has been operating in Hawaiian waters for nearly four years under the control of the Naval Ocean Systems Center, Hawaii Laboratory.

Present plans call for detailed economic, technical, and fisheries' investigations of the SSFV during the remainder of 1978. During 1979, a detailed design of the vessel will be completed, with the start of construction planned for early 1980. Several State and Federal agencies, including the UH Sea Grant Office, are cooperating with SEACO in conducting studies and sea trials to demonstrate the effectiveness of this type of craft.

The SSFV Program Manager, **Mark Rice**, cited recent fisheries studies by the National Marine Fisheries Service which have uncovered large fish and lobster resources in the Northwest Chain. While the present fleet of Hawaiian fishing vessels is not designed for extended deployment in these rough waters, the 200-mile fisheries zone now under United States jurisdiction makes a Hawaiian Fleet economically and politically viable. There exists a need for new vessels that can fish effectively in this untapped region.

The potential of SSFVs for fishing in the Northwest Chain holds additional promise for diversification of Hawaii's industries. Involvement of local companies and local labor will give Hawaii a unique vessel to tap these large fish reserves, and

could provide the State with an exportable shipbuilding technology. The SSFV design may also serve for scientific research and passenger-cargo versions, according to SEACO.

As with the Kaimalino, the new SSFV will have a high degree of stability in open sea waves up to 20 feet. The advanced design of the vessel will provide a higher degree of crew comfort, increased efficiency, and improved safety for fishermen working around remote reefs and shoals in the Hawaiian Chain.

SEACO is an independent technical services and research firm with headquarters in Kailua. The company is engaged in development and analyses of high technology ocean systems, communications, technical documentation, and systems management projects under contracts with the government and private firms, and has held contracts with the Navy for operation and engineering support of the SSP Kaimalino. The company's approximately 100 scientists, technicians, and engineers represent a pool of talent available to strengthen Hawaii's position in the research and scientific industries.

Egypt Seeks Japan's Help To Build New Suez Canal

Egypt has sought Japanese cooperation to construct a new Suez Canal to be opened by the end of the 20th century.

Egyptian officials were expected to brief Japan on the details of the \$5.2-billion project at the first Japan-Egypt economic meeting in Cairo.

The Egyptian government has decided to construct a new Suez Canal instead of enlarging the present canal for two-way traffic, after consultations with a British technical institute.

The construction site is planned on the eastern side of the present canal.

SNAME New York Section Reports Meeting Program For 1978-1979 Season

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers has announced its program of technical meetings for the 1978-79 season. All meetings this season, except the Annual Meeting, will be held at the Whitehall Club, 17 Battery Place, New York, N.Y. The schedule for the season is as follows:

October 19, 1978—Paper: "Containership Economics for Effective Decision Making Analysis." Author: **N. Caracostas**, Advanced Marine Enterprises, Inc.

November 16-18, 1978 — 86th Annual Meeting and Banquet, to be held at the New York Hilton Hotel, Avenue of the Americas and 53rd Street, New York, N.Y.

December 13, 1978 — Paper: "The Maintenance and Repair of Modern Marine Diesel Propulsion

Systems." Author: **J. Diller**, American M.A.N. Corp. This meeting to be a joint meeting with the Society of Marine Port Engineers.

January 11, 1979—Paper: "The Design and Performance of Radical, High Speed Sailing Vehicles." Author: **Prof. W.S. Bradfield**, State University of New York at Stony Brook.

February 13, 1979—Paper: "COGAS—Marine Power Plant for Energy Savings." Authors: **R.P. Giblon** and **I.H. Rolih**, George G. Sharp, Inc.

March 15, 1979 — Paper: "The Service Life of Marine Coatings and Paint Systems." **F. Matanzo Jr.**, Engineering Systems Company.

April 17, 1979—Paper: "Design Criteria for Modern Mooring Machinery." Authors: **W.M. Christiansen**, Kocks Crane and Marine, **E. Lithen**, J.J. McMullen Assoc., and **H. Herchenroder**, Kocks GmbH.

May 1979—Date, Papers, Authors and Place to be announced.

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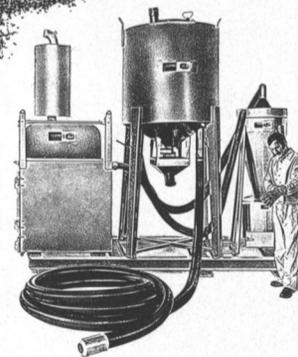
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Modules Towed To Site For Construction Of Offshore Plants

With the rapid increase in the need for large plants in nonindustrialized areas, major Japanese shipbuilders have each developed unique methods to build large plants utilizing their engineering and shipbuilding techniques, such as barge-mounted plants. Some of them have already exported barge-mounted plants for production of pulp and mortar, as well as for desalination.

A method described below is a "Module Plant System" which was developed by Mitsubishi Heavy Industries, Ltd. The plant constructed under this system is the offshore natural gas liquids facilities for Qatar General Petroleum Corporation, and final shipment was recently completed.

Mitsubishi-developed Module Plant System is, in a word, an efficient prefabrication method for plant construction. It has the following features: (1) Specially developed system and equipment for transportation and erection; (2) Easily transportable, and completely assembled modules of high quality, and (3) Simplified, no piling foundation.

MHI has all the fundamental techniques required for this system, which have been acquired through long experience as one of the leading shipbuilders, heavy machinery manufacturers and plant engineering contractors.

Major steps of the Module Plant System are divided into the following six stages: (1) Engineering, (2) Procurement and/or fabrication of equipment and materials, (3) Module fabrication, (4) Loading and

ocean transport, (5) Unloading and inland transport, and (6) Civil engineering and installation work.

Of the above-mentioned major steps, the module fabrication is carried out under the following process:

Equipment and materials are delivered to and stocked at the module fabrication factory under a firm schedule and careful material control.

Fabrication of modules is made under the same production control as in well-equipped factories. A factory with ample stock yard and facilities for module fabrication, as well as loading on oceangoing vessels, is considered to be most suitable.

The Module Plant System has the following advantages as compared to conventional methods: (1) High quality, (2) Lower cost, (3) Faster delivery, (4) Less work at site, and (5) Less effects from local conditions.

