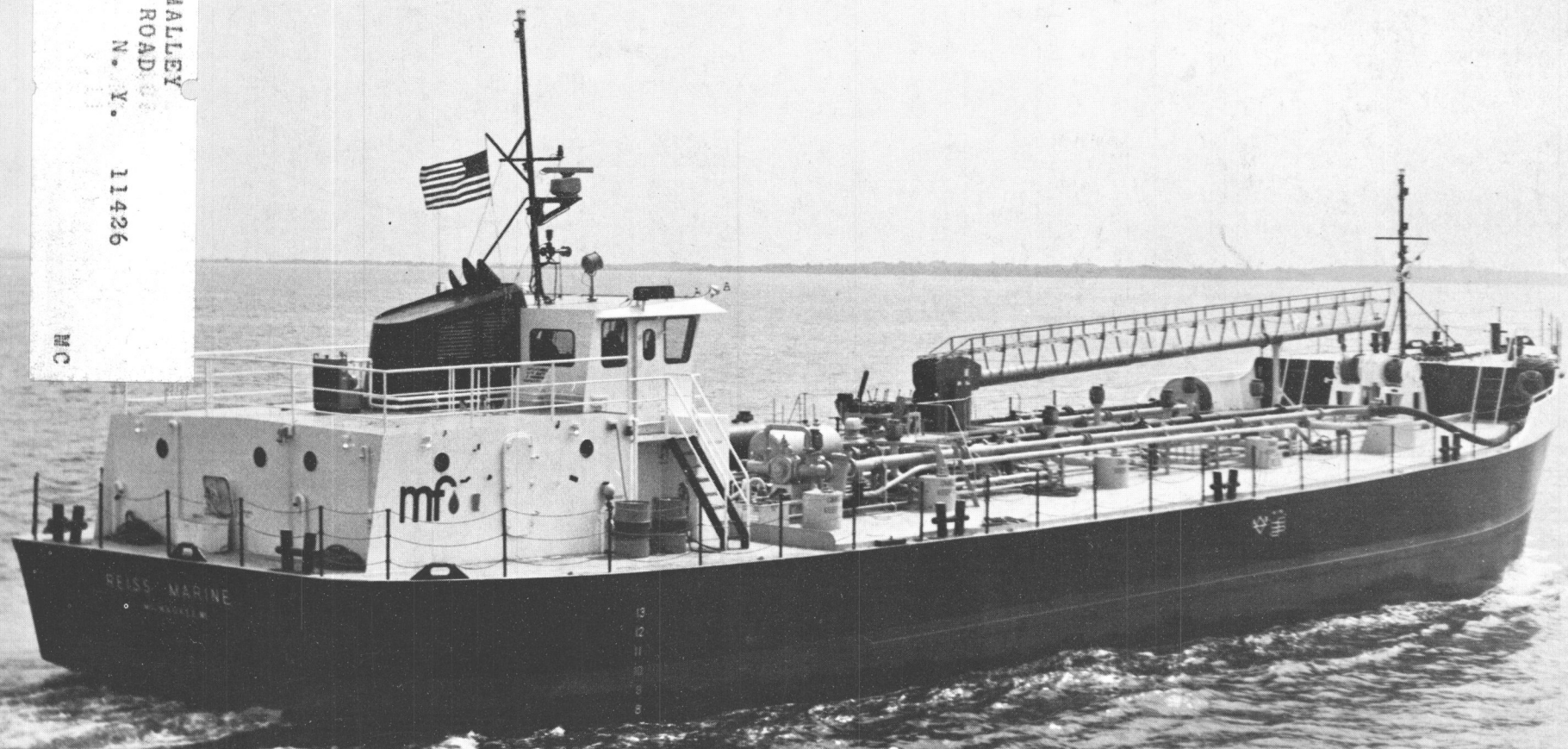


# MARITIME REPORTER

AND  
ENGINEERING NEWS

JOHN J. O'MALLEY  
33 ONTARIO ROAD  
BELLEROSE, N.Y.  
11426

MC



T/V Reiss Marine

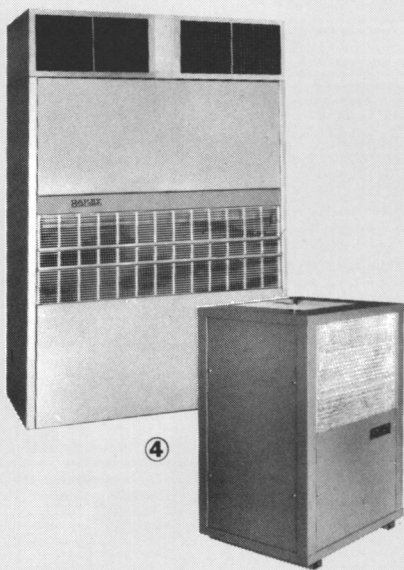
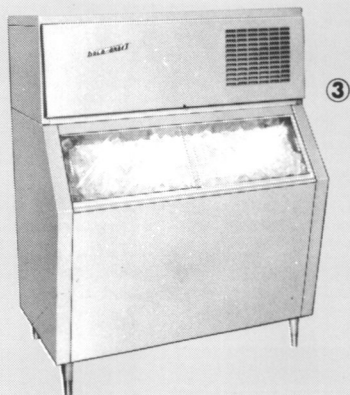
**Blount Marine Delivers  
Bunkering Tanker To Reiss  
For Great Lakes Service**

(SEE PAGE 11)

**AUGUST 15, 1978**



# LATEST BAILEY MODELS especially for marine use



## ① REFRIGERATORS/FREEZERS/STORAGE UNITS

You can now combine these units in less than 5 cu. ft. of floor space. Capacity of refrigerators and freezers is 6 cu. ft., storage units of 11 cu. ft. A refrigerator with ample space for ice cube trays and/or frozen foods is ideal for officers' quarters. For mess or galley, combine a refrigerator with a storage unit or a freezer. If you need 12 cu. ft. of either refrigerator or freezer space, combine two similar units using our optional stacking frame with functional air grille to save valuable deck space.

We also have a complete line of standard, portable and under-counter refrigerators from 4 to 102 cu. ft., AC or DC. AC units with blower-type evaporators are self-defrosting. All units rat-proofed in accordance with U.S. Health Service requirements.

## ② WATER COOLERS

Model B14M has an easy-to-clean top, a recessed rust-resistant base and mounting brackets for bolting cooler to the deck, all of stainless steel. Panels are of pearl gray baked-on enamel finish but are also available in stainless steel at slight extra cost.

Cooler capacity is 14 gals. of 50°F. water per hour. Bubbler has a built-in pressure regulator assuring an even flow of water at line pressures of 20 to 125 psi.

## ③ ICE CUBERS

BAILEY Kold-Draft\* Ice Cubers, occupying only 7½ sq. ft. of floor space, have a capacity of up to 1,200 lbs. per 24 hours. Add-A-Unit feature permits increasing this capacity without using more floor space. All models compensate for a 15° roll and/or pitch. Units have a special condenser, valves and fittings, permitting salt water to be used for cooling.

Models are in gray acrylic baked-on enamel; stainless steel finish is an optional extra. Daily capacities range from 110 to 1,200 lbs. using ice storage bins. Immediate delivery of complete units or repair parts from any of our four warehouses.

\*Reg. TM Uniflow Mfg. Co.

## ④ AIR CONDITIONERS

Water-cooled, self-contained units have cabinets of heavy gauge steel, protected with rust inhibiting primer possessing excellent water immersion, salt spray and humidity resistance. Finish is neutral beige, baked enamel. In 3, 5, 7½ and 10 ton models, AC or DC.

Smaller models (AC only) are available for areas where deck space is at a minimum. Whereas other models must allow several inches for breather space, these fit flush against the bulkhead because the permanent-type, air return filter is in the front and the directional, controllable air discharge grille is on the top. In models ranging from 9,400 to 27,500 BTU/hr capacity, they are self-contained and sea water cooled. May be installed easily and inexpensively anywhere on a ship.

FOR YOUR  
PROTECTION

When you purchase any kind of automatic equipment, be certain that your supplier can furnish proper service when needed. BAILEY maintains qualified mechanics to install units and service them properly, as well as a team of engineers to cope with any problems that may arise.



## BAILEY DISTRIBUTORS, INC.

74 SULLIVAN STREET • BROOKLYN, N.Y. 11231 • 212/855-3958

### Affiliated Companies

BAILEY REFRIGERATION CO., INC.  
BAILEY CARPENTER & INSULATION CO., INC.  
BAILEY JOINER CO., INC.

### Offices and Warehouses

AVENEL, N.J. 07001 • 2323 Randolph Avenue • 201/382-1225  
NEW ORLEANS, LA. 70117 • 632 Alvar Street • 504/943-2461  
NORTH MIAMI, FLA. 33179 • 524 N.E. 190th St. • 305/651-4160



# Shipping containers to and from New England?



## McAllister Has Doubled Its Feeder Service.

The newly launched 300' ocean deck barge, McAllister Transporter, handles 386 T.E.U.'s in weekly service between New York, Boston, and New Haven with considerable savings in port charges.

Call this number direct to the booking agent  
212-425-3540-41 or 800-221-6422-23.

McAllister Feeder Barge Division  
McAllister Lighterage Line, Inc.  
17 Battery Place, New York, N.Y. 10004

**McAllister** 



# Carboline marine coating systems mean problem-free dry-docking.

When your ship is in drydock you want to be relieved of time consuming details. You want a marine coating supplier offering experience, dependability, performance, service and competitive prices. You want Carboline...your best source for dry dock coating requirements.

Carboline provides a proven combination of coating systems, fast dependable service, and full time—on the drydock—technical service by a qualified Carboline representative.

Next time, clear drydock the Carboline way. Contact your Carboline Marine Sales Engineer today or write for our Protective Coating Guide for the Marine Industry.



Protective coatings for every need,  
anywhere in the world.

350 Hanley Industrial Court, St. Louis, Missouri 63144 314-644-1000  
24353 Clawiter Road, Hayward, California 94545 415-893-1062



## Beliard, Crighton Opens New Drydock In Dunkirk

Beliard, Crighton & Cie S.A., the leading French ship repairer based at Dunkirk, recently opened its fourth drydock with the docking of the South African container vessel S.A. Sederberg.

Measuring 50 meters by 310 meters (approximately 164 feet by 1,017 feet), the new drydock is capable of handling vessels up to 170,000 dwt.

The new drydock will add to Beliard, Crighton & Cie S.A.'s existing facilities, which include three drydocks and two floating docks.

In conjunction with the leading French shipbuilders Messrs Chantiers de France-Dunkirk, Beliard, Crighton & Cie S.A. early last month acquired a controlling interest in its former competitor, Flandres-Industrie S.A., and in effect became one of the largest ship repair groups in France.

Beliard, Crighton & Cie S.A. is represented in Hong Kong by C.C. Chen of Hongkong United Dockyards, Ltd.

Both Beliard, Crighton & Cie S.A. and Hongkong United Dockyards Ltd. are represented exclusively in the United States by Robert M. Catharine of the Jackson Marine Corporation of New York.

## Booklet Tells How To Keep Seawater Piping Systems Free Of Growth

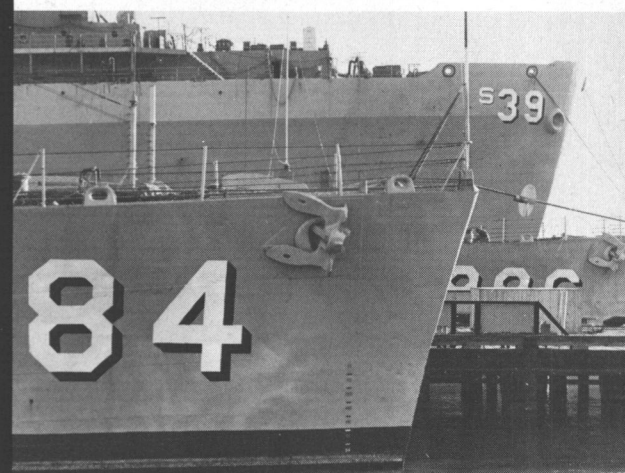
A new brochure, "Offshore Chloropac® Systems," is available from the Systems Department of Engelhard Industries.

Engelhard's Chloropac Generating Systems, skid-mounted, produce sodium hypochlorite for electrolytic decomposition of salt water with very little electric power. The units keep cooling lines, water-flood lines, sewage, sanitary and firefighting lines clear and free of marine growth.

In diagrams, photographs and text, the brochure provides details about once-through, continuous seawater dosing systems which are available in watertight, weathertight and hazardous area units.

Copies of this four-page pamphlet, EM-12109, are available by writing to Paul Byrne, Engelhard Systems, 2655, U.S. 22, Union, N.J. 07083.

# we build them —



# WE CAN FIX THEM!

Lockheed has built a string of government ships — roll-on/roll-off transports, destroyers, frigates, hydrofoil, assault transports, cruiser, icebreakers . . . Ships with a wide range of electronic, armament, material handling, and propulsion sophistication; ships powered by steam, diesel, diesel-electric, automated gas turbine . . . And the know-how that builds them, can fix them. Our estimators have sharpened their pencils and are waiting for your job.

## LOCKHEED

SHIPBUILDING AND  
CONSTRUCTION COMPANY

2929 16th AVE. S.W., SEATTLE, WASH. 98134  
PHONE 206-292-5656 • CABLE LOCKSHIP 78-1

3 floating drydocks to 18,000 tons  
Shipways to 100 x 700 feet • Piers to 1,100 feet

# MARITIME REPORTER

AND  
ENGINEERING NEWS

No. 16

Volume 40

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

(212) 689-3266, 3267,  
3268, 3269

ESTABLISHED 1939

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

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

Member

## BPA

Business Publications  
Audit of Circulation, Inc.



# You can pay a little more now, or a lot more later.

Jeffboat refuses to compromise on quality. Because we don't, the initial cost of a Jeffboat barge may sometimes be slightly higher.

But the true cost of ownership is over the life of a vessel, not the initial investment. And no one can match the added service Jeffboat quality builds into our vessels.

A Jeffboat-built barge offers superior fitting, joining, sizing

and plate preparation. No detail goes overlooked. After a weld, for example, we eliminate the slag residue to be sure the weld is true and strong.

When you build a barge this way it may cost you slightly more initially. But on the true bottom line—many extra years of dependable performance with minimal maintenance problems—it's actually going to cost a good deal less.

And we'd be happy to help you compare your barge specifications against ours so you can see for yourself the reason for these savings.

## JEFFBOAT

**America's Largest Inland Shipbuilder**

P. O. Box 610  
Jeffersonville, Indiana 47130  
Phone: (812) 288-0100





**Whether you're sitting in the middle of the Mojave Desert or three days out of New Orleans bound for Aberdeen...**

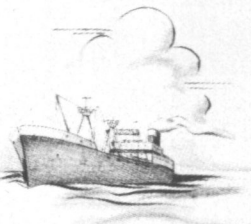
## **...here are some thoughts on fuel systems that could mean a lot to you**

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 before-hand 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.

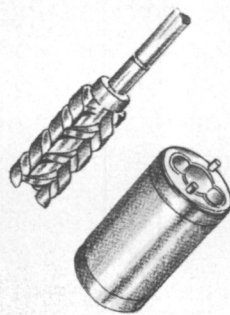


### **Ask anyone who ever served belowdecks**

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<sub>c</sub> 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.*

# DELAVAL

 A Transamerica Company



### Hong Kong Shipyard Awarded \$4-Million Contract From China

The Hong Kong Trade Development Council reports that the People's Republic of China recently placed a \$4.3-million order for a total of five oil skimmers with the Hong Kong shipyard A. Fai Engineers and Shiprepairs Co. Ltd., and World Ocean System of Japan; the former will be responsible for the construction of four ships, the latter to build the fifth vessel. Work is scheduled to begin on the 190-gross-ton oil skimmers this month, with the completion date set for mid-March of next year.