As the main stages of the construction process are carried out under the same production control as applied in the factories, and because on-site work is minimized, it is possible to eliminate unfavorable local factors which may seriously affect work flow at site.

Moreover, making the most of these advantages, the system makes it possible to undertake construction of any type of plant based on a total integrated contract.

The LNG facility for Qatar General Petroleum Corporation is to separate gas from oil during offshore drilling and transport it to shore by a process developed by Mitsubishi.

The LNG facility will be installed in waters with a depth of 35 meters, about 85 kilometers offshore east of Doha, along the coast facing the Persian Gulf. Installation of the entire facility is scheduled to be completed by July 1979.

Composition of the facility: At present, there are three oil wells in operation in the sea area. For these three oil wells, three stations will be erected, each comprising a compressor (compression unit) platform, a glycol dehydrator/power generator platform, and a living quarters platform (for the operators). The platforms will be connected by bridges.

Weight of platforms and modules: Compressor platform—three units, each 4,000 tons. Each unit consists of three modules, which are put together at the site. Glycol dehydrator/power generator platform—three units, each 1,100 tons. Each unit consists of one module. Living quarters platform—three units, each 1,100 tons. Each unit consists of module.

As described above, one station includes five modules and weighs a total of 6,200 tons. The three stations weigh 18,600 tons in total. In addition, a riser-deck with a weight of 100 tons will be added. This means that there will be in all, 16 modules.

Hull And Cargo Surveyors, Inc. Relocate Fort Lauderdale Office

Hull and Cargo Surveyors, Inc. has relocated its Fort Lauderdale, Fla., office to new and larger quarters. The new address is South Andrews Professional Building, Suite 206, 1525 South Andrews Avenue, Fort Lauderdale, Fla. 33316.

George H. Bark continues as principal surveyor and manager of this office. He is a fully licensed surveyor in Florida and the Bahamas.

Hull and Cargo Surveyors, Inc. represents underwriters and private interests in surveying and inspecting all types of ocean and inland marine risks.

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Halter Delivers Second Supply Boat To Gonsoulin Enterprises

A new tug/supply vessel, the Charleston, has been delivered by Halter Marine, Inc., New Orleans, La., to Gonsoulin Enterprises of Houma, La.

The new boat, second of two built recently at Halter for Gonsoulin, has overall dimensions of 185 feet in length, with a 40-foot beam and 14-foot depth.

Propulsion is provided by two rebuilt EMD-16-645C engines developing 1,500 horsepower each at 900 rpm. She is equipped with Falk reduction gears with a ratio of 2.968:1, and swings two 90-inch four-bladed propellers. Electrohydraulic steering and autopilot were supplied by Sperry. Maneuverability and station keeping are enhanced by a 300-hp Bird-Johnson bowthruster.



The Charleston was built at Halter's Moss Point, Miss., shipyard, one of the 10 Halter-owned shipyards in the United States.

The vessel is equipped with a bulk mud system comprised of six tanks with a capacity of 6,000 cubic feet.

Auxiliary machinery includes two Delco 98-kw generators, two Quincy air compressors, a Deming sanitary water system, a 30-point engine monitoring alarm system, and a Barnes fire protection system.

Communications and navigation equipment include VHF and single sideband radios, two Decca radars, Ritchie magnetic compass, Bendix Loran, Sperry gyrocompass and Raytheon depth sounder.

The Charleston is ABS classed, A-1 Maltese Cross, full ocean towing, AMS ice class "C". She carries a Panama Canal admittance certificate, and is U.S. Public Health approved.

The Charleston was built at the Moss Point, Miss., Division of Halter Marine, one of 10 shipyards owned and operated by Halter in the Southeastern United States.

Halter is the world's largest builder of supply vessels for the offshore oil and gas industry.

Ship Structure Committee Publishes Two New Reports

The Ship Structure Committee has recently published two new reports dealing with structural details and tolerances common to the commercial and naval shipbuilding industry. These reports should be valuable guides to both structural designers and shipyard personnel.

SSC-272, "In-Service Performance of Structural Details," catalogues various structural design details used in marine construction and their performance, based on the examination of 50 different ships undergoing repairs or periodic surveys. This information should be invaluable as an aid to engineers and designers, since failure causes such as

design, fabrication, maintenance, or operation are postulated.

SSC-273, "Survey of Structural Tolerances in the United States Shipbuilding Industry," is a survey of the deviations from ideal structural design of different types of vessels during construction and service. While no complete set of structural tolerance limits is universally accepted or required in the United States, a comparison with the standards of other shipbuilding nations and the international classification societies is noteworthy. This report should be of interest to both shipowners and shipbuilders/designers.

The Ship Structure Committee is an inter-agency committee composed of representatives from the Naval Sea Systems Command, Maritime Administration, U.S. Coast Guard,

Military Sealift Command, U.S. Geological Survey, and the American Bureau of Shipping. The purpose of the committee is to conduct an aggressive research program which will, in the light of changing technology in marine transportation, improve the design, materials and construction of the hull structure of ships and other marine structures. This is accomplished by an extension of knowledge in these fields for the ultimate purpose of increasing the safe and economic operation of all marine structures.

For copies of these reports, an index of past reports, or further information, contact: Secretary, Ship Structure Committee, U.S. Coast Guard (G-M/82), 400 Seventh Street, S.W., Washington, D.C. 20590.

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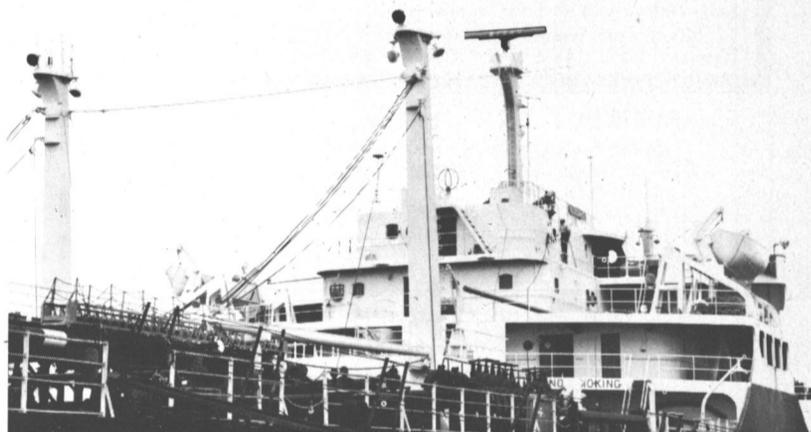


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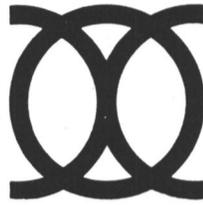
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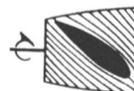
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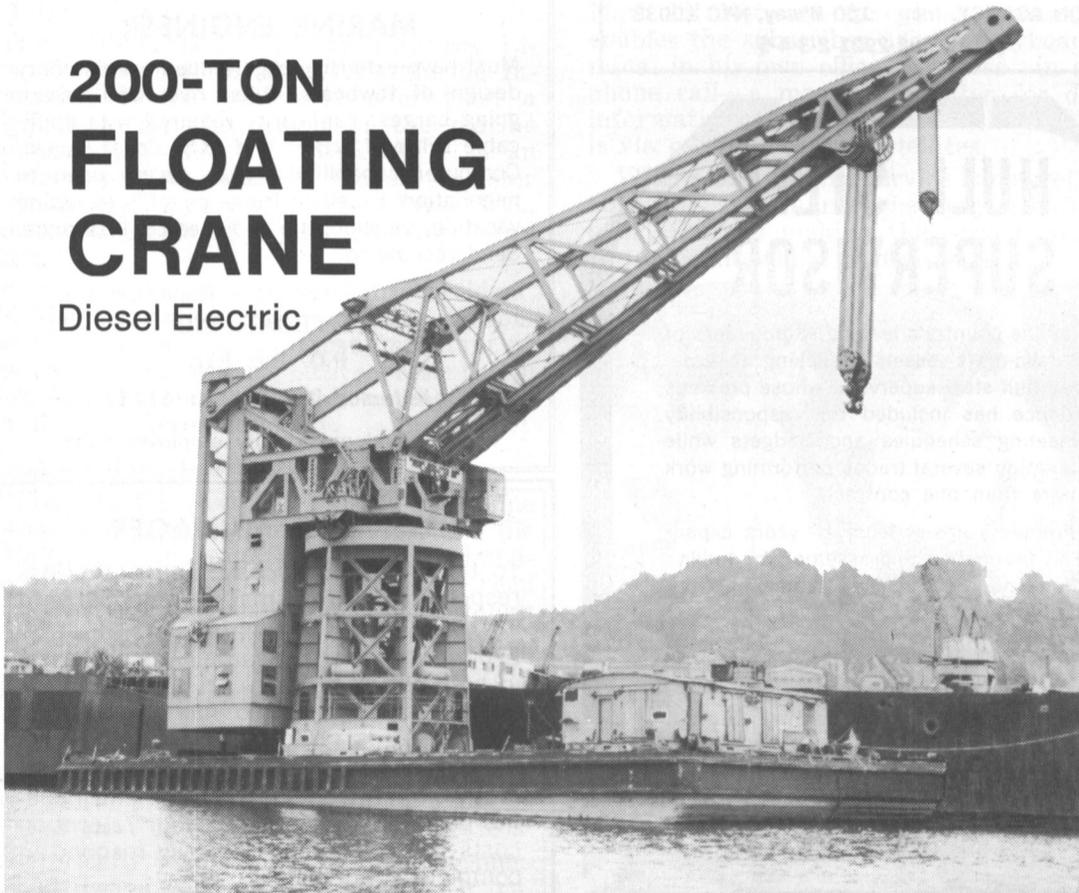
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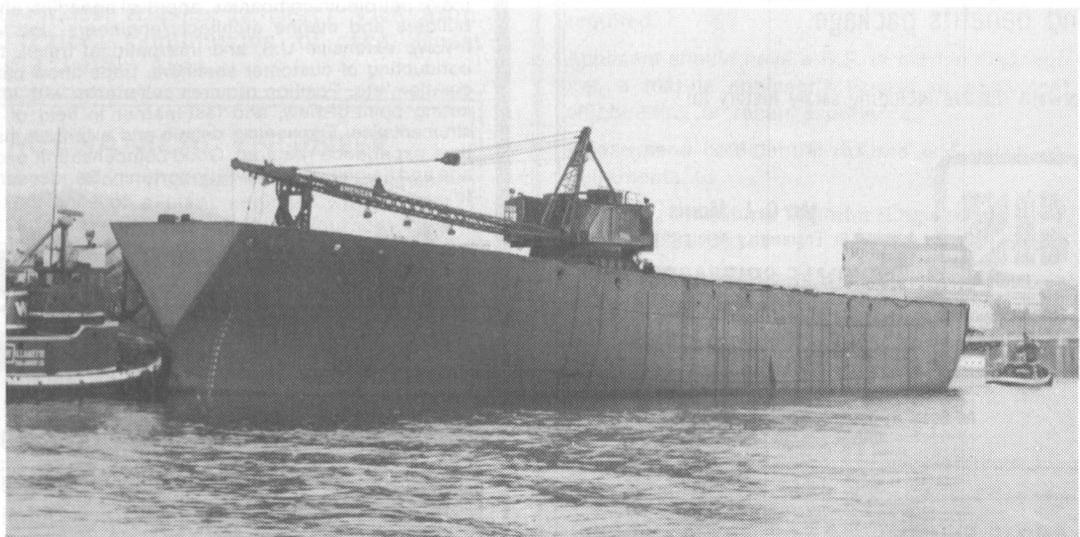
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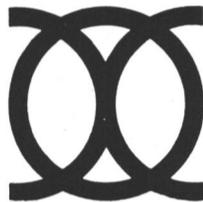
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Maritime Data Network Announces Computerized Charter Fixtures Library

A newly developed, computerized system—designed to provide shipbrokers, charterers, and shipowners around the world with instant, timely, and accurate information reflecting the constantly fluctuating charter fixtures market—has been announced by Maritime Data Network, Ltd. (MARDATA), Stamford, Conn.

The system, the "Charter Fixtures Library," is part of MARDATA's Marine Information Service which is offered on a global scale for the benefit of the marine transportation industry. MARDATA is an international firm owned by Lloyd's Register of Shipping, Lloyd's of London Press Ltd., Marine Management Systems Inc., and others.