### Bender To Build Fisheries Research Vessel For NOAA

Robert J. Blackwell, Assistant Secretary of Commerce for Maritime Affairs, has authorized the award of a contract to Bender Welding and Machine Co., Inc., Mobile, Ala., for the construction of a fisheries research vessel for the National Oceanic and Atmospheric Administration (NOAA). He also approved a determination that the fixed price of \$2,875,000 for the vessel was "fair and reasonable."

NOAA has furnished the Maritime Administration with \$3.1 million for the construction of the vessel. This includes \$225,000 above the fixed contract price for changes and contingencies.

The research vessel will be used by NOAA's National Ocean Survey for stock assessment in the North Pacific 200-mile fisheries zone. The vessel is a modified stock design combination crabber/ trawler. It will measure approximately 127 feet in length, 30 feet abeam, and will have a draft of 13 feet.

In 1976, NOAA officials informed MarAd of their need for additional vessels to carry out that agency's extended jurisdiction to the 200-mile limit. It was felt that procurement of a vessel built to industry standards for uninspected fishing vessels would avoid detailed vessel specifications and result in reduced cost and construction time. NOAA asked for MarAd's support in the acquisition of such a vessel.

Assistant Secretary Blackwell proposed a five-phase MarAd effort to assist in the procurement. The plan included conceptual studies to ensure an acceptable vessel, preparation of a Request for Proposal Package, participation in selection of a contractor and inspections during construction, and performance of trial and delivery inspections as required. The proposal was accepted by NOAA on June 28, 1977, but budgetary restraints delayed the award of a contract until this time.

The vessel is scheduled for delivery by September 1979.

### Tenn-Tom Towing Asks Title XI For Barges And Towboats

Tenn-Tom Towing, Inc., 25 North Section Street, Fairhope, Ala., has applied for a Title XI guarantee to aid in financing the construction of two steel oil barges and two oil screw towboats. The vessels will be operated in the Gulf Intracoastal

Waterway and on related connecting river systems. The applicant transports petroleum products under contract.

The two steel oil barges will measure approximately 264 feet by 50 feet by 10.25 feet. A shipyard for the barges has not been determined yet.

The two boats covered in the application are the 147-gross-ton Herndon R and the 64-gross-ton Ruth McCoy, which were deliv-

ered September 16 and November 1, 1977, respectively. The Herndon R was built at Rayco Shipbuilders & Repairs, Inc., and the Ruth McCoy at Dravo Steel-Ship Corporation.

If approved, the barges would qualify for 87½ percent guarantees and the towboats for 75 percent guarantees. The total amount guaranteed for the four vessels would be approximately \$1,475,000.

**Simrad's LC-204** has more signal pulling power and cycle matching ability than any other Loran C receiver in maritime service. With it you can navigate the great circle route from the U.S. East Coast to Europe on high accuracy groundwave alone! You can do the same going to the Mediterranean... or from San Francisco to Japan, with only a short distance on skywave in mid-ocean. The entire Gulf of Mexico is a Simrad sea, as is the North Sea. No other Loran C receiver can match that kind of performance.

There are more Simrad LC-204 Loran C receivers in commercial shipping service and the fisheries than the sets of all other manufacturers combined. More than 450 ports worldwide have Simrad service centers. Simrad LC-204 receivers meet or exceed the Minimum Performance Standard (MPS) of the Radio Technical Committee for Marine Service, for ships operating in U.S. waters.

Specify the Simrad LC-204 for its extraordinary performance, unmatched reliability and ease of

servicing. When it comes to the things that really count, Simrad is easily the champion.

When the Coast Guard rulemaking is published, mandating Loran C receivers on board all ships 1600 tons or over operating in U.S. waters, the LC-204 may be in short supply. Make sure you have the best... place your order now.

For details of our special pre-rulemaking price promotion, contact your Simrad dealer or write Simrad, Inc., One Labriola Court, Armonk, NY 10504.

# SIMRAD

A trusted name at sea.



## Robert E. Zitner Forms Omega Marine

Robert E. Zitner has established Omega Marine, a small boatbuilding company in West Palm Beach, Fla. Mr. Zitner is a graduate of the University of Michigan, in naval architecture, and has held senior management positions at Ingalls Shipbuilding, Equitable Equipment Company, and Lantana Boatyard.

Omega Marine will be constructing commercial and military boats

ranging in size from 21 to 65 feet in length. Stock designs are available for a variety of craft, including flush-deck workboats, small (up to 50 feet) landing craft and patrol, rescue and fireboats. The company has complete marine design and naval architectural services, and will be developing custom designs to suit specific requirements.

For further information, call or write Omega Marine, 135 Greenwood Drive, West Palm Beach, Fla. 33405.

## Discover the Inspectronic world.

The highest quality professional underwater services available anywhere in the world.

### Underwater Inspection

- Degreed engineer divers
- CCTV (remote or diver operated)
- Advanced NDT techniques
- Caisson/borehole verticality
- Cable detection/tracking

### Marine Survey

- Hydrographic
- Side scan sonar
- Geodetic positioning
- Bottom sampling
- Outfitted survey vessels

### Full Marine Insurance

- Jones Act, Longshoreman's and Harbor Worker's endorsements

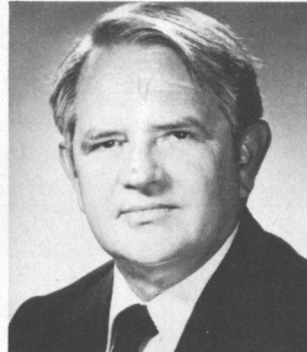
So, for the most professional services, just contact IC. Today.



Inspectronic Corporation  
222 Fordham Street, City Island, N.Y. 10464  
Tel. 212-885-2141 / Telex 147242  
a subsidiary of International Underwater Contractors.

## Abex/Denison Promotes W. Grimes And R. Holmes

D.J. O'Rourke, vice president-marketing, has announced several organizational changes in the Marketing Department of Abex Corporation, Denison Division, Columbus, Ohio. The changes have been made, he said, to further increase the effectiveness of service to the division's customers for fluid power components and systems.



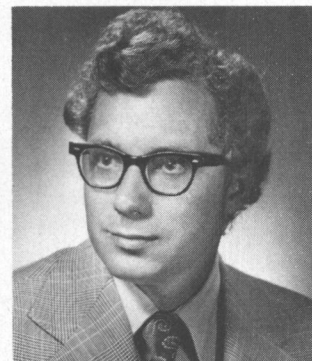
Werner Grimes

Werner Grimes has been promoted to the position of product manager-valves, and is now responsible for all aspects of Abex/Denison hydraulic valve engineering, manufacturing and marketing. He had been sales manager-valves for the past year.

Mr. Grimes has served in various sales positions since joining Denison in 1955, including periods as sales manager for Denison Division, Abex International, Paris, France, and as sales manager of Denison Hydraulics, Japan, Ltd. He attended college preparatory and technical schools in Germany, and studied in the University of Houston College of Engineering.

Robert L. Holmes has been promoted to manager-sales administration, and heads the division's

newly formed Sales Administration Group. He had been product manager-valves since joining Denison in 1962.



Robert L. Holmes

Mr. Holmes is a mechanical engineering graduate of Ohio State University, and a registered professional engineer in the state of Ohio. Prior to joining Denison, he had more than eight years of experience in the design and development of hydraulic equipment. In his new position, Mr. Holmes reports to Robert D. Montgomery, director-marketing administration.

Denison designs, manufactures and markets worldwide a complete line of hydraulic pumps, motors, valves, transmissions and hydraulic presses.

In addition to its plants in Columbus, Marysville and Delaware, Ohio, Denison has plants and sales offices in Canada, Denmark, England, France, India, Italy, Japan, and West Germany. The company is represented in the United States through a network of independent fully qualified and authorized distributors, and throughout the world by a network of sales and service affiliates.

Denison's parent company, Abex Corporation, is a subsidiary of IC Industries, Inc., Chicago, Ill.

## First Seal, Inc.

### Application Approved

The Assistant Secretary, U.S. Department of Commerce, Maritime Administration, has approved in principle the application by First Seal, Inc., 3305 Avenue S, Galveston, Texas, for a Title XI guarantee to aid in financing the construction of two oceangoing tug/supply vessels.

The vessels will carry provisions and construction materials to offshore drilling sites, and engage in towing operations as needed. They also have the capacity of accommodating research and oceanographic charters.

Rysco Shipyard, Inc., Rockport, Texas, is shipbuilder for the two vessels, M/V Red Seal, and M/V Black Seal. Each of the vessels will have an overall length of approximately 185 feet, a molded beam of 38 feet, and a fully loaded molded draft of 12 feet 3 inches. They are rated at 2,500 horsepower each.

The combined estimated actual cost of the two tug/supply vessels is \$4,486,000. They are eligible for Title XI guarantees of 87½ percent of that amount.



## Neverleak... no lube oil to seep out or seal to fail.

The water under your keel lubricates the Moffitt-engineered Cutless® rubber bearing. Fresh water, salt or sand-filled. Freedom from oil-seal failure prevents excessive bearing wear and expensive seal replacement.

Exclusive "Water Wedge" channels push a full flow of water between shaft and rubber bearing liner molded of B.F. Goodrich-formulated rubber. The low friction of metal turning on water-wet rubber improves horsepower utilization, reduces fuel consumption, lengthens bearing life. The soft/firm rubber liner flushes itself free of sand and yields slightly to absorb slight shaft misalignment.

Cutless bearings are available world-wide from yards and marine stores. Or phone us for same-day shipment from our 20,000-bearing stocks.

**LUCIAN  
MOFFITT, INC.**  
NATIONAL and INTERNATIONAL DISTRIBUTORS  
P.O. Box 1415, AKRON, OHIO 44309



## Congressman Murphy To Receive AOTOS Award

On September 22, 1978, the Honorable **John M. Murphy**, Chairman of the Merchant Marine and Fisheries Committee, Congress of the United States, will receive the coveted AOTOS Award, and will be named "Admiral of the Ocean Sea," in the Grand Ballroom of the New York Hilton, New York City. The title Admiral of the Ocean Sea was first granted to Christopher Columbus in 1493 by King Ferdinand and Queen Isabella of Spain for the discovery of the New World that now houses our great nation.



Hon. John M. Murphy

Congressman **Murphy**, a graduate of the United States Military Academy at West Point, served with great distinction as an officer in the Ninth Infantry Regiment during the Korean Conflict. In addition to the Purple Heart and the Bronze Star, Congressman **Murphy** holds this nation's second highest award for valor in combat — The Distinguished Service Cross. Congressman **Murphy** was first elected to Congress, representing the 17th District of New York, in November 1962, and has been reelected to each succeeding Congress. As Chairman of the Merchant Marine Fisheries Committee, Congressman **Murphy** is a strong proponent of legislation designed to strengthen the presence of American maritime power upon the oceans of the world.

### Admiral Of The Ocean Sea The AOTOS Legend

It was the rebirth of classical Greek and Roman knowledge in Renaissance Spain, joined with Columbus's global venture, that inspired King Ferdinand and Queen Isabella to give Columbus the title "Admiral of the Ocean Sea," upon his return to Spain in 1493. Columbus had traveled the fabled "Okeanos," the great river of water around the world (according to Homer), and sailed under "Okeanos," the god of the outer waters. He returned with the discovery of the New World, and proof as well that the world was round — a great new beginning.

The title Admiral of the Ocean Sea was prophetic in that Columbus's voyage opened up the new world, and began two centuries of maritime exploration that carried ships and seamen to every part of

the world and established the roots of America's shipping heritage.

The title belonged strictly to Columbus and his family until 1970, when the United Seamen's Service began sponsoring the Admiral of the Ocean Sea (AOTOS) Award. Since then, with the co-operation of the entire maritime industry, the person who has done the most to advance the cause of American-flag shipping each year has been named Admiral of the

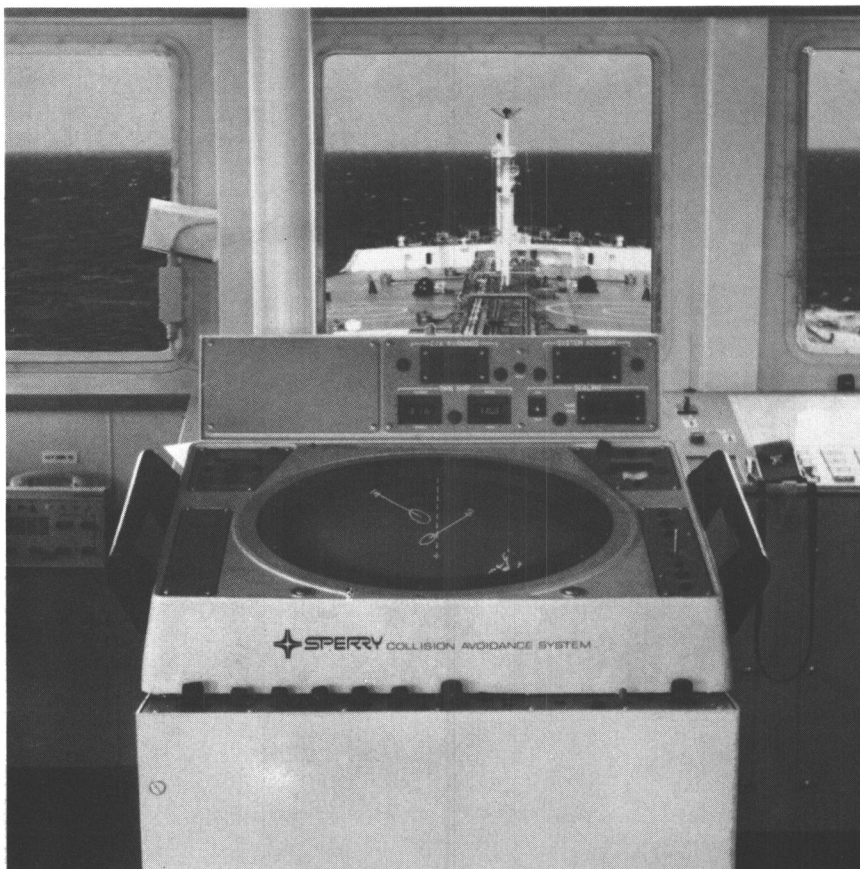
Ocean Sea, and presented with this coveted award. The AOTOS recipient is selected by a committee of maritime labor, management and government leaders.

The AOTOS Award is a silver statuette of Christopher Columbus with his hand resting on his ship's anchor. Each year, it is cast in Genoa, Italy, just two blocks from the place of this famous mariner's birth, and brought to the United States on an American ship.

## Marinette Marine Receives \$11,384,500 Landing Craft Contract

Marinette Marine Corporation, Marinette, Wis., is receiving a \$11,384,500 formerly advertised firm fixed price contract for 56-foot mechanized landing craft (LCM-6) hull product improvement (HPI) Mod-2 with related spare and repair parts and data. The Naval Sea Systems Command is the contracting activity.

# Sperry's patented "PAD" gives you a way to turn for Collision Avoidance.



At a glance, you see own ship's exact position relative to that of the traffic in your vicinity—a clearly-defined, easy-to-interpret, graphical display of the dangers imposed by every vessel under track. You see each ship's immediate position and where it will be minutes later. Most important—you always see where to steer to avoid danger situations. The patented Sperry PAD (Predicted Area of Danger) instantly advises where to turn.

**"PAD"**  
(Predicted  
Area of Danger)

Over 200 Sperry Collision Avoidance Systems Delivered.



Worldwide Headquarters  
Great Neck, New York 11020, U.S.A.

World Sales • World Service • and a World of Experience

SPERRY IS A DIVISION OF SPERRY RAND CORPORATION

Busy harbors—crowded shipping lanes—ships coming and going—their size and number ever increasing—the navigational problems becoming more complicated and difficult. The slow and tedious process of manually plotting radar data to determine collision possibilities needs a better way.

Now, Sperry's Collision Avoidance System provides the better way—safer, quicker, more reliable and readily capable of handling today's requirements for multiple threat situations. Collision dangers are presented with accuracy, clarity, and simplicity in a graphical format that permits the watch officer to assess risks almost instantaneously.



## 1980 LNG Conference Set For Kyoto, Japan

The Sixth International Conference and Exhibition on Liquefied Natural Gas (LNG-6) will be held April 6 through April 11, 1980, at the International Conference Hall in Kyoto, Japan.

Sponsored by the International Gas Union, London, England, the Institute of Gas Technology, Chi-

cago, Ill., and the International Institute of Refrigeration, Paris, France, the conference will bring together speakers and exhibitors worldwide to present developments in LNG technology and trade since the close of LNG-5, held in Dusseldorf, Germany, in August 1977. That conference attracted 1,600 registrants from 38 countries, and 120 exhibitors from 13 countries.

LNG-6 co-chairmen are **E. Giorgis**, vice president of the International Gas Union and delegate administrator of Compagnie Industrielle et Commerciale du Gaz, Switzerland, and **Hiroshi Anzai**, president of the Japan Gas Association and chairman of Tokyo Gas Company, Ltd. Mr. Anzai also serves as chairman of the LNG-6 Organizing Committee.

Host of LNG-6 is the Japan

LNG Congress, an organization created especially for the purpose, whose 90 members represent the Japanese gas industry, education, research institutes, trade associations and industrial corporations, all concerned with LNG. Its general secretary is **Yoshimitsu Shibasaki**, vice president, the Japan Gas Association, 15-12, Toranomon 1-chome, Minato-ku, Tokyo, 105, Japan.

Kyoto, noted for its temples, gardens and ancient crafts, is located 283 miles from Tokyo and 26 miles from Osaka. Eleven Kyoto hotels have reserved 1,050 rooms to accommodate up to 1,920 guests attending LNG-6. Committees are now organizing the exhibition and technical program, and will issue a call for papers in November 1978.

Inquiries from North, Central, and South America should be directed to the Institute of Gas Technology, 3424 South State Street, Chicago, Ill. 60616, U.S.A.

# L-GF means reliability and economy

Reliability, economy and simple maintenance are proven features of slow-running diesel propulsion.

Now, a further saving in fuel of 8% is a fact where L-GF propulsion machinery is specified.

**Reliability.** The L-GF long-stroke engine is already at sea. More than eighty L-GF engines are on order. The design is a straightforward development of the outstandingly successful B&W K-GF range, already installed or on order to a total of more than 6,000,000 bhp.

**Economy.** L stands for long-stroke giving lower r/min and consequently increased propeller efficiency (5%). Further, the long-stroke results in thermodynamic advantages giving a reduction in specific fuel consumption (3%).

The range of B&W L-GF Diesel Engines:

	L45GF	L55GF	L67GF	L80GF	L90GF
Bore (mm)	450	550	670	800	900
Stroke (mm)	1200	1380	1700	1950	2180
No. of Cyl.	4-10	4-10	4-10	5-10	5-12
r/min	170	150	119	103	94
MEP (bar)	11.96	12.02	11.57	11.53	11.55
MEP (kp/cm <sup>2</sup> )	12.2	12.3	11.8	11.8	11.8
kW/cyl.	647	985	1375	1940	2510
BHP/cyl.	880	1340	1870	2640	3410

output at max. continuous load.

## B&W Engineering

### B&W Licensees:

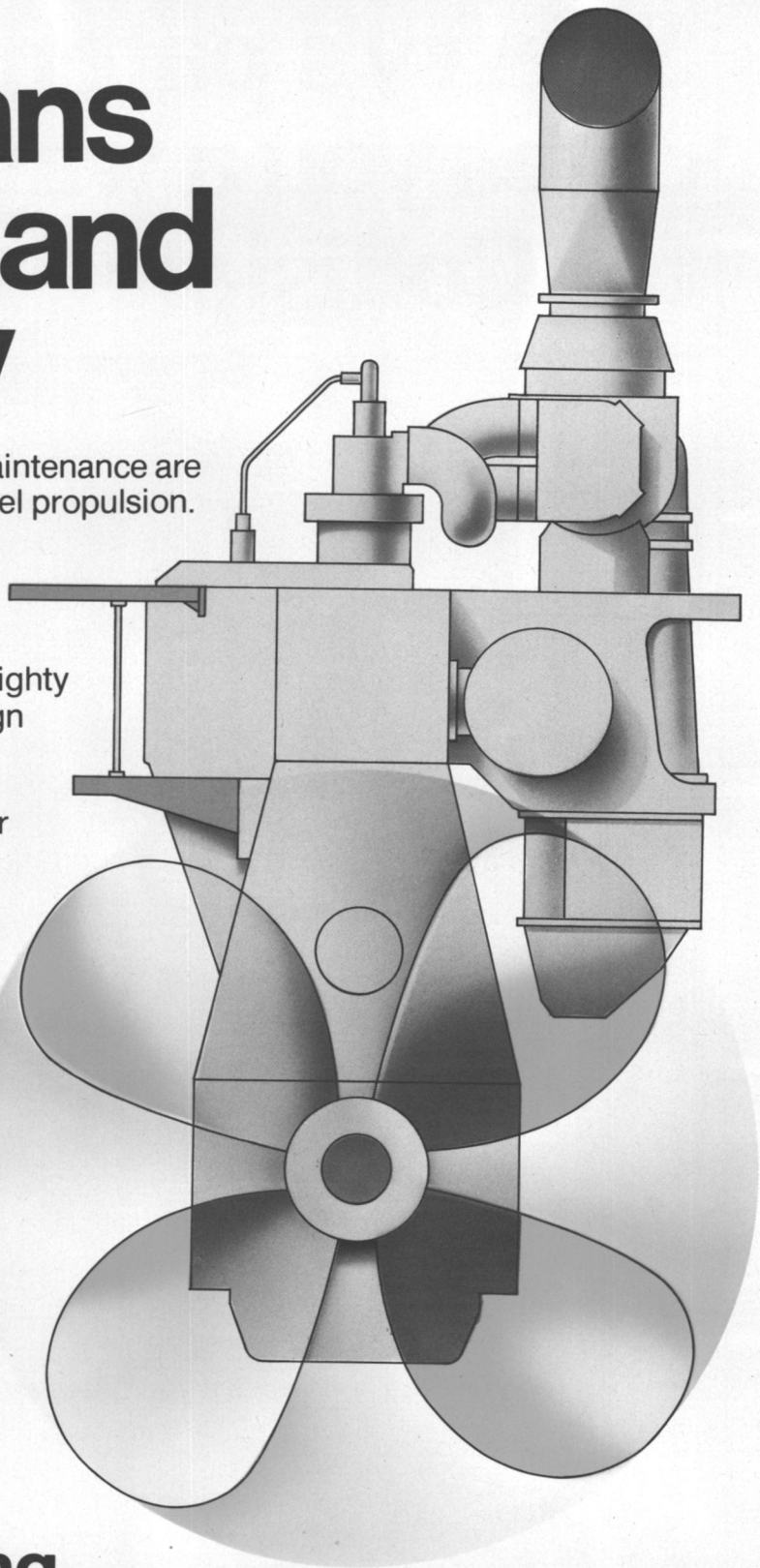
**Belgium** Société Anonyme Cockerill-Ougrée-Providence et Espérance-Longdoz  
**Brazil** Equipamentos Villares SA  
**British Isles** Harland & Wolff, Limited  
**John G. Kincaid & Co., Ltd.**  
**Denmark** Helsingør Værft A/S/A/S Orlogsværft  
**Finland** Valmet OY  
**France** Altshom-Atlantique/Ateliers Thiriet Cattin

**Holland** Machinefabriek en Scheepswerf van P. Smit Jr., B.V.  
**Italy** Cantieri Navali Riuniti S.p.A.  
**Japan** Hitachi Shipbuilding & Engineering Co., Ltd.  
**Mitsui Engineering & Shipbuilding Co., Ltd.**  
**Korea** Hyundai Shipbuilding & Heavy Industries Co., Ltd.  
**Norway** A/S Akers Mek. Verksted  
**Aktieselskabet Fredriksstad Mek. Verksted**  
**Poland** Foreign Trade Office H. Cegielski

**Stocznia Gdańska im. Lenina**  
**Spain** La Maquinista Terrestre y Marítima, S.A.  
**Astilleros Españoles, S.A./Construcciones Echevarria, S.A.**  
**Sweden** Eriksberg Mek. Verkstads Aktiebolag  
**AB Götaverken, Götaverken Motor**  
**Uddevallavarvet AB, Skandiaverken/Uddevallavarvet AB**  
**U.S.S.R.** Vsesojuznoe Objedinenie "Licensintorg"  
**Yugoslavia** "Uljanik" Diesel Engine Factory/Titovi Zavodi Litostroj

## Burmeister & Wain AS-Copenhagen-Denmark

B&W Offices (+ telephone number): Cape Town (21) 514111/Copenhagen (1) 542501/London (1) 5805391/Madrid (1) 4111413/New York (212) 269-0980/Oslo (2) 113385/Paris (1) 522-5057/Piraeus (21) 417 6573/Rio de Janeiro (21) 232-2643/Rotterdam (10) 366833/Tokyo (3) 278-0891



## City Of Ponce Orders First Portainer Crane

The Gobierno Municipal de Ponce (City of Ponce), Commonwealth of Puerto Rico, recently ordered a Portainer® crane from Paceco, Inc., a subsidiary of Fruehauf Corporation, Alameda, Calif.

Mayor **Jose G. Tormos Vega** represented the City of Ponce during the contract signing for a 40-long-ton Paceco Portainer crane to be erected on Ponce Wharf of the Puerto Rican terminal. **C. Jay Dunton**, manager, Licensee Services, represented Paceco, Inc.



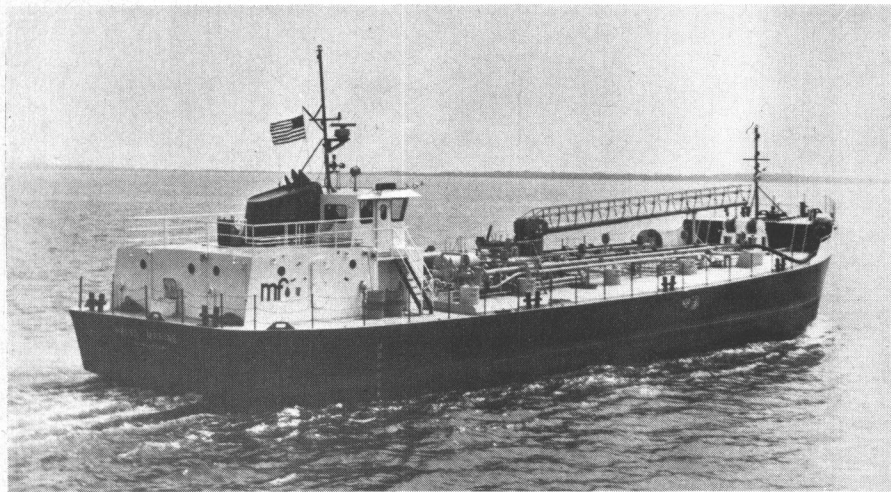
Mayor **Jose G. Tormos Vega** (left), City of Ponce, Puerto Rico, and **C. Jay Dunton**, Paceco, Inc., at contract signing for new Paceco Portainer Crane.

The Portainer crane is a Modified "A" Frame model with Paceco's advanced engineering technology and container handling elements designed into it. As the first Portainer crane on Ponce Wharf, the huge structure will boast a 115-foot outreach and 60-foot backreach. It will be equipped with a Quick Change Headblock and Telescopic Spreader to handle 20-foot/35-foot/40-foot containers. The cab will be air-conditioned for operator convenience and comfort. The entire crane is self powered from its own diesel electric generator set.

Paceco's Gulfport, Miss., manufacturing facility will fabricate the crane for a scheduled spring 1979 delivery.







The sophisticated Reiss Marine with its unitized hose-handling crane and hydraulic oil transfer system will be placed in service by the Marine Fueling Division, operators of six fueling ports on Lakes Erie and Superior.

## Blount Marine Delivers Fueling Tanker Reiss Marine To Service Great Lakes Shipping

The 150-foot bunkering tanker Reiss Marine was recently delivered by Blount Marine Corporation of Warren, R.I., to Superior, Wis.

The vessel will be operated by the Marine Fueling Division of Reiss Oil Terminal Corporation, a wholly owned subsidiary of The C. Reiss Coal Company, located in Sheboygan, Wis. Marine Fueling, which operates six fueling ports on Lakes Erie and Superior, is headquartered in Cleveland, Ohio.

Built to service Great Lakes shipping, including taconite and coal carriers, the Reiss Marine will replace the tanker William H. Bennett, the first vessel built under contract by Blount Marine Corporation. The Bennett was built in 1950 for Charles Laduca, president of West Shore Fuel, for operation in Buffalo, N.Y., and was later purchased by Reiss Marine Transport.

The 569-gross-ton vessel was designed by Blount Marine, and at-

tained a speed of 10 knots on her trials in Narragansett Bay. The Reiss Marine was built to meet American Bureau of Shipping specifications for classing of Maltese Cross A-1 (E) AMS unrestricted oil carrier with loadline for Great Lakes service and U.S. Coast Guard regulations.

The tanker has six cargo tanks carrying 339,000 gallons of heavy and diesel oil and 2,500 gallons of lube oil. Brown Fintube heating coils are installed in all tanks. Ship's service tanks carry 580 gallons of water, 2,600 of fuel oil, 130 of lube oil, and 500 gallons of sewerage.

Cargo tanks are pumped by hydraulically operated Blackmere pumps. Metering is accomplished through a Smith meter. All controls are located aft of the hose-handling Comet crane. An interesting feature of the hose-handling crane is a ladder extending the length of the boom to enable a

### SPECIFICATIONS "Reiss Marine"

#### General:

Length Overall:	149' 8"
Beam (Maximum):	39' 2"
Depth:	14' 6"
Draft (Full Load):	10' 9 3/8"
Gross Tonnage:	569.21
Maximum Speed:	10 Knots

#### Capacities:

Fuel Capacity:	6 Tanks — Heavy Oil 191,474 Gallons (4558 BBLS) 4 Tanks — Diesel Oil 147,593 Gallons (3514 BBLS)
Freshwater Capacity:	1 Tank — 582 Gallons
Sewerage Capacity:	1 Tank — 498 Gallons
Lube Oil Capacity:	2 Tanks — 2,512 Gallons (60 BBLS)
Ship's Fuel Oil:	1 Tank — 2,587 Gallons (62 BBLS)
Ship's Lube Oil:	1 Tank — 131 Gallons
Quarters:	2 Staterooms, 4-men Total Complete Galley

#### Propulsion:

Main Engines:	2 General Motors 12V-149
Generator Sets:	2 General Motors 6-71 with 60 KW Delco Generator
Steering:	Electrohydraulic with Continental Poly-Pac Pumps Sperry Electric Controls
Propellers:	Federal Propeller 66 x 56 3-blade, Stainless Steel

member of the tanker crew to board a larger vessel quickly and safely.

Propulsion is provided by two keel-cooled General Motors 12V149s providing 1,300 horsepower to drive two Federal 66-inch stainless-steel propellers. Propeller shafts were forged by Cape Ann Forge.

All engine mufflers were furnished by Maxim.

The steering system is electrohydraulic using Vickers valves and Sperry electrical controls.

The engine room has a fixed CO<sub>2</sub> system furnished by C-O-Two Sales. A Rockwood fixed foam system provides fire protection on the main deck.

Ship's power is furnished by two 60-kw, 450-volt generators driven by two General Motors 6-71 engines.