Eugene D. Story, MARDATA's president, said the Charter Fixtures Library is considered to be one of the most important of several library systems either presently in operation, or being prepared, by the Stamford-headquartered company.

Instant Research Capability

"The Charter Fixtures Library is unique in that it is the only computerized data file of its kind available to the maritime community. The new system will eliminate the need for extensive, costly manual research through publications," Mr. Story stated.

The data, which originates with shipowners, brokers, charterers, and various news services in the U.S., Europe, and the Far East, includes vessel name, deadweight, cargo, charterer, period, load area, discharge area, rates, and dates. The Library file is updated on a daily basis.

Historically, he explained, the charter market had always reflected "word-of-mouth" negotiating and reporting between shipbrokers, charterers, and vessel owners. He commented that "a shipowner, naturally, tries to get the most for the use of his vessel, while a charterer seeks the best possible deals for moving his cargoes." The price agreed upon is governed by supply and demand as in the stock market.

Time Lag Reduced

Mr. Story cited the time lag before reported charter fixtures information is published in the industry's publications, pointing out that MARDATA's service aims to reduce this interval substantially to provide subscribers with information almost as fast as it is reported.

MARDATA's personnel will begin the day by listing charter fixtures as they are reported in London, with their counterparts in New York and Tokyo continuing the procedure as these markets become active.

Pointing to time zone differences, he said that by the time the business day begins in New York City, five or six hours of data will already have been collected and filed in the Library's system.

Simultaneously, as the business day closes in New York at 5 p.m., MARDATA's Tokyo office, where the time is 6 a.m., will take over the task of monitoring the data. Their job will be to verify the accuracy of the data input that day and make necessary corrections, referring to telexes and oral reports received from brokers.

Practical Applications Seen

Shipowners and charterers using the Charter Fixtures Library will be able to obtain immediate reports on what ships have been reported as fixed in the market, the kinds

of commodities being transported, and the freight rates for different trades.

For brokers, he declared, the Library represents the fastest means of collecting, in an organized manner, vast amounts of information on charter fixtures.

"The system can be quite useful to assess the market and make projections for their clientele," he added.

GE's Mark III Network

MARDATA's service, which utilizes GE's Mark III Network for global transmission, enables the subscriber using a keyboard terminal in his own office to access—in a local phone call—a master computer for desired information. Link-up between the continents is via communication satellites.

Where local tie-line service is not yet available, the system may be accessed through telex, thereby making the service available virtually anywhere in the world.



COAST GUARD INSPECTION — Newly appointed U.S. Coast Guard Commandant Adm. John B. Hayes (right) is briefed by Capt. Douglas Hard, director of MarineSafety International, on MarineSafety's shiphandling training simulator in the system's wheelhouse at New York's LaGuardia Airport. Observing the ship maneuver the simulated port of Valdez, Alaska, is (left) Vice Adm. Robert Price, Commander of the Coast Guard's Atlantic Area.

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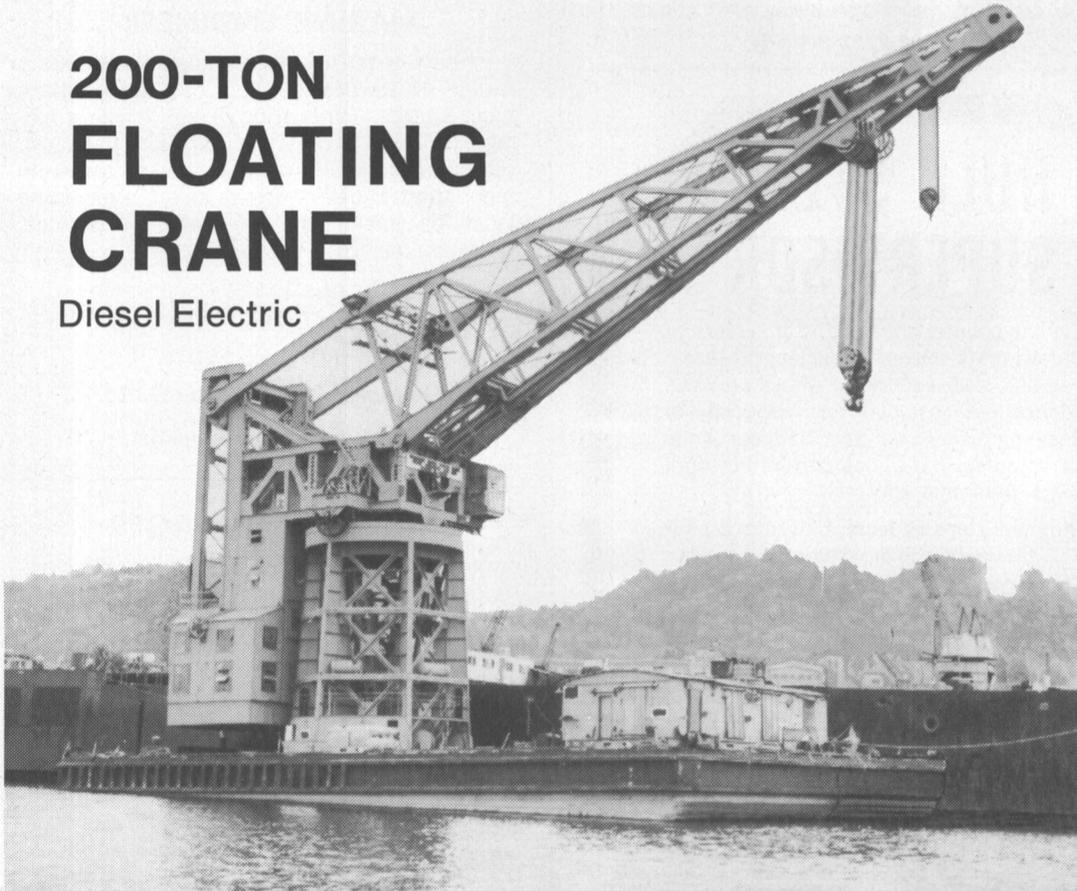
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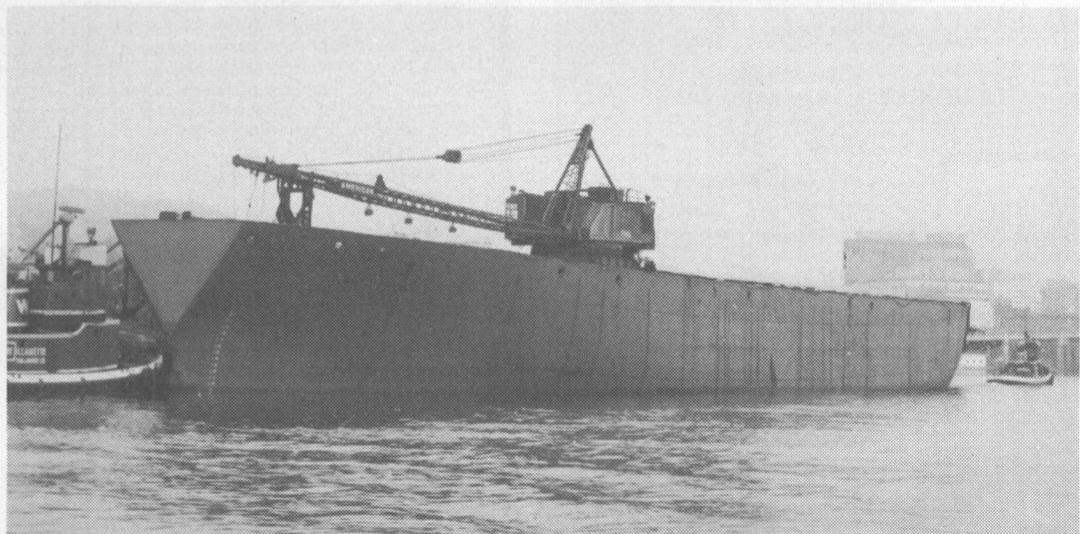
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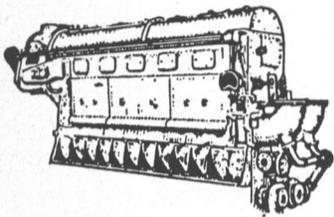
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MARINE DIESEL ENGINES