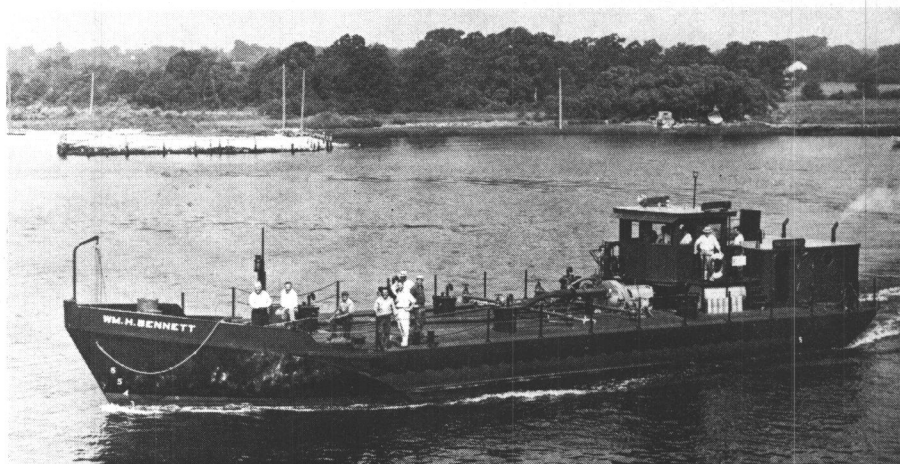
Galley equipment and a dining area for six men is located on the main deck. Two cabins provide berths for four men.

The large pilothouse has a Sperry furnished MK-74-6 radar, an MK-37 gyro and automatic pilot. Other equipment includes a Lorain RF-457 radiophone, and a depth sounder.

The vessel has two 1,000-pound Baldt anchors hauled by an electric anchor windlass. Singer-Kearfott furnished pilothouse windows, Cornell-Carr joiner doors, and Julius Mock watertight doors.

### List Of Suppliers

Viking Pumps	Allen & Reed
Paint	Ames Paint & Chemical Co., Inc.
Armored Cable	Anixter — New York
Lifejackets	Atlantic-Pacific Mfg. Corp.
Searchlights	Baldt, Inc.
Electrical Fittings	Carlisle & Finch Co.
Navigation Panel	City Hall Electric
Fixed CO <sub>2</sub> System	Con-Select
Joiner Doors	C-O-Two Sales
Hatches	Cornell-Carr
Switchboard	Dover Marine
Propellers	Federal Pacific Elec. Co.
Gorman Rupp Pumps	Federal Propeller
Aeroquip Fittings	Hayes Pump and Machinery Co.
Alarm System	Hathaway Machinery
Electronic Gear	Henschel
Phone System	Hitchcock Marine Services
Air Horns	Hose-McCann Telephone Co.
Blackmere Pumps	Kahlenberg Bros. Co.
Battery Charger	John W. Kennedy Co.
Life Rafts	LaMarche Mfg. Co.
Square "D" Breakers	Landrigan
Paint	Major Electric & Supply
Oils & Lubricants	Mobil Chemical
Watertight Doors	Mobil Oil
Engine Alarm Switches	Julius Mock & Sons, Inc.
Brass Fixtures	Frank W. Murphy Mfg.
Hydraulic Steering	Pauluhn Industries
Chockfast	PDN/Pace
Packings	Philadelphia Resins
Pipe, Valves, Fittings	PIC
Engines	Power Piping
Compass	Power Products
Mufflers	Ritchie Navigation
Foam System	Riley-Beard Inc.
Steel & Gratings	Rockwood Foam
Paint	Joseph T. Ryerson Inc.
Windows	Sherwin-Williams Co.
Steering System	The Singer Co.
Batteries	Sperry Marine Systems
Cutless Bearings	Surrette Storage Battery Co.
Baseboard Heaters	TEK Bearing
Insulation	Valad Electric Heating Corp.
Fuel Meters	Ward Process
Searchlights & Strainers	H. H. Watson
	C. V. Watson



FIRST FROM BLOUNT — The William H. Bennett, first vessel built by Blount under contract in 1950, will be replaced by the sophisticated Reiss Marine.



## Alcoa Marine Forms New Offshore Division

Alcoa Marine Corporation has announced the formation of a new division, Alcoa Marine Offshore Services Co., to offer geotechnical and geophysical marine field services, primarily to the oil industry.

The new division, to be headquartered in Houston, Texas, will use the services of Alcoa Sea-

probe, a 243-foot marine research and coring vessel, owned by Alcoa Marine.

**Herman C. Sieck** has been named president of the division, reporting to **Craig Mullen**, vice president-operations of Alcoa Marine Corporation.

Mr. Mullen said: "The formation of this division of Alcoa Marine Corporation is a logical extension of our present capabilities.

We have added a team of experienced undersea geotechnical and geophysical people, and our facilities in Houston put our new expertise close to the center of the oil industry."

Alcoa Marine Corporation, a wholly owned subsidiary of Aluminum Company of America (Alcoa), is a diversified company providing a variety of products and services to the maritime industry

on a global basis. It is headquartered in Upper Marlboro, Md.

Incorporated in 1968 as Ocean Search, Inc., the company was formed to provide program management, deep-ocean search, salvage, and ocean engineering services. For this purpose, the all-aluminum vessel Alcoa Seaprobe was designed, constructed and is now managed by Alcoa Marine. Configured much like a drillship, Alcoa Seaprobe is designed to recover objects up to 200 tons from 6,000 feet and operate its search sensors or recover lesser weights from as deep as 20,000 feet. In addition to its search and recovery capabilities, other potentials for the ship's systems include deep-ocean mining exploration and monitoring, geological survey, coring and oceanographic research.

Alcoa Marine Offshore Services Co. will be located at 8804 Daffodil in Houston, Texas 77063.

## Oceaneering Int'l Names Taylor Potter



Taylor Potter

Oceaneering International, Inc., P.O. Box 2430, Santa Barbara, Calif. 93120, has announced that **Taylor Potter** will assist Dr. **Yoram Goren** with the firm's expansion of services into the management of undersea projects. Mr. Potter comes to Oceaneering with a great deal of experience in offshore work in the North Sea, and prior to that, in shipbuilding and naval architecture.

His background includes several years as Chief of Hull Research Division in the U.S. Maritime Administration, and then vice president and general manager for a Hamburg-based branch of a U.S. firm of consulting engineers. He next served for several years as manager of marine engineering for the El Paso Natural Gas Company's LNG tanker and terminal building program, and then as assistant vice president of the affiliated Methane Tanker Service Company.

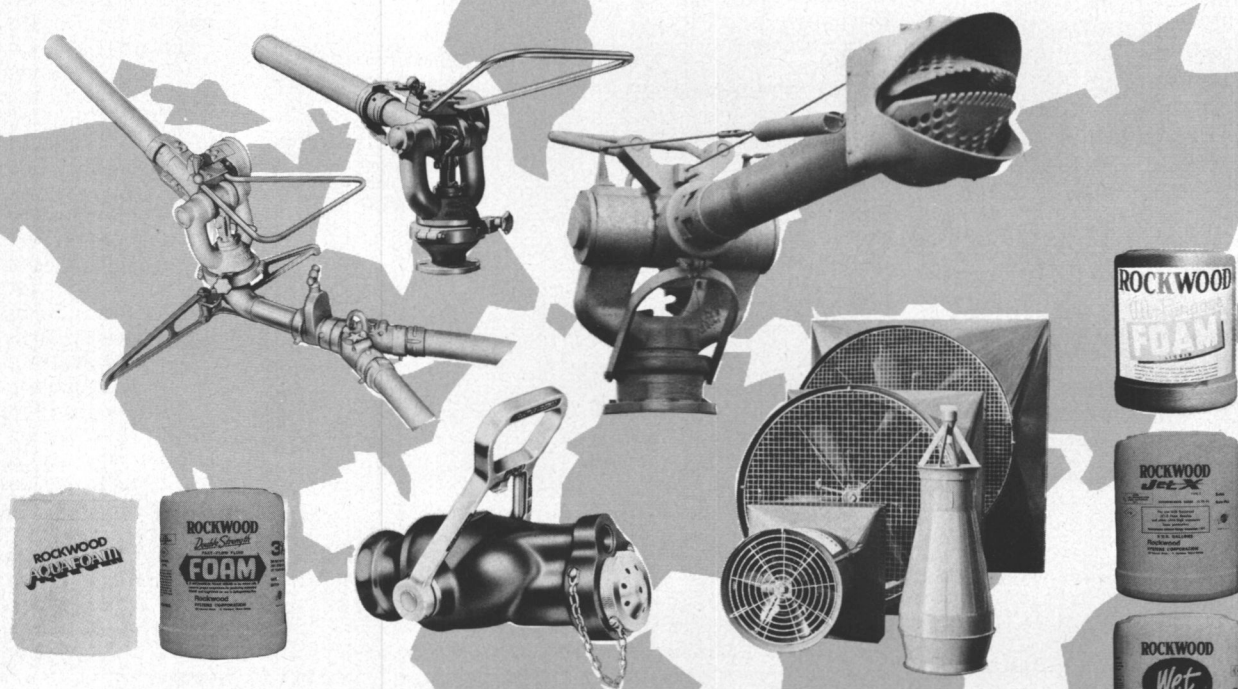
In 1974, Mr. Potter went to England as offshore manager on the Thistle Field and was later involved in other assignments, including consultant to the British National Oil Corporation.

Oceaneering is one of the world's largest diving and underwater construction contractors, offering services and equipment in all phases of offshore activity, in every major exploration and producing area of the world.

# ROCKWOOD

**proven under pressure  
around the world**

**in fire fighting foams and foam systems  
turret and water fog nozzles**



**For Municipal and Volunteer Fire Departments, Airports,  
The Petroleum/Petrochemical Industries.**

**Send for our new fully illustrated  
fire fighting products catalog**



**ROCKWOOD**

Rockwood Systems Corp. 80 Second Street S. Portland, Me. 04106



## Hoffert Marine Inc. Names Byrne Exec. VP

William H. Byrne has been named executive vice president for sales of Hoffert Marine Inc., by Paul E. Hoffert, president of the Jacksonville, Fla.-based company that is one of the nation's leading suppliers of deck and engine equipment for merchant marine and Naval vessels. Hoffert Marine also maintains offices in Lyndhurst, N.J., serving the Port of New York-New Jersey, and in Norfolk, Va., and Houston, Texas.



William H. Byrne

Mr. Byrne, a native of Hackensack, N.J., attended Dartmouth College, and served with distinction in the U.S. Navy during World War II, and Korea. He started his maritime career with the noted firm of naval architects, Gibbs & Cox, and was associated with Cosmopolitan Shipping Company, and Marine Engine Specialties Corporation, all of New York City.

For 13 years, Mr. Byrne traveled the world as vice president of international sales for Sealol, Inc. Prior to his new position, he headed up Byrne Associates, Jacksonville, Fla., U.S. representatives for MIK, Ltd., Australia, makers of propeller shaft seals.

The new executive vice president of Hoffert Marine is a member of The Jacksonville Propeller Club, The Society of Naval Architects and Marine Engineers, and the Marine Square Club.

## A.L. Burbank And Co. Named Worldwide Agents For Fuel Savers, Inc.

A.L. Burbank and Co., One World Trade Center, Suite 2811, New York, N.Y. 10048, will be sole worldwide marketing agents for the Marine ThermoTest Division of Fuel Savers, Inc., it was announced by Victor M. Richel, president. The Marine ThermoTest Division performs diagnostic inspections of electrical and thermo-mechanical equipment aboard ships.

"Our Division uses infrared imaging equipment as a preventive maintenance tool in the marine industry," said Mr. Richel. "We look to A.L. Burbank's breadth of experience for developing marine applications for this

new technology as an important growth factor."

Under the supervision of Peter Burbank, president, A.L. Burbank representative Len Johnson and consultant Clifford Wise will be account managers. They will report to Adam A. Duch, general manager of the ThermoTest Division of Fuel Savers.

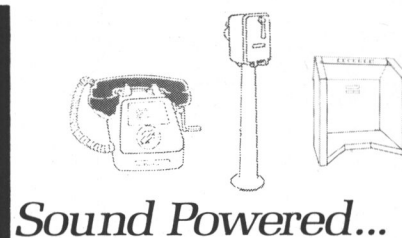
"In just over two years, we have had great success utilizing infra-

red imaging equipment as a diagnostic tool to locate problems in electrical and thermo-mechanical equipment in industrial plants that go undetected by conventional maintenance procedures," Mr. Richel noted. "We look to provide a similar preventive maintenance testing service on ships for major electrical equipment, control and engine room machinery, ship refrigeration systems and winching equipment."

Fuel Savers, Inc. is an affiliated company of National Utilities and Industries. The Elizabeth, N.J.-based concern uses high technology infrared imaging systems as a preventive maintenance tool to locate malfunctions in electrical and thermo-mechanical equipment. ThermoTest also provides thermographic surveys for energy conservation analysis for the residential, industrial and commercial markets.

## Alarms & Monitors...

For almost any shipboard condition. Available off-the-shelf or designed for the specific needs of your vessel.



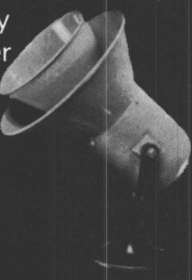
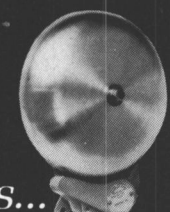
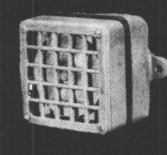
## Sound Powered...

The simplest and most trouble-free means yet for on-board intercommunications. Nothing else beats Henschel for reliability.



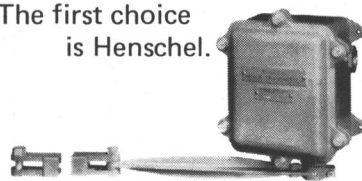
## Horns, Bells, Sirens...

Signaling devices, rather than noisemakers. Carefully designed to carry the message over conflicting din.



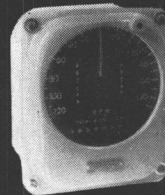
## Rudder Angle

This system is used more widely — and specified more often than any other maker's. The first choice is Henschel.



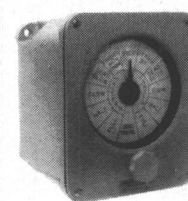
## To Measure...

Shaft RPM, total turns, and to give an exact readout anywhere on board if required.

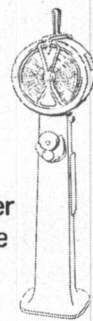


## To Order...

These Engine Order Telegraphs have become a familiar symbol of precise ship control.



The current models are even more convenient to use.

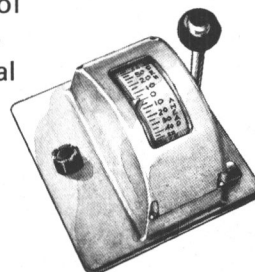


## Especially for Rugged Marine Service



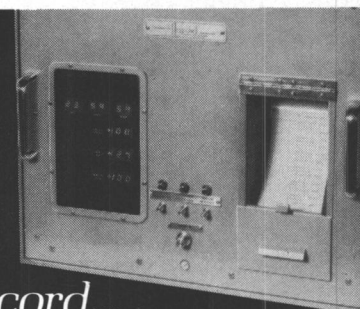
## To Control...

Direct engine control from the Bridge is now practical for even the largest vessels.



## To Record...

Engine orders/Engine room reply, throttle settings, actual shaft speed/direction, and other data are recorded by the Bell Logger.



and Clock the Time... Displayed, exactly synchronized, anywhere on board with this simple digital system.



Write or Telephone for More Information and Data Sheets  
Henschel Corporation 14 Cedar Street, Amesbury, Massachusetts 01913 Telephone: 617-388-1103 Telex: 94-7444



## Carrington Slipways Pty. Ltd. Appoints Four Directors

A Newcastle chartered accountant, **N.L. Dalby**, has been appointed chairman of directors of Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, New South Wales, Australia 2322.

Three of the shipbuilding firm's departmental managers have been appointed directors also.

They are the commercial manager, **T. Coles**; shipyard manager, **P. Higgins**, and contracts manager, **D. Moir**.

The appointments increase the number of directors to six. Other directors are the general manager, **D. Laverick**, and assistant general manager, **J. Laverick**.

Carrington Slipways' founder-chairman

**J.F. Laverick**, who was the third member of the original board, died in April.

**D. Laverick** said the appointment of new directors was aimed at widening the expertise of the board.

The firm would remain a family company. There were no plans to make it a public company.

**Mr. Dalby** is the senior partner of N.L. Dalby & Co., a Newcastle firm of chartered accountants. He is consultant to Touche Ross and Co., an international firm of accountants, and a director of several Newcastle companies.

He has been auditor and financial adviser to Carrington Slipways for more than 20 years, and an accountant in Newcastle for more than 40 years.

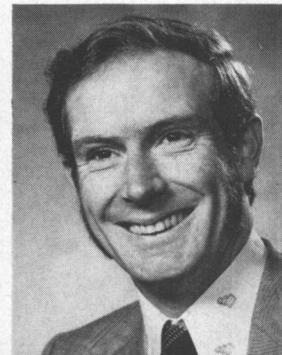
**Mr. Coles** was appointed accountant to Carrington Slipways in 1972. Before that, he was

employed by N.L. Dalby and Co. where his main account was that of Carrington Slipways.

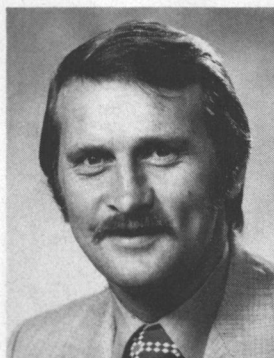
He was appointed commercial manager in 1975, and is responsible for the company's financial operations, including evaluation of prospective capital expenditure.



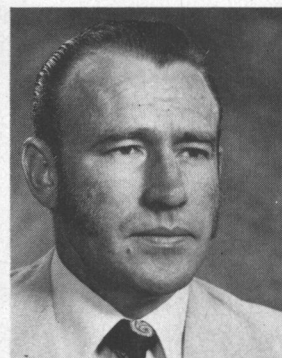
N. L. Dalby



T. Coles



P. Higgins



D. Moir

## PIONEERING MARINE PRODUCTS FOR OVER 45 YEARS HOSE McCANN TELEPHONE CO., INC.

Pioneers and originators of marine sound powered telephones over forty-five years ago, Hose-McCann is regarded today as the finest name in I.C. equipment, offering a wide variety of marine products, some of which are listed and illustrated below.

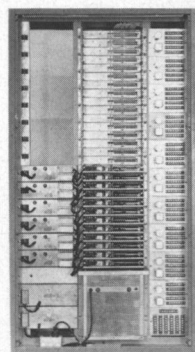
Every Hose-McCann product is precision engineered and manufactured to provide many years of dependable, trouble-free operation. The name Hose-McCann as always, stands for reliability, integrity and the highest standard of quality.



ROTATING BEACON-WT



STEERING STANDS



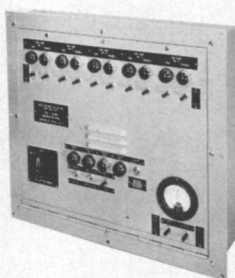
MARINE AUTOMATIC DIAL SWITCHBOARDS & TELEPHONE INSTRUMENTS



SOUND POWERED TELEPHONE SYSTEMS



WATCH CALL SYSTEMS AND ASSOCIATED ROOM UNITS



FIRE AND GENERAL ALARM PANELS

RUDDER ANGLE INDICATOR SYSTEMS



**OTHER HOSE-McCANN PRODUCTS:** • Navy and Commercial Sound Powered Telephone Systems and Accessories  
• Navigation Light Panels • Engineers' Signal and Alarm Panels  
• Annunciator and Control Panels • Power Failure Alarm Panels • Bells and Contact Makers  
• Automation Equipment • Dumbwaiter Communication Systems

For further information and specifications on any of the above products, write to:

**HOSE McCANN TELEPHONE CO., INC.**

524 WEST 23rd STREET NEW YORK, N. Y. 10011  
(212) 989-7920 (Cable) CYBERNETIC NEWYORK

ORIGINATORS AND PIONEERS OF SOUND POWERED TELEPHONES FOR MARINE USE  
Representatives in principal domestic and foreign seaports

## Fluid Power Fundamentals Training Program Presented With Slides And Sound Track

This is the first complete training program in basic hydrostatics. Color slides, a complete pulsed sound tract, instructor's guide, workbooks, and tests present the program in an entertaining way.

The program, which lasts 75 minutes, is subdivided into four parts, which may be used independently. "The Theory of Hydraulics" covers basic terms and principles such as pressure and flow. "The How and Why of Hydraulic Components" explains the operation of the most commonly used hydraulic components. "Troubleshooting Hydraulic Systems" develops practical problem-solving skills such as analyzing pressure and flow, and establishes a logical troubleshooting sequence. "The Language of Fluid Power Symbols" is an introduction to reading fluid power circuit diagrams.

The program is applicable to any situation where training is required or indicated for the maintenance of hydraulic equipment.

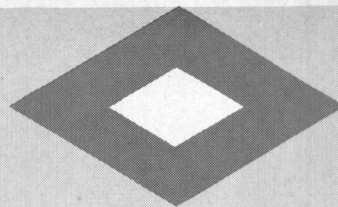
Further information and preview copies of the program are available.

For more information, contact **Dennis Clarke**, Industrial Media, Inc., 6303 — 28th Street, S.E., Grand Rapids, Mich. 49506.

Maritime Reporter/Engineering News



# THERE IS A DIFFERENCE IN TUGBOAT COMPANIES



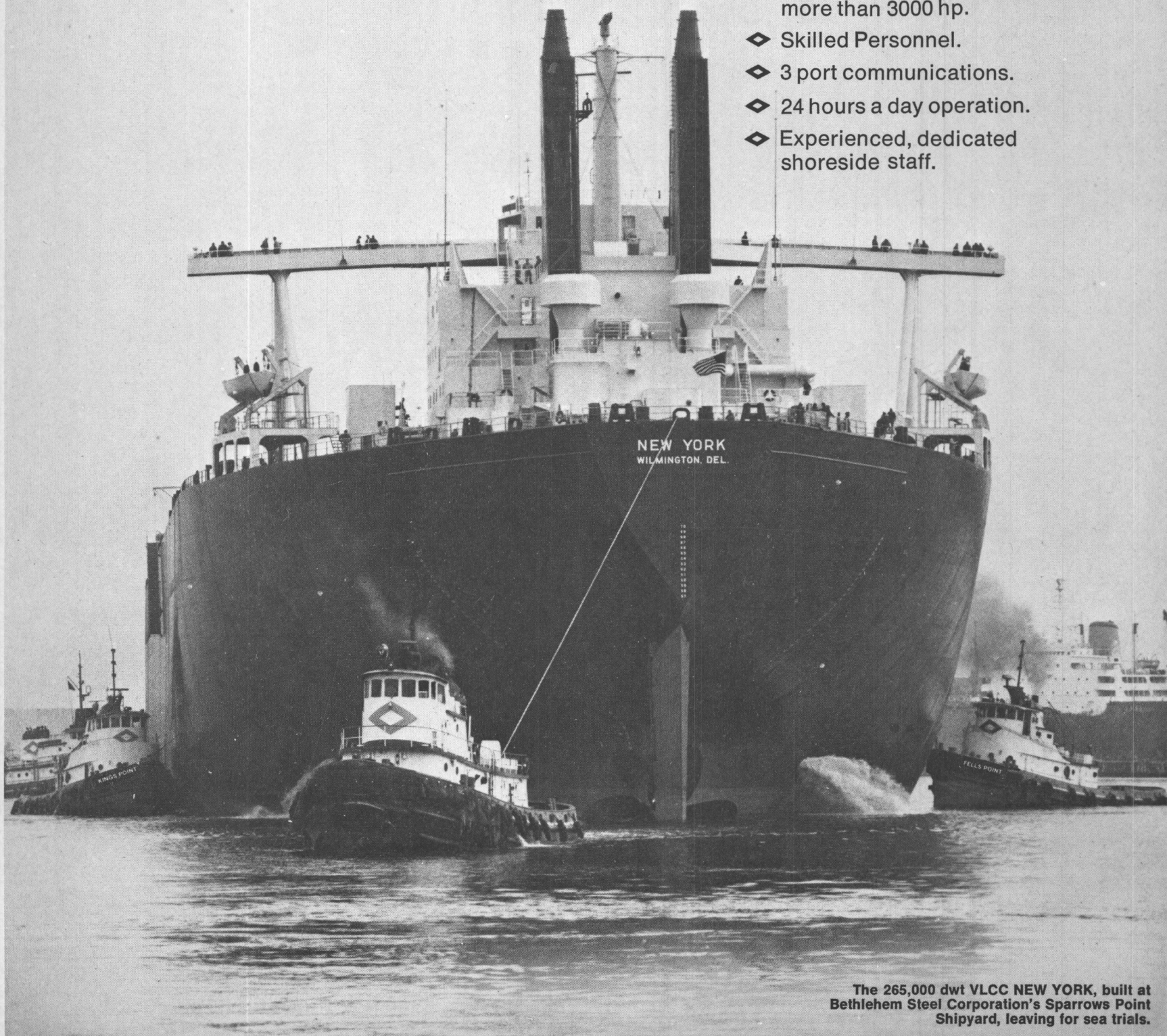
## Curtis Bay Towing Company

Over 66 years of service

Philadelphia • Baltimore • Hampton Roads

Phone: (301) 685-8700

- ◆ The largest and most powerful fleet of tugs.
- ◆ Eleven new tugs in ten years.
- ◆ Future tugs under design.
- ◆ Seven twin-screw tugs of more than 3000 hp.
- ◆ Skilled Personnel.
- ◆ 3 port communications.
- ◆ 24 hours a day operation.
- ◆ Experienced, dedicated shoreside staff.



The 265,000 dwt VLCC NEW YORK, built at Bethlehem Steel Corporation's Sparrows Point Shipyard, leaving for sea trials.



**Alco Power Inc.  
Names Richard Fuller**



**Richard Fuller**

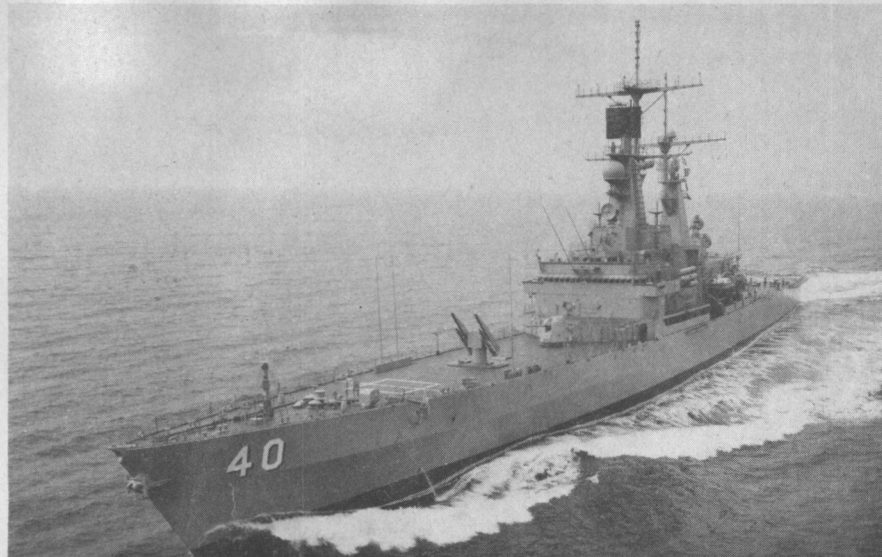
**Richard Fuller** was recently appointed manager of manufacturing for Alco Power Inc. of Auburn, N.Y. Mr. Fuller came to Alco from the Mixing Equipment Co., Inc. in Rochester, N.Y., where he held the position of manager of weld and fabrication departments.

In his new position, Mr. Fuller will be responsible for directing department superintendents in the

manufacturing area to assure efficient and economical productivity and, in cooperation with manufacturing services, develop short and long-range layout, tooling and other capital planning for the manufacturing operations. Other responsibilities include the participation in development of new products, coordinate manufacturing schedules and objectives, maintain and justify proper staffing, and coordinate recruiting and development needs with the employee relations department.

Holding a BBA degree granted by Cleveland State University and an MBA degree granted by the University of Akron, Mr. Fuller is a member of the American Institute of Industrial Engineers, the American Society for Metals, and the American Welding Society.

Alco is a leading manufacturer of diesel engines used for marine propulsion, standby electric power generation, onshore and offshore oil exploration, pumping and locomotive applications.



**FROM NEWPORT NEWS**—Tenneco's Newport News Shipbuilding, Newport News, Va., recently delivered the nuclear-powered guided missile cruiser Mississippi (CGN-40) to the United States Navy. With the Mississippi, Newport News Shipbuilding has delivered 11 of the last 14 nuclear-powered ships received by the Navy since 1975. The Mississippi is the shipyard's third Virginia-class cruiser and the Navy's eighth nuclear-powered guided missile cruiser. Including the Mississippi, the Navy now has 11 nuclear-powered surface ships—eight built by Newport News Shipbuilding. The Mississippi is 585 feet long, has a beam of 63 feet, and displaces about 11,000 tons. It carries two twin-armed batteries of antiaircraft missiles and antisubmarine rockets. The Mississippi also has 5-inch guns, long-range sonar, torpedoes, electronic warfare equipment, and a helicopter hangar. Its nuclear reactors contain enough energy for 10 years of operation without refueling. The shipyard now has under contract or construction 11 nuclear-powered vessels for the U.S. Navy—nine submarines, one cruiser, and one aircraft carrier—and four commercial vessels—two liquefied natural gas carriers (LNGs), and two ultra large crude carriers (ULCCs).

# SEALOY

## Stainless Steel Boat Shafting



### ...Armco's newest heavy-duty shaft

Now the company that introduced you to the tough family of AQUAMET Stainless Steel Shafting also offers you SEALOY® Boat Shafts. This latest addition to the Armco Boat Shaft family further rounds out your selection for meeting exact boating needs.

Armco also manufactures AQUAMET 17, 18 and 22 Boat Shafts.

Each special alloy can be ordered in diameters up to 12" and lengths to 40'. Larger diameters are also available in shorter lengths.

The many benefits of our AQUAMET and SEALOY

grades are well founded in the marine industry. AQUAMET 17 has served as the work-horse in fish and work boats for the past 15 years.

All four heavy-duty shafts are available from marine dealers and distributors coast to coast.

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**

### Nav-Com And Simrad Co-Host Navigation Seminar



Shown at the reception preceding the seminar are, left to right; Al Carlson, Nav-Com Inc.; Howard Thompson, Jr., Jakobson Shipyard, Inc.; Bjorn Carlsen, Simrad, Inc.; Gerald A. Gutman, Nav-Com Inc.; Jack Provenzano, Nav-Com Inc.; Gilbert N. Nelson, Simrad, Inc.; Edward Blayer, McAllister Bros. Inc., and Walter Perlowski, Simrad, Inc.

A marine navigation seminar, jointly sponsored by Nav-Com Incorporated of North Lindenhurst, Long Island, N.Y., and Simrad, Incorporated of Armonk, N.Y., was attended by representatives of major shipping companies, tanker fleets, tug operations, commercial fishing interests, area shipyards, and the Corps of Engineers. The seminar, held on July 20, was presented by Gil Nelson, vice president of marketing for Simrad. Also representing Simrad were Bjorn Carlsen, president, and Walter Perlowski, product manager.