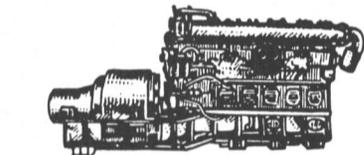
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D. C.

1 — 400 KW, WORTHINGTON Turbine, 200 PSI with Crocker-Wheeler Generator, 400 KW, 120/240 Volts DC, Type CDC, 1200 RPM.

7 — 300 KW, ALLIS-CHALMERS Turbines, 440 PSI, 5645 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, WESTINGHOUSE Turbines, 440 PSI, 5920 RPM, with Westinghouse Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

2 — 300 KW, TERRY Turbines, 440 PSI, Type TM-5, 5965 RPM, with Crocker-Wheeler Generators, 300 KW, 120/240 Volts DC, 1200 RPM.

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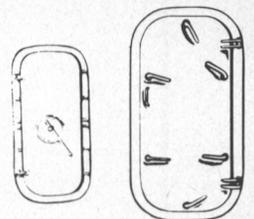
3—INGERSOLL - RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

1—INGERSOLL - RAND, Model 40B, 155 CFM, 110 PSI, 870 RPM, with 40 HP Motor, 230 DC.

2—WORTHINGTON, 20 CFM, 3000 PSI, 4 stage, 585 RPM, with Worthington Steam Turbine, 47 HP, 5502 RPM.

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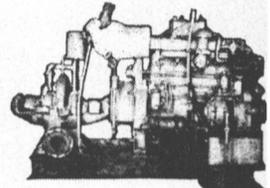
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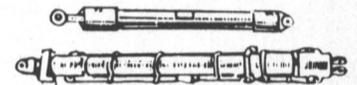
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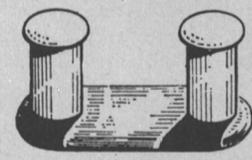
2—BUDA, Model 6-LD-468, Diesel Engine 6 cylinders, 100 BHP, Marine, Gardner Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280' head, suction and 5" discharge.

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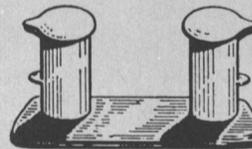


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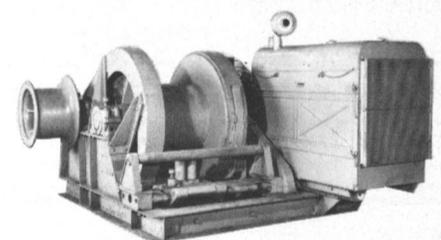
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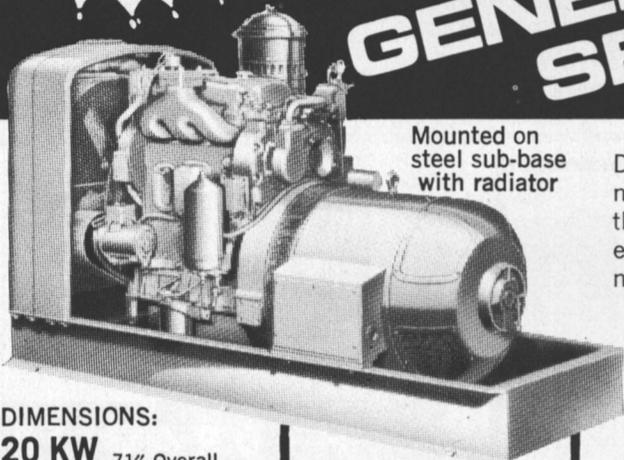
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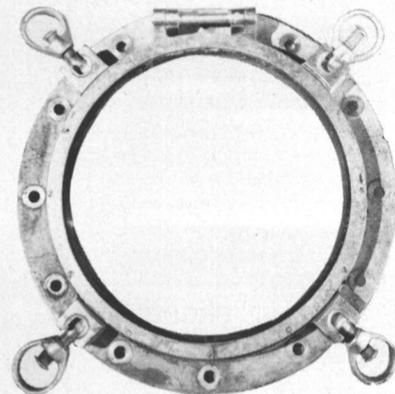
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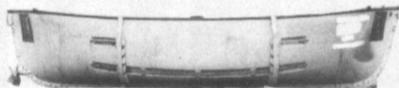


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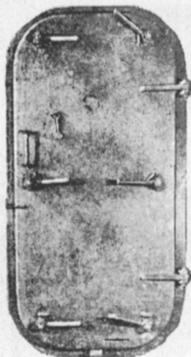
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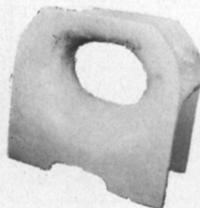
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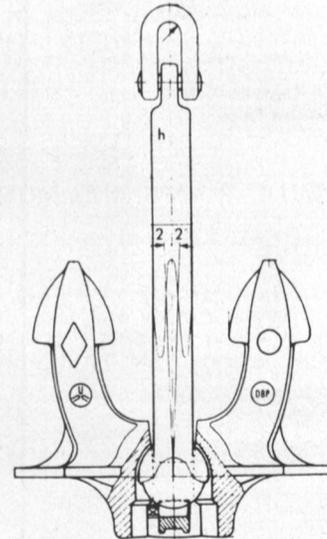
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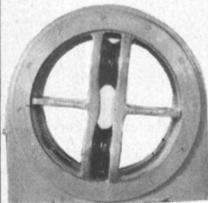
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Nelson & Associates, Inc., 2001 N.W. 7th Street, Miami, Florida 33125

Nickum & Spaulding Associates, Inc., 811 First Ave., Seattle, Wash. 98104

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

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

S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317

M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 657 Mission St., San Francisco, Calif.

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

Schmah and Schmah, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316

Seaworthy Engine Systems, 73 Main Street, Essex, Conn. 06426

George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007

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

SRS Shipping Research Services Inc., 205 S. Whiting St., Alexandria, VA 22304

The Stanwick Company Marine Systems Department, 3661 E. Virginia Beach Blvd., Norfolk, VA 23502

R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235

Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963

H.M. Tiedemann & Co., Inc., 295 Greenwich Ave., Greenwich, Conn. 06830

Thames Engineering Consultants Inc., P.O. Box 589, New London, Ct. 06320

Timco, 951 Government St., Suite 2161, Mobile, Alabama 36604

Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706

Wesley D. Wheeler Associates, Ltd., 104 East 40 St., Suite 207, New York, N.Y. 10016

NAVIGATION & COMMUNICATIONS EQUIPMENT

BUYERS DIRECTORY (continued)

OIL PURIFIERS—Separators

Golden Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231

OILS—Marine—Additives

Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
Texaco, Inc. (International Marine) 135 East 42nd St., N.Y., N.Y. 10017

PAINT—Coatings, Protective

Caroline Co., Marine Div., 350 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Reynolds Co., Inc., P.O. Box 7600, Louisville, Ky. 40207
Hanline Bros., Inc. (Consol Paint), 1400 Warner St., Baltimore, Md. 21230
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
Patterson Sargent Co., 1471 Jersey Ave., New Brunswick, N.J. 08901
Products Research & Chemical Corp., (PRC Coating and Sealants Div.) 5430 San Fernando Road, Glendale, California 91203

PETROLEUM SUPPLIES

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

PILOT LADDERS—Wood Products

A.L. Don Co., 58 Grant Avenue, Carteret, N.J. 07008

PIPE—HOSE—Cargo Transfer, Clamps, Couplings

Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

PLASTICS—Marine Applications

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

PLATENS

Welding Wholesale Co., Div. J.A. Cunningham Eqpt., Inc., 2151 Dreer St., Philadelphia, Pa. 19125

PROPELLERS: NEW AND RECONDITIONED—SYSTEMS

Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
The Columbian Bronze Corp., 216 North Main Street, Freeport, N.Y. 11520
Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102
Escher Wyss GmbH, P.O. Box 798, Ravensburg, Germany
Lips BV, Lipsstraat 52, Drunen, Netherlands
LIPS Propeller Works Inc., 420 Lexington Ave., New York, N.Y. 10017
Voith Schneider—U.S. Agent: Krupp International, Inc., 550 Mamaroneck Ave., Harrison, N.Y. 10528

PROPULSION—Marine

Combustion Engineering, Inc., Windsor, Connecticut 06095
Delaval Turbine Inc., Turbine Div., Trenton, N.J. 08602
In-Place Machining Co., 1929 N. Buffman St., Milwaukee, WI 53212
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
Stal-Laval, Inc., 400 Executive Blvd., Elmstord, N.Y. 10523

PUMPS—Repairs—Drives

Delaval Turbine Inc., IMO Pump Division, P.O. Box 321, Trenton, N.J. 08602
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Worthington Pump Inc., P.O. Box 1250, Mountainside, N.J. 07092

RATCHETS

CM American, Division Columbus McKinnon Corp., P.O. Box 74, McKees Rocks, Pa. 15136

REFRIGERATION—Refrigerant Valves

Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014
Stal-Laval, Inc., 400 Executive Blvd., Elmstord, N.Y. 19523

RIGGING & BLOCKS

D. Van Beest En Zn.B.V., P.O. Box 57, Merwestraat 1-5, Sliedrecht, The Netherlands

ROPE—Manila—Nylon—Hawesers—Fibers

American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
The Cordage Group, Columbian Drive, Auburn, N.Y. 13021
Wall Rope Works, Inc., Beverly, N. J. 08010

RUDDER ANGLE INDICATORS

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

SCAFFOLDING EQUIPMENT—Work Platforms

Chamberlain Manufacturing Corp., 845 Larch Ave., Elmhurst, Ill. 60126
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
Spider Staging Sales Co., P.O. Box 182, Renton, Washington 98055
Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

SEWAGE—Pollution Control

Argo Marine, Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
Clear Water, Inc., N. Main Street, Walworth, WI 53184
Colt Industries, Water & Waste Management Operation, Beloit, Wisc. 53511
Demco, Inc., P.O. Box 94700, Oklahoma City, Oklahoma 73109
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184
Microphor, Inc., P.O. Box 490, Willits, CA 95490
Red Fox Industries, P.O. Drawer 640, New Iberia, La. 70560
Research Products/Blankenship, 2639 Andjon, Dallas, Texas 75220
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111

SHAFTS, SHAFT REVOLUTION INDICATOR EQUIP.

Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage

American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Levin Metals Corp., 1310 Canal Blvd., Richmond, CA 94807
National Metal & Steel Corp., 691 New Dock St., Terminal Island, Cal. 90731
Zideil Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

SHIPBUILDING STEEL

Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking

Arab Shipbuilding & Repair Yard Co., P.O. Box 5110, Bab-Al-Bahrain Building, Bahrain, Arabian Gulf
Astilleros Espanoles, S.A., 17, Padilla, Madrid 6, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blohm + Voss AG, D-2000 Hamburg 1, P.O.B. 10 07 20
Blomh + Voss Co., 55 Morris Ave., Springfield, N.J. 07081
Blount Marine Corp., P.O. Box 368, Warren, RI 02885
Boston Marine Industrial Park, Public Drydock No. 3, 60 Congress St., Boston, Mass. 02109
Bremer Vulkan Schiffbau und Maschinenfabrik, P.O. Box 70023/24, 2820 Bremen 70, W. Germany
Camden Ship Repair Co., Inc., Point & Erie Streets, Camden, N.J. 08102
Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
CCL Shipcare Limited, Easton Lane Winnall Estate, Winchester Hampshire, England SO237QU
Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048
China Shipbuilding Corp., c/o Allegro Transportation Supply Co., 393 Seventh Ave., Room 234, New York, N.Y. 10001
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles
Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004
Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122
FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208
General Dynamics, Quincy Division, Quincy, Mass. 02169
Granges Repair Service GmbH, P.O. Box 3166, Gutenbergring 64, D-2000 Hamburg-Norderstedt Germany
Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189
Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., P.O. Box 510, Brownsville, Pa. 15417
Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong
Hyundai Shipbuilding & Heavy Industries Co., Ltd., 5 World Trade Center, Suite 679, New York, N.Y. 10048
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Heavy Industries, Ltd., Kawasaki Kisen Kaisha, Ltd., 8 Kaigan-dori, Kuta-ku, Kobe, Japan
Kockums Shipyard, S-201, 10 Malmo 1, Sweden
Lisnave Estaleiros, Navais de Lisboa, Apartado 2138, Lisbon 3 Portugal
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Marathon Manufacturing Company
Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002
Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520
Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Dunbartonshire, G81-1YB, Scotland

Marinette Marine, Ely Street, Marinette, WI 54143
Matton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
Maxon Marine Industries, Inc., P.O. Box 349, Tell City, Ind. 47586
J. Ray McDermott & Co., Inc., P.O. Box 60035, New Orleans, LA 70160
Mercantile Marine Engineering & Graving Docks Co., N.V., Antwerp, Belgium
Misener Industries, Inc., 5353 Tyson Avenue, P. O. Box 13625, Tampa, Fla. 33681
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
Murray & Stewart (Marine) (PTY) Ltd., Ocean Road-Table Bay Harbour, P.O. Box 1909, Cape Town 8000, South Africa
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
Northwest Marine Iron Works, P. O. Box 3109, Portland, Oregon 97208
O.A.R.N. (Officine Allestimento-Riparazioni Navi), P.O. Box 1395, Genoa, Italy 16100
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Sumitomo Heavy Industries, Ltd., 2-1 Ohtemachi, 2-Chome, Chiyoda-Ku, Tokyo, Japan
Sun Shipbuilding, Foot of Morton Ave., Chester, Pa. 19013
Swiftships Inc., P.O. Box 1908, Morgan City, La. 70380
Tampa Ship Repair & Dry Dock Co., P.O. Box 1277, Hookers Point, Tampa, Fla. 33601
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada
Wall Shipyard, P.O. Box 419, Harvey, La. 70058
Wiley Mfg., a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702
Zigler Shipyards, P.O. Box 2607, Morgan City, La. 70380

Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong
Hyundai Shipbuilding & Heavy Industries Co., Ltd., 5 World Trade Center, Suite 679, New York, N.Y. 10048
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Heavy Industries, Ltd., Kawasaki Kisen Kaisha, Ltd., 8 Kaigan-dori, Kuta-ku, Kobe, Japan
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Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Dunbartonshire, G81-1YB, Scotland

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Mercantile Marine Engineering & Graving Docks Co., N.V., Antwerp, Belgium
Misener Industries, Inc., 5353 Tyson Avenue, P. O. Box 13625, Tampa, Fla. 33681
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
Murray & Stewart (Marine) (PTY) Ltd., Ocean Road-Table Bay Harbour, P.O. Box 1909, Cape Town 8000, South Africa
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
Northwest Marine Iron Works, P. O. Box 3109, Portland, Oregon 97208
O.A.R.N. (Officine Allestimento-Riparazioni Navi), P.O. Box 1395, Genoa, Italy 16100
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Sumitomo Heavy Industries, Ltd., 2-1 Ohtemachi, 2-Chome, Chiyoda-Ku, Tokyo, Japan
Sun Shipbuilding, Foot of Morton Ave., Chester, Pa. 19013
Swiftships Inc., P.O. Box 1908, Morgan City, La. 70380
Tampa Ship Repair & Dry Dock Co., P.O. Box 1277, Hookers Point, Tampa, Fla. 33601
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada
Wall Shipyard, P.O. Box 419, Harvey, La. 70058
Wiley Mfg., a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702
Zigler Shipyards, P.O. Box 2607, Morgan City, La. 70380

TANK LEVELING INDICATORS

Gems Sensors Div., Delaval Turbine Inc., Spring Lane, Farmington, Conn. 06032

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Transportation Concepts & Techniques, Inc., 551 Fifth Avenue, New York, N.Y. 10017