The seminar covered the latest new product advances in Loran-C navigation equipment, including Simrad's new CC-2 Navigation

Computer. The CC-2 Navigation Computer may be used in conjunction with any of Simrad's Loran-C receivers to provide a digital direct readout of latitude and longitude, bearing to sail, time and distance to destination, true ground speed, and cross track error. All information is derived from the Loran-C receiver. The computer may also be used for other navigation computations. Other products presented in the seminar included high-performance depth recorders used for navigation and commercial fishing. Included among these were such units as the Simard EL, EQ, EX, etc. Systems employing multiple transducers, digital readouts, depth alarms, and bottom expansion were discussed.



## Patrick Devery Named TTT Vice President



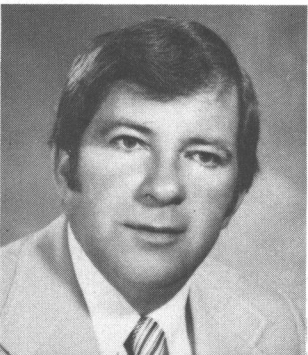
H. Patrick Devery

H. Patrick Devery, a veteran of 30 years in the steamship industry, has joined TTT Ship Agencies, Inc., New York, N.Y., as a vice president. His primary responsibility will be supervision of Star Lines, which recently named TTT as its ship agency.

Prior to joining TTT, Mr. Devery served as operations vice president and Northeast regional manager of Pacific Far East Line. Previously, he had served as general manager, Mediterranean service, and as manager of equipment control worldwide for American Export Lines.

Following service in the U.S. Navy in World War II, Mr. Devery started his career with Grace Line in its financial department.

## Hansen And Tidemann Appoint Basil Finn



Basil Finn

Basil Finn has been appointed director of sales in Houston, Texas, by Hansen and Tidemann, Inc., ship agents and chartering brokers.

In his new position, Mr. Finn will oversee the sales and marketing efforts for all the transportation services represented by H&T in the Gulf area.

A native of New York, Mr. Finn brings to H&T a background of more than 15 years in shipping and transportation, and a knowledge of markets on the East, West and Gulf Coasts.

Mr. Finn, a graduate of St. John's University in New York, has also done postgraduate studies at several California colleges.

Hansen and Tidemann, Inc., with more than 40 years in the transportation industry, maintains a network of 21 offices throughout North America, and represents a variety of transportation services. Gulf Stevedoring is an affiliated company.

## Int'l Symposium On Fracture Mechanics Proceedings Available

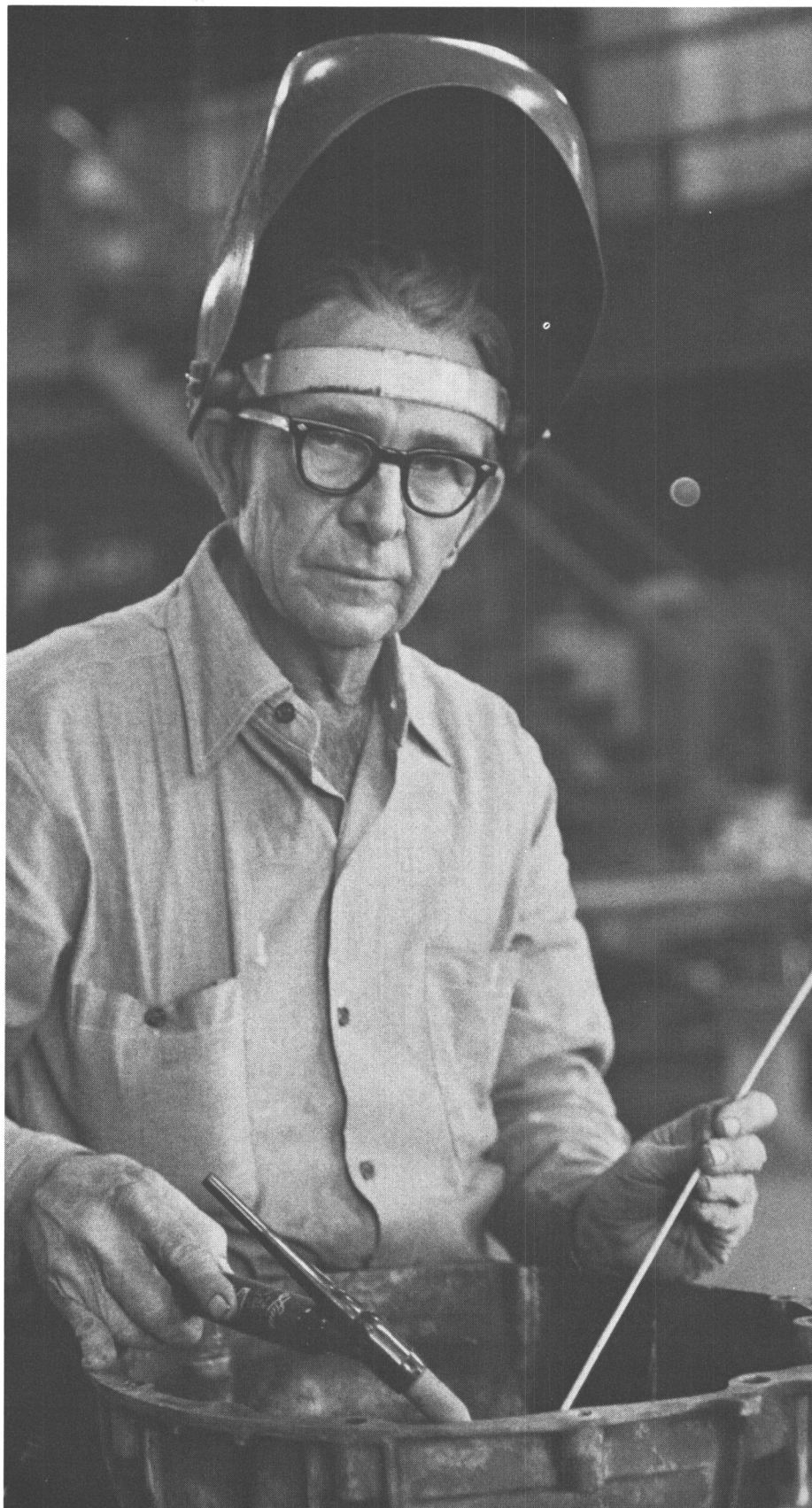
Proceedings of the International Symposium on Fracture Mechanics to be held at the George Washington University, September 11-13, 1978, will be available through the University Press of Virginia. This symposium, sponsored by the Office of Naval Research, presents an overview of fracture problems

in ship and aircraft structures, as well as an international review of the state-of-the-art in many areas of fracture mechanics research. Included are results of both theoretical and experimental studies of fracture and fatigue in a variety of materials and structures. Various aspects of fracture are discussed for composites, polymers, ceramics and metallic materials under wide ranges of loading and environment. Fracture mechanics

technology is reviewed through fracture case studies, discussions of recent advances in nondestructive flaw detection, and applications to nuclear reactors, gas turbines, and rocket motors.

This book, edited by Drs. N. Perrone, H. Liebowitz, and D. Mulville, will be available in September. It can be ordered from the University Press of Virginia, Box 3608, University Station, Charlottesville, Va. 22903, for \$25.

## "The great Coppersmith" is not extinct. You'll find him in Savannah.



When we spotted Bill Greenwood thirty-four years ago, we found a rare bird. And no tinhorn will ever replace him in Savannah.

Bill is an artist with metals. He can do creative and amazing things with galvanized, stainless, and copper.

Unfortunately, great coppersmiths are just a memory at most shipyards.

But we're not most shipyards.

Our people are the best you'll find. They work their tails and talents off on every single job.

Besides that, our prices are unbeatable. And so is our mild, year-round weather, which lets us handle winter jobs at top speed, unlike frostbitten northern yards.

Savannah Machine and Shipyard Company.

For voyage repairs, major conversions, and scheduled drydocking. Whatever the job, whatever the skill is required.

You'll find it in Savannah.

### The Savannah Yard.

Savannah Machine & Shipyard Co.  
P.O. Box 787, Savannah, Ga. 31402  
Tel. (912) 233-6621

74 Trinity Place, Suite 1800  
New York, N.Y. 10006  
Tel. (212) 432-0350



## British Firm Sells Survey Technique To Maritime Administration

U.K.-based international shipyard consultants A and P Appledore (APA) have sold their shipbuilding technology survey technique to the U.S. Department of Commerce, Maritime Administration.

The survey technique is a system developed by the British firm two years ago to measure on a worldwide basis the level of technology used in 70 different aspects of shipbuilding yard operation.

The Maritime Administration is now using the APA system to assess U.S. shipbuilding technology at 14 leading shipyards.

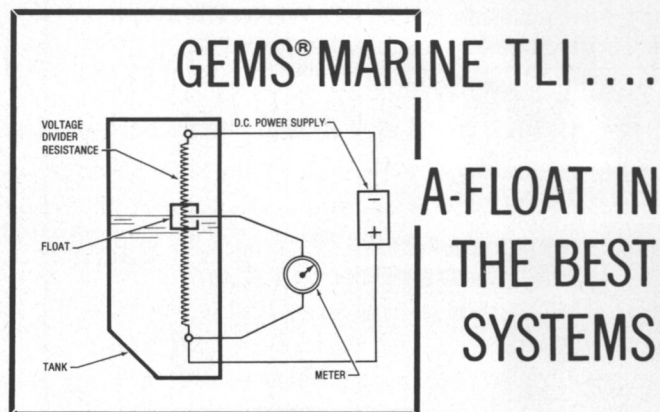
The operation is being carried out by Marine Equipment Leasing (MEL), the American marine consultants, under the direct supervision of the Administration and APA.

Two senior Appledore consultants have returned from Washington, D.C., after a detailed briefing of MEL and Administration staff. MEL will now carry

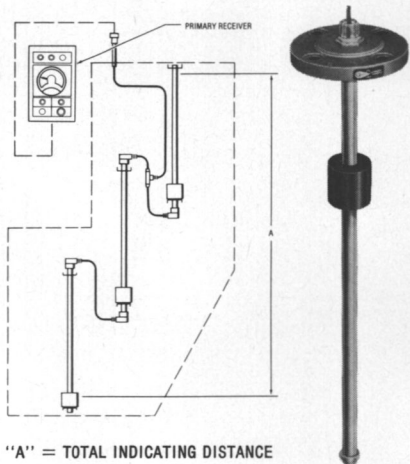
out surveys in the shipyards, and later this year will visit Appledore's Newcastle upon Tyne northeast England office, to prepare its reports and compile a consolidated industry report, which will compare U.S. shipbuilding technology with major foreign shipyards.

APA say that there has never been a uniform industry-wide evaluation of shipbuilding technology, and the study will identify areas where the U.S. shipbuilders are leading or lagging behind their foreign counterparts. It will thus provide the U.S. with a sound basis for developing a research and development program to improve the efficiency and productivity of its shipyards.

The Appledore survey technique has been widely used in both shipbuilding and ship repair yards in the U.K., Canada, India, Egypt, and France.



The trouble-free simplicity of a magnetic float — transmitting continuous level "information" to a remote readout meter as it fluctuates with liquid level — is one very good reason to specify a dependable Gems Marine TLI System. Another is experience . . . more than two decades solving every known tank gauging problem afloat . . . on Flat Tugs to Cruise Ships; Submarines to Super Tankers. Check these outstanding features, then contact us for a competitive quotation.



- Single or multiple transmitters available to suit every tank configuration.
- Transmitter accuracy nominal to within 1/2" of liquid level.
- Long operating life with minimal maintenance required.
- All systems are specific gravity compensated.
- Transmitter capable of two-liquid interface indication under MIL-L-23886A.
- Digital or dial receivers can be located up to 2000 feet from transmitter. No special or shielded cables required.
- Design simplicity minimizes malfunctions (float is only moving part).
- System accuracy and integrity checkable at the flip-of-a-switch. Installation is fast, simple, convenient; bracket or flange mounting.
- System calibration requires no special tools or test instruments.
- Adjustable independent alarms feature solid-state sensing for alarm and control functions.
- Quality control meets MIL-9858 requirements fully.

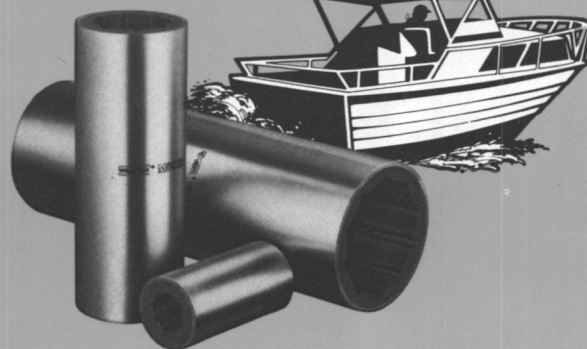
CLIP & MAIL  
Please Send Free TLI Book To:

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

DELAVAL TURBINE INC. GEMS SENSORS DIVISION  
Farmington, Connecticut 06032  
ATTN: Mel Brown

DELAVAL

Put MORSEPOWER  
in Your Product!

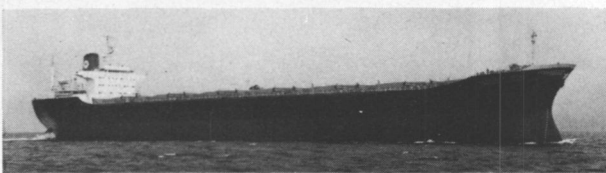


## Morse brass marine bearings run clean and true, last years in hostile environments

Engineered to meet the toughest service requirements in corrosive and abrasive marine or industrial use. Fluted oil-resistant bearing sleeve assures continuous lubrication with water- or oil-based liquids, outwears hard surface types 10 to 1. For shaft diameters from 3/4" to 6 1/2", lengths from 3" to 30". Meets U.S. Navy Specifications MIL-B-17901A CLII. Contact your Morse Distributor or Service Center: Aurora, Ill.; Hasbrouck Hts., N.J.; Atlanta, Dallas, Los Angeles, Toronto. Morse Chain Division, Borg-Warner Corp., Ithaca, N. Y.

**MORSE®** **BORG-WARNER®**

## REFRIGERATION AND AIR CONDITIONING



- Air Conditioning & Refrigeration Systems Design, Sales and Service
- Stainless Steel Refrigerators and Freezers
- Ice Cubers
- Walk-in Coolers and Freezers
- Service and Parts Available 24 Hours A Day
- Rebuilding of All Ferrous and Non-Ferrous Surfaces With "Belzona Molecular Metal"

Over 50 ships serviced in the past year alone ● Our employees have over 80 years total experience in marine refrigeration ● Complete inventory of parts—York—Carrier—Chrysler—Henry—Alco—Penn—Sporlan—J & E Hall—Danfoss

new equipment — parts — services

## ADRICK Cooling Corp.

30 B. Remington Blvd.  
Ronkonkoma, New York 11779 ● (516) 585-4231  
PLEASE SEND BROCHURE TO:



Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Olof Wadehn, formerly manager, MTU engine sales for MBNA, has been appointed general manager, MTU of North America, Inc.

The headquarters office is located at 1 Glenview Road, Montvale, N.J.

MTU specializes in the manufacture of high-performance diesel engines with unique design features such as favorable horsepower-to-weight ratio and compact engine dimensions.

At the recent Offshore Technology Conference in Houston, Texas, MTU introduced a new family of diesel engines, including a 7,000-hp model which is the most powerful diesel in its size and rpm range ever introduced in America.





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.

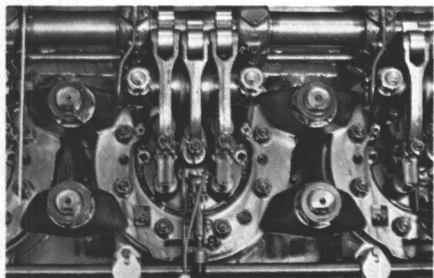
## How Shell's CAPRINUS<sup>®</sup> R Oil 40 is helping keep EMD's clean with low wear in the 8,400-hp Dennis Hendrix

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.

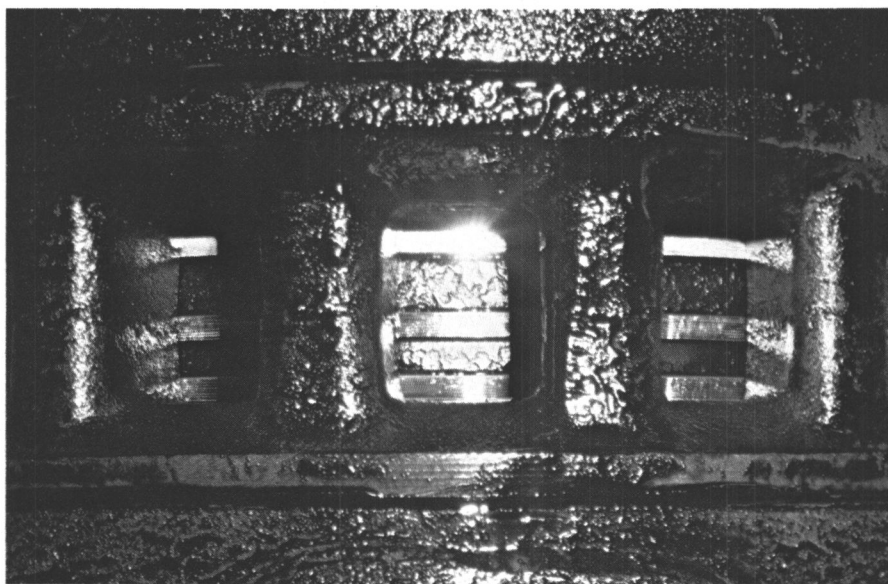
One of the most powerful towboats on the waterways, the M/V *Dennis Hendrix*, was built by Jeffboat, Inc. It has been in service since July, 1977 for the American Commercial Barge Line located in Jeffersonville, Indiana.

Under her three stacks are three EMD16-645 E5's on Shell CAPRINUS<sup>®</sup> 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



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.



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.

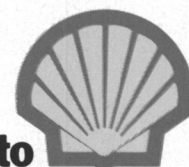
CAPRINUS R Oil's dispersant additive system helps keep contaminants in suspension, prevents heavy deposit buildup on filters. That can mean important savings.

### 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.*



**Come to  
Shell for answers**



## Tacoma Boat Names Streb Chief Engineer

Paul V. Williams, vice president of Tacoma Boatbuilding Co., Inc., has named **Herbert R. Streb** chief engineer of the Tacoma Boat-Escher Wyss controllable-pitch propeller operations.

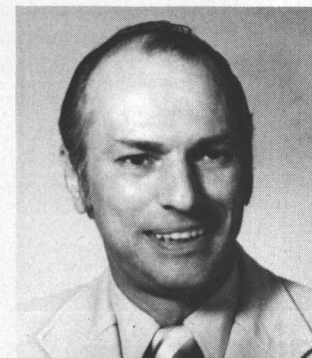
Recently, Tacoma Boatbuilding Co., Inc. of Tacoma, Wash., and Escher Wyss G.M.B.H. of Ravensburg, West Germany, signed a li-

cense agreement which enables Tacoma Boat to manufacture the full range of Escher Wyss CP propellers at their Tacoma facilities. Escher Wyss has been a major manufacturer of controllable-pitch propellers for over 40 years. Presently, over 1,300 Escher Wyss propellers are in service, including the world's most powerful, a 24-foot-diameter system absorbing 46,000 horsepower.

Mr. Streb joined Tacoma Boat

in 1977 as Mechanical Project Engineer for the U.S. Navy's 245-foot Patrol Chaser, Missile (PCG). He assumed his new position in February of this year. Mr. Streb will coordinate and direct the engineering, marketing, sales, and field service for the Tacoma Boat-Escher Wyss propellers. He brings to Tacoma Boat 19 years' background in the technical and operational aspects of marine and ocean engineering, systems design, mar-

keting and contract management. Ten of those years were in the field of controllable-pitch propellers. Mr. Streb has held positions with Aerojet Liquid Rocket Company, Marine Propulsion Engineering, Inc., AVCO Corporation, and Ingersoll Kalamazoo Division of Borg-Warner Corporation. He is a member of The Society of Naval Architects and Marine Engineers.

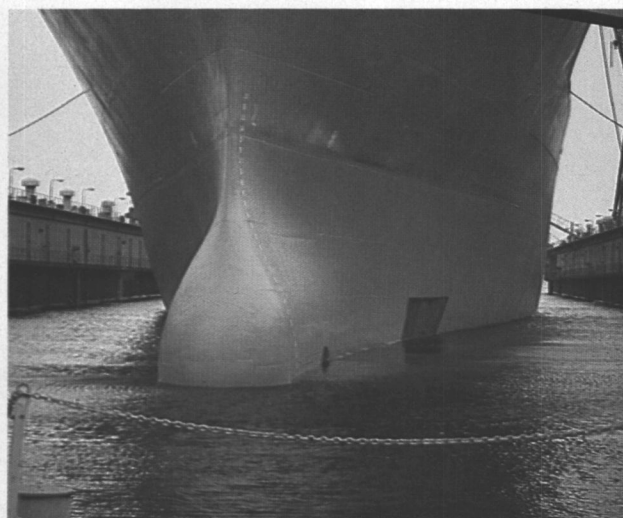


Herbert R. Streb

# MAUI. The first vessel in the U.S. to apply the most unique bottom coating in the world, SPC.



MAUI: dark area—Cathodic Protection Dielectric shield; green—first coat of SPC; blue—second coat of SPC.



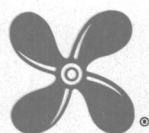
MAUI: ready for sea with 4 coats of SPC.

Matson's new 720', 38,700 ton maximum displacement container vessel, MAUI, has been coated with SPC self-polishing copolymer by Maryland Shipbuilding and Drydock. Built by Bath Iron Works, MAUI went through fitting out period with only an anti-corrosive coating below the waterline. Prior to receiving 4 coats of SPC the only surface preparation required was a high pressure water wash.

SPC self-polishing copolymer antifouling bottom paint is a revolutionary coating patented by International Paint Company. The unique chemical combination of biocide and vehicle allows the water turbulence to polish SPC's surface as the ship passes through the water. Not only does the hull remain clean but the progressive smoothing of the underwater hull results in significant operational savings.

You too can expect to save at least 12% in fuel costs if you coat your vessels with SPC. You will also require fewer drydockings because the life of SPC is directly proportional to its thickness. Recoating with SPC is simpler than with conventional antifouling systems. A high pressure water wash, touch up of physically damaged areas with anti-corrosive, and the surface is ready for enough additional coats of SPC to last until next planned drydocking two, three or even four years away.

Contact your nearest International Marine Coatings representative and challenge him to show how much SPC can save for you.



## International Marine Coatings International Paint Company, Inc.

Executive Sales Office: 17 Battery Place North, New York, NY 10004  
c/o W. Norman Duncan, Vice President-General Sales Manager

3915 Louisa Street, P.O. Box 26069, New Orleans, LA 70186  
c/o F. Brick Hurst, Vice President, Southern District & Offshore

220 South Linden Avenue, South San Francisco, CA 94080  
c/o Grant Johnson, Executive Vice President

**SPC**<sup>TM</sup>  
Self-Polishing Copolymer A/F  
**SAVES FUEL**

Present contracts include the building of four twin-screw, 245-foot Patrol Chasers, Missile (PCG) for the U.S. Navy, and four twin-screw, 270-foot Medium Endurance Cutters (WMEC) for the U.S. Coast Guard. Tacoma Boat-Escher Wyss CP propeller systems will be installed on these vessels. The Navy PCG propellers will be 9 feet in diameter and designed to absorb 11,500 shp at 350 rpm. The Coast Guard WMEC propellers will be 9 feet in diameter and capable of absorbing 3,500 shp at 260 rpm. The propellers will be manufactured under the supervision of **John Matzen**, operations manager of the Northern Line Machine Division. Tacoma Boat has developed considerable experience and capability with controllable-pitch propellers through the manufacture, installation and testing of such systems over the past several years.

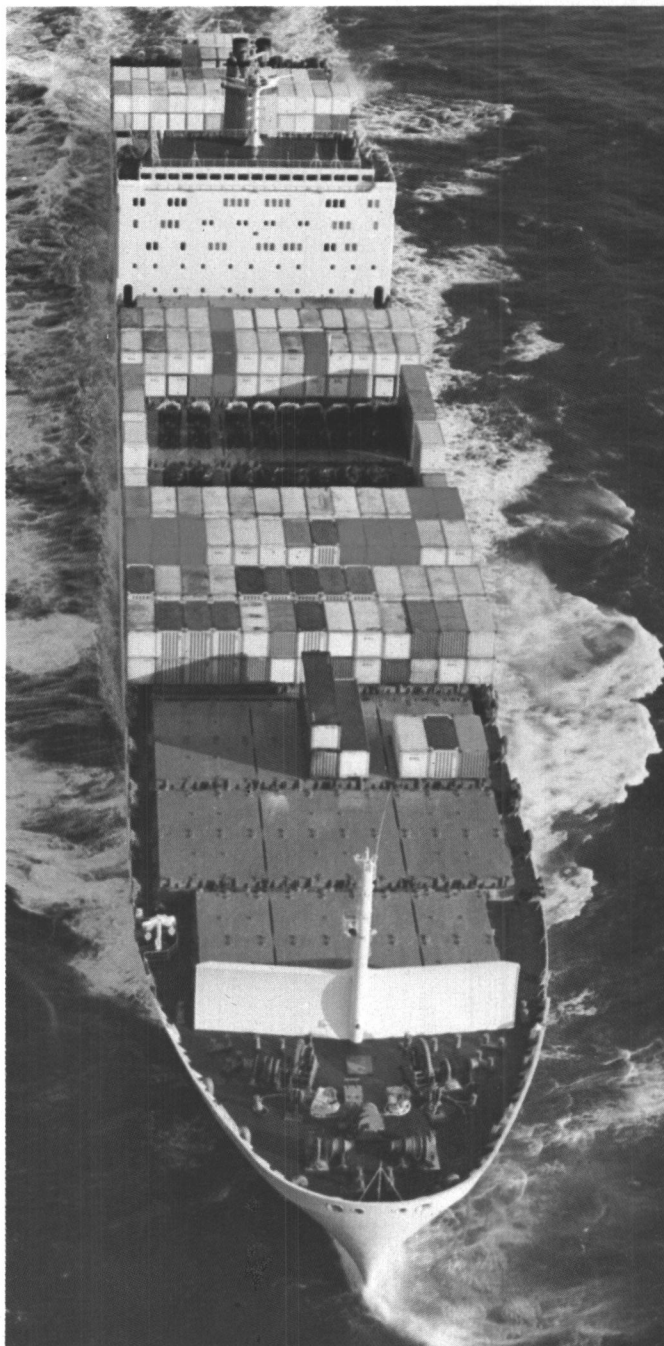
Under the license agreement, Mr. Streb has established complete marketing and field service capability for the Escher Wyss propellers within the United States.

## Bergeron Industries To Build Oceangoing Barges For Able

Bergeron Industries, Inc., St. Bernard, La., has been awarded a contract by the Able Barge Company, New Orleans, La., for the construction of three oceangoing deck cargo barges. Each barge will have overall dimensions of 180 feet by 54 feet by 12½ feet, and will be United States Coast Guard approved and built to American Bureau of Shipping Class "Maltese Cross A" unrestricted ocean requirements.

The barges will be built at Bergeron's marine facility located on the Mississippi River at Braithwaite, La., near the Port of New Orleans, and are scheduled for delivery during the latter part of 1978 and early 1979.





# MacGregor muscle

MacGregor. Giving you power to move cargo on and off ships faster. Using every new technique to streamline loading methods and cut time in port.

MacGregor cargo handling expertise

has been applied to every kind of dry cargo ship afloat. Custom-built or converted. Backed by a service network covering every major maritime nation.

**MacGREGOR**  
***Cargo transfer and access equipment***

The entire resources of the International MacGregor Organisation are available to the United States maritime industry through:  
MacGregor Comarain Inc., 135 Dermody Street, Cranford N.J. 07016. Telephone: 272 8440 Telex: 138618



## Raytheon Marine Offers Line Of Commercial Doppler Speed Logs

A complete line of commercial doppler speed logs is now available from Raytheon Marine Company.

The doppler speed logs, which are manufactured by Raytheon Company's Submarine Signal Division in Portsmouth, R.I., will be

sold and serviced by more than 250 authorized Raytheon marine dealers around the world.

According to Raytheon Marine Company president **Dick Warden**, the sales agreement will make an already well-accepted product more accessible to the marine community. "We've worked very closely with our sister division in Portsmouth for years," he said. "Now, with the growing popularity of our commercial radar sys-

tems and the recent introduction of our anticollision unit, we feel we're in an excellent position to broaden our lines and offer the doppler systems through our dealer network. It's a move toward greater marketing efficiency."

The Raytheon doppler speed log line currently ranges from the Model DSL-250, a basic speed log which measures speed ahead and astern, to a dual-axis navigation

system with docking capability. The solid-state digital systems are designed to be easily adapted to the broadest range of vessel applications. More than 100 systems of various configurations are now in use aboard tankers, high-speed cargo carriers, research ships, and destroyer-type vessels.

For speed measurement, all systems bottom-track to 1,000 feet (330 meters), and automatically shift to water-mass tracking at greater depths. At speeds above 10 knots, resolution is 0.1 knot. At speeds under 10 knots and in water depths of less than 250 feet, a "mooring mode" provides speed accuracy to 0.01 knot.

A depth indicator and adjustable depth alarm are standard on all systems. Depth display resolution in mooring mode is 0.1 meter. All models also include a feature for testing circuits and lamps.

The Model DSN-450 dual-axis navigation system simultaneously measures and displays ahead and astern speed, athwartship speed, distance-run, and depth. To aid the maneuvering and docking of very large ships, this system can be expanded to measure athwartship speed and depth at the stern, as well as dual-axis speed and depth at the bow.

Data is displayed numerically by all systems on an integrated bridge console. Remote digital and analog speed displays are optional. All models are designed to provide accurate speed data to true motion radars, satellite navigators, advanced collision avoidance/navigation systems and other ship-board integrated navigation systems.

Raytheon doppler speed logs utilize bottom and water-mass tracking technology. Speed measurement is based on the doppler effect, which is the difference in frequency between signals transmitted to the bottom or water-mass and their return echoes.

Additional information and complete specifications can be obtained from **Stanley L. Clark**, Raytheon Marine Company, 676 Island Pond Road, Manchester, N.H. 03103.

## American Manufacturing Opens Tampa Warehouse

American Manufacturing Co., Inc., has opened a new warehouse in Tampa to serve southern and central Florida with a complete line of natural and synthetic ropes from 3/16 inches through 4 inches in diameter.

Located at the Land Warehouse Company, 6002 North 51st Street, Tampa, Fla. (tel. 318/621-2497), this facility will be under the supervision of **Bob Johnson**, who maintains an office and warehouse in Jacksonville, Fla.

American, with plants in Honesdale, Pa., and Lafayette, La., has 12 other branch/warehouse locations to serve cities on all coastal waters, the Gulf, and waterways.

## Five years ago, the MSD on this vessel was seven years ahead of its time.



RED FOX LED THE INDUSTRY THEN. AND IT LEADS THE INDUSTRY NOW.

In 1973, when the Central Gulf LASH vessel, Green Valley, and her sister ships were built at the Avondale Shipyards, they were outfitted with Red Fox series RF 3000 Type II Marine Sanitation Devices.

These were among the first LASH vessels to install MSD units to meet all US Coast Guard effluent discharge standards. Central Gulf knew the Red Fox Type II MSD had been the industry benchmark since 1970, meeting the toughest USCG and IMCO standards for effluent discharge. Even standards scheduled to take effect in 1980.