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Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
Gulf Mississippi Marine Corp., 225 Baronne St., New Orleans, La. 70112
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La. Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002
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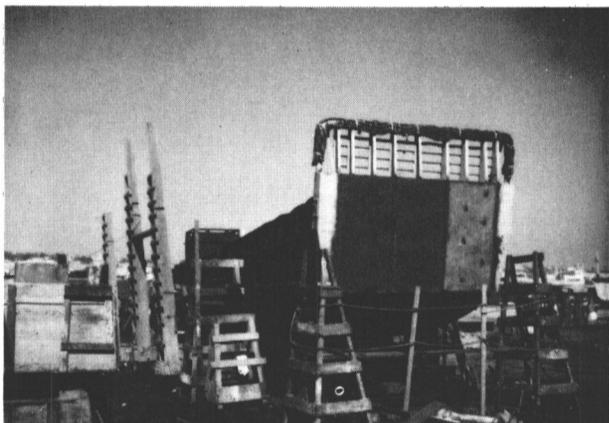
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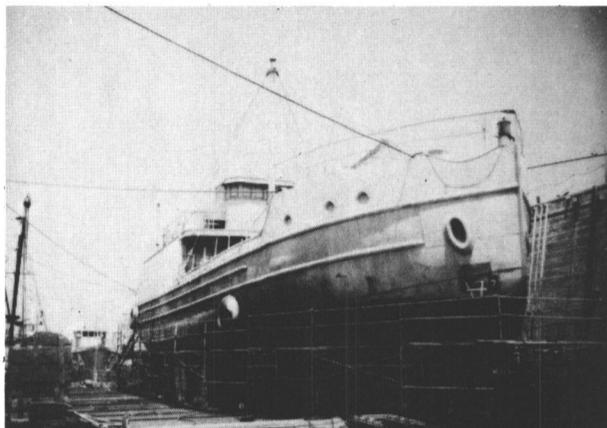
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LOCATION: (3) East Coast
(6) West Coast — ENGINES COMPLETELY REBUILT



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LOCATION: West Coast

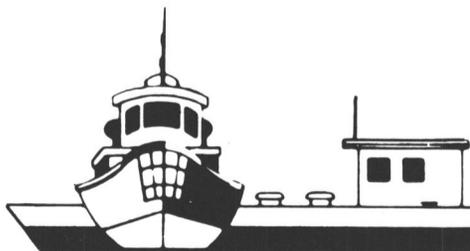
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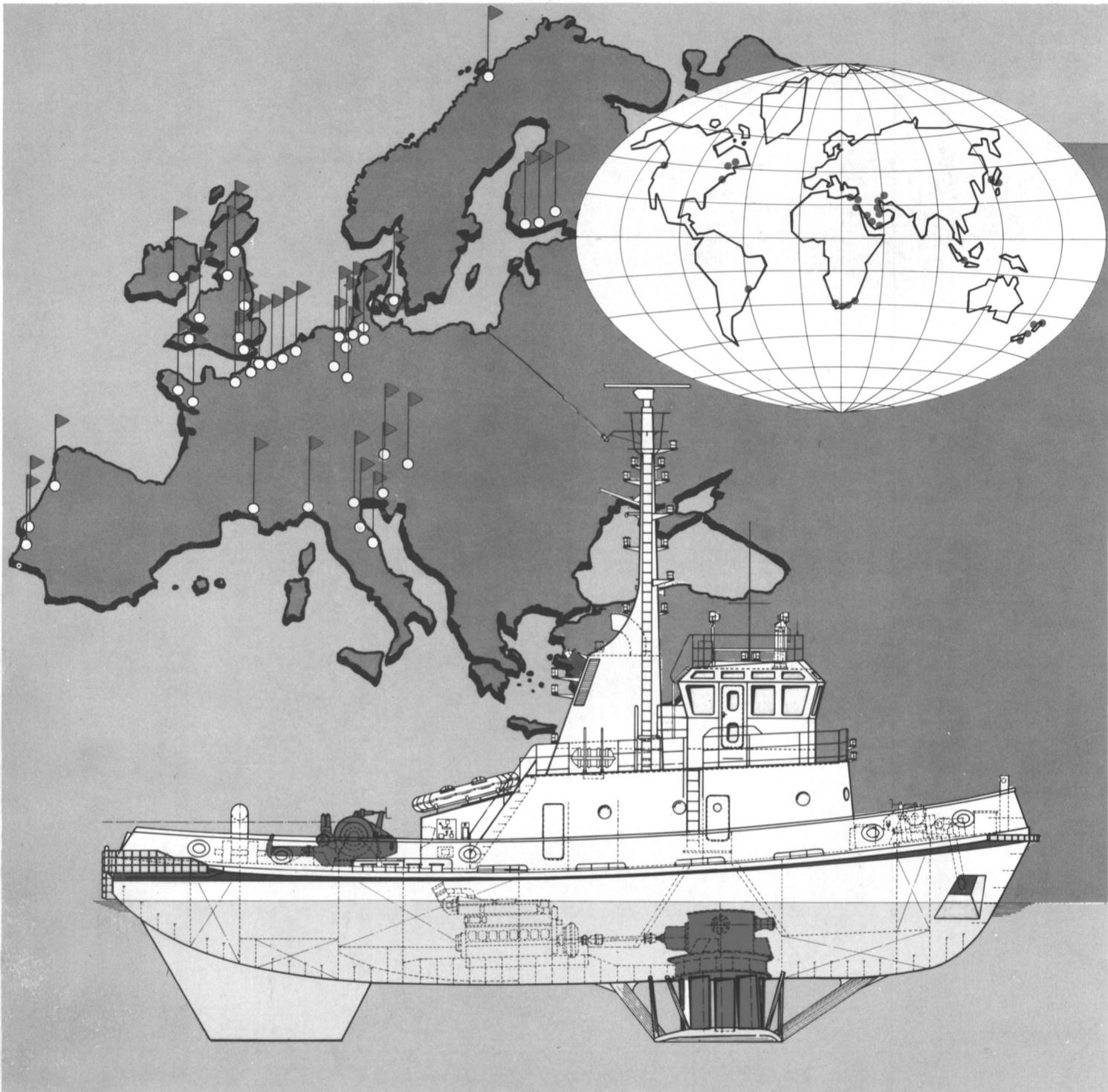
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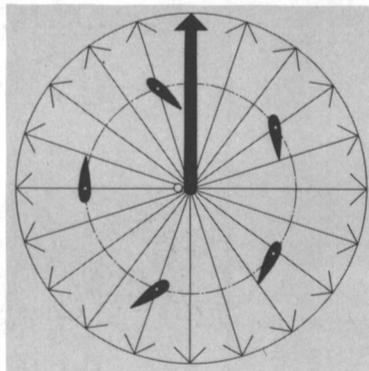




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