Central Gulf knew that the Red

Please send information on  
RED FOX MSD.

Name \_\_\_\_\_

Company \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_

Mail to:  
Red Fox Industries, Inc.  
P.O. Box 640  
New Iberia, Louisiana 70560  
..

Fox MSD's could be counted on for dependable operation and efficiency both at the time of installation and in the future. Red Fox units avoid the need for costly changeover later.

Now is the time to install a Red Fox MSD. You'll have the easiest to operate Type II MSD known; a compact, continuous aeration system without filters, incinerators, holding tanks, or special commodes. It operates in Fresh or Salt water with only an occasional addition of inexpensive household bleach. No expensive chemicals, sludge removal, or specially trained personnel are required.

Fill out the coupon and we'll show you that the Red Fox MSD is the clear solution for the future.

**redFox**  
Industries, Inc.

P.O. Box 640 New Iberia, La. 70560 (318)/365-8131 Telex 586680 Regional Offices: New Orleans, San Diego, New York City.





# Repeat Performance.

## 28 years later, Blount Marine gets the call again!

In 1950 Luther H. Blount built the tanker, WILLIAM H. BENNETT, in his backyard in 99 days. The BENNETT has been operated continuously on the Great Lakes for 28 years. She is now owned by Reiss Marine Transport, Inc. Reiss Marine needed a larger, more sophisticated vessel, so they came back to Blount Marine. The REISS MARINE was delivered to Superior, Wisconsin, in June, 1978. She represents the latest in bunkering technology. Blount Marine has come full circle, replacing the first vessel it built on contract.



August 15, 1978

## **BLOUNT MARINE CORPORATION**

P.O. Box 368, Warren, Rhode Island 02885

401-245-8300 Telex 927686



## 2,800-Ton Load On Barge Towed 7,900 Miles From Izmit, Turkey To Japan

A Global Transport Organisation barge loaded with dredge equipment recently arrived in Yokohama, Japan, concluding a 7,900-mile voyage from Izmit, Turkey, in some 45 days.

The dredge fleet, owned by the

Japanese dredging firm Aoki Gumi, includes the dredge No. 1 Genkai, a hopper barge, pusher boat, work barge and two workboats. This equipment and other cargo, 2,800 tons in all, were loaded aboard the 400 by 100-foot GTO barge Genmar 102, which was towed by a 9,000-hp GTO tug. The tow averaged nearly 10 knots for the trip.

The dredge equipment will be

utilized for the Bosphorus Submarine Pipeline-Crossing Project in Japan.

Global Transport Organisation, San Francisco, Calif., is an international marine transportation group uniting three prominent marine carriers. Member companies are Crowley Maritime International, Federal Pacific Limited and Genstar Overseas Limited.

## TTT Transfers Spano From New Orleans To Key Post In New York

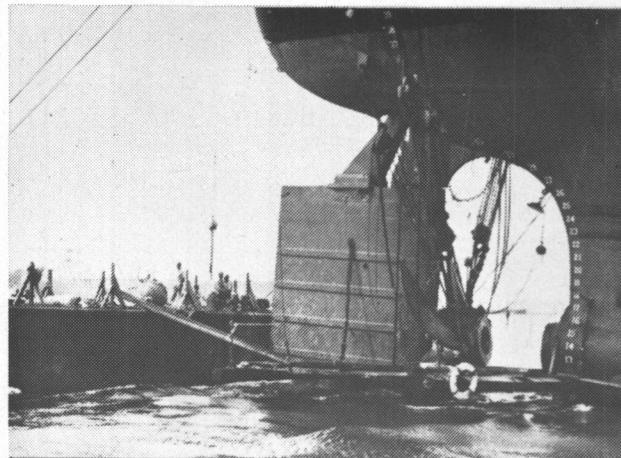


Anthony J. Spano

Anthony J. Spano, vice president Gulf liner services and supervisor of the New Orleans, La., office of TTT Ship Agencies, Inc., has been transferred to TTT's New York City headquarters as vice president and assistant to the president, Robert F. Weiss.

Among his new duties, Mr. Spano has overall responsibility for administration of TTT's 23 U.S. offices. He also supervises all TTT claims activities, the TTT Travel Service, and is responsible for the firm's corporate communications.

Joining TTT in 1957, following service with the U.S. Air Force, Mr. Spano served successively as line manager for several TTT principals in the New Orleans office, freight department manager for all Gulf services, and as general manager of the firm's traffic division. He was elected a vice president in 1976.



## Western Eagle

**GEARED FOR ACTION**  
round-the-clock

We specialise in

- Maintenance and afloat-repair of vessels at the Anchorages and in the waters around Singapore.
- On-voyage repairs anywhere in the world.
- Conversion and modification of machinery and marine equipment.

Our reputation is staked on the expertise and efficient service of our workforce, having successfully undertaken repairs to more than a thousand vessels since our incorporation in 1973.

We also stock a comprehensive range of parts for Sulzer Marine Diesel Engines.

Agent for Sulzer Brothers Ltd. Switzerland.

**Western Eagle (Private) Ltd.**

P.O. Box 614, Telok Blangah West Post Office, Telok Blangah Drive, Singapore 4. Tel: 270-9977 Cable: Westeagle Telex: RS 21367

## THE NO.1 PERFORMER REDESIGNED!

**CM AMERICAN**  
**New TELESCOPIC  
BARGE RATCHET**

is now 32 lbs. lighter,  
19" shorter, stronger,  
easier,  
to handle

...with a longer 22½" take up!

Weight loss from 65 lbs. for the current production model is accomplished by a unique redesign that telescopes the ratchet screws into one another requiring a shorter barrel, with the overall closed length reduced from 51" to 32".

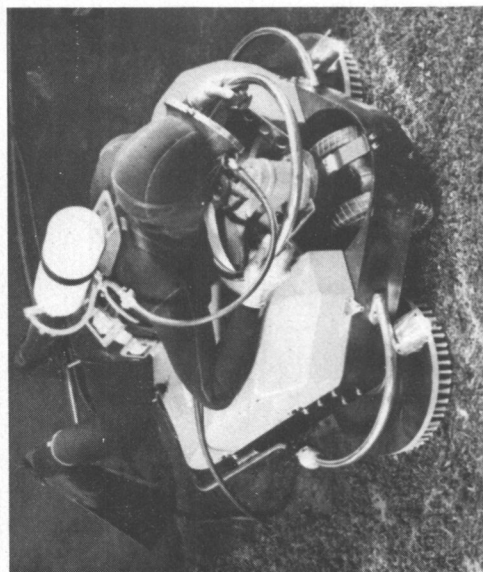
Patent pending



Telephone 412/771-4514.

**CM AMERICAN**

DIVISION COLUMBUS MCKINNON CORPORATION • P. O. BOX 74, MCKEES ROCKS, PENNSYLVANIA 15136



Following 20 years experience in UNDERWATER CLEANING of ships, the PHOCEENNE SOUS-MARINE/PHOSMARIN EQUIPMENT group of companies now ranks first in the world for this technology.

Hydraulic PHOSMARIN equipment is used in 38 countries and the new semi-automatic package "BRUSH KART", commercialized from 1975, is used in 20 cleaning stations along the major sea lanes, and more BK stations are to come.

The quality of underwater cleaning obtained with BRUSH KART is far better than anything else available: semi-automatic operation ensures a quality standard, nearing perfection, which BK offers alone.

A single diver can clean the VLCCs and ULCCs during very short calls, thanks to the velocity of operation.

Specially designed rotary brushes do not sever the coatings nor does BRUSH KART deprive the weld beads of their protective coats.

Consequently, without any risk of corrosion — corrosion is highly expensive — ship's underwater parts can be maintained afloat during many years thanks to this technology. Brushing can be performed as often as is required to ensure economical trading without speed loss.

the current 'oil and hard cash savings' policy in most countries can only open attractive prospects to this technology, providing cleaning services are offered along the main sea routes throughout the world.

And this is a new target which PHOCEENNE SOUS-MARINE EQUIPMENT are concentrating upon currently.

EQUIPMENT SOLD DIRECTLY TO USERS WITHOUT ANY AGENTS.



**PHOCEENNE SOUS-MARINE S.A. — SERVICE PHOSMARIN EQUIPEMENT**

21, Boulevard de Paris, 13002 MARSEILLE (France)

Tel. (91) 90.42.00 Telex 401826 PHOSMAR

## Marine Concrete Structures Relocates Headquarters

Marine Concrete Structures, Inc., has moved its corporate headquarters to 2030 St. Charles Avenue, New Orleans, La., Don Payne, president, announced. All administrative, accounting, engineering, purchasing and sales offices are housed in this facility.

The move to its new two-story building was due to the rapidly expanding volume of business generated by the offshore oil industry. "By having all our key people in one easily accessible central location, we will be able to meet with our customers more readily and render a faster service to satisfy their needs," Mr. Payne said.

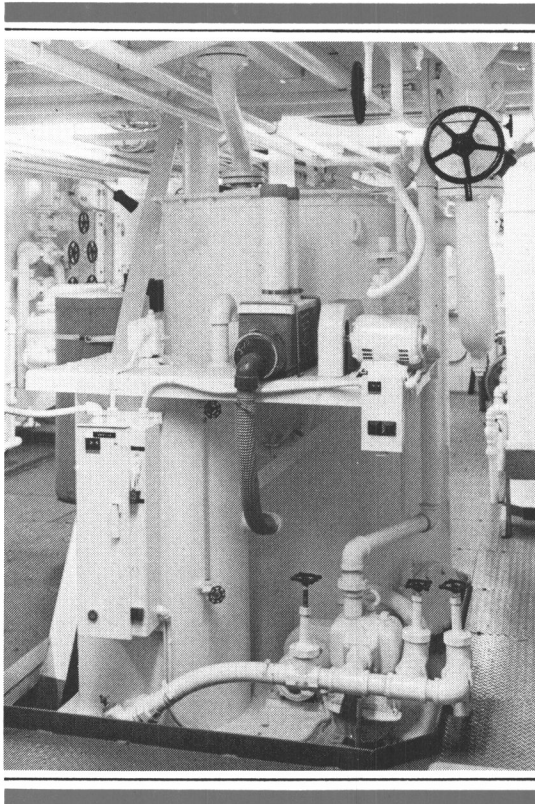
The company will maintain a field office at its Metairie, La., plant, which continues to produce concrete piling, Span-Deck concrete planking, and other related products for the commercial and construction industries.

Marine Concrete Structures also has a 76-acre facility at Port Bienvenue, Miss., for constructing concrete gravity structures of all types used in the production of oil in the Gulf Coast area, and a complete shipyard for building and handling barge/boat repairs.



# Clean Simple Odorless Clogproof Minimum Maintenance and It Works.

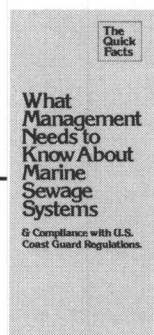
**FAST Marine Sewage Systems** are built exclusively by St. Louis Ship, America's Largest Inland Shipbuilding and Repair Firm. FAST® stands for Fixed Activated Sludge Treatment, which is a patented biological process for removing impurities from sewage as required by law. FAST Systems are certified by the U.S. Coast Guard as Type II flow-through devices. They also meet U.S. Public Health Service and A.B.S. Requirements, and all known or anticipated marine standards worldwide. This unique system is extremely reliable and consistent in operation. It has been proven by continuous marine service since 1970. It cannot be clogged and operates without foul odors. Simple but



rugged in design, there are no adjustments. It operates with minimum maintenance, low operating costs and produces superior effluent quality. Available three ways: modular, completely assembled or built into vessel tankage. Accommodates 3 to 3000 persons. The FAST System is also convertible to Type III No Discharge operation if desired.

#### FREE BOOKLET:

Write or call today for your copy of "What Management Needs to Know About Marine Sewage Systems, & Compliance with U.S. Coast Guard Regulations." Telephone (314) 638-4000. Telex 44-7224 ST L SHIP STL.



#### FAST® Sewage Systems

St. Louis Ship Division  
Pott Industries Inc.  
611 East Marceau Street  
St. Louis, Missouri 63111

Please send me a copy of your Free Booklet all about Marine Sewage Systems.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

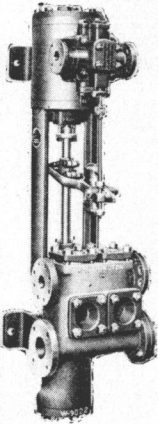
Telephone \_\_\_\_\_ Zip \_\_\_\_\_

MR-11/7



## PUMPS

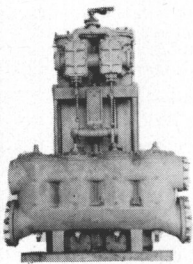
### UNUSED WORTHINGTON VERTICAL SIMPLEX PUMPS



7½x4x10—3" suction—2" discharge—1¼" steam—1½" exhaust. OAH 5'2"; OA depth 23"; OAW over air dome 2'2". Weight about 800#. Suitable for Liberty Ships EC-2 & Victory Ships VC2, AP2 & AP3. (Fuel oil service) Liquid capacity from 8 to 20 GPM—up to 350#. Also suitable for small boiler feed service. Steam WP 220# and 10# exhaust.

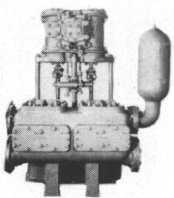
**\$795**

### WORTHINGTON 16" X 14" X 18" VERTICAL DUPLEX STRIPPING PUMP



1400 GPM @ 110 PSI — suction lift 11.5 ft. — steam back pressure 15 lbs. 14" Suction — 10" discharge — 2½" steam — 4" exhaust. Overall width 6'8" — overall height 9'1½" — depth 3'9½". Wt. approx. 10,000 lbs.

### STEAM DRIVEN VERTICAL DUPLEX FIRE & GENERAL SERVICE PUMPS



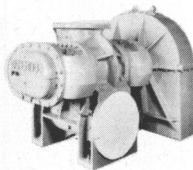
10 X 11 X 12 — Worthington — 560 GPM @ 125# G. 8" Suction — 6" discharge pumps bronze fitted.

### NEW TURBINE DRIVEN FIRE PUMP



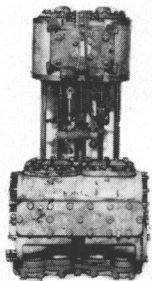
Allis-Chalmers 6x5 pump type SKH — 1200 GPM — 125 PSI — 3500 RPM. Coppo turbine type TF-22-2½ — 3500 RPM. 273# — 50° superheat.

### WATEROUS CARGO PUMP



Model P1118 — 600 GPM @ 100 PSI @ 222 RPM — 8" suction — 8" discharge. Complete with input gear box. For diesel motor drive. Ex Y.O. & Y.W. vessels.

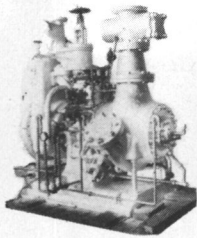
### 8" X 8" X 10" VERTICAL DUPLEX PUMP



Hendy design Suction 8" — discharge 6" — 160 GPM @ 100 PSI.

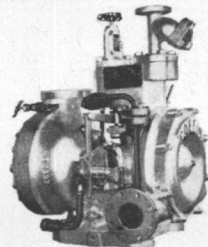
**WE HAVE MANY MORE PUMPS  
AVAILABLE FOR IMMEDIATE  
DELIVERY. TELL US WHAT  
YOU NEED.**

## COFFIN FEED PUMPS — ALL SIZES — TYPE DE



**3 TYPE DE-2  
540 GPM 1870' NET HEAD**  
8450 RPM — 585 PSIG — 0°-200° superheat — exhaust pressure 15 lbs — NSPH 30 — typical serial 4683DE

**2 TYPE DE-B 214 GPM 2070' NET HEAD**  
7040 RPM — 241 HP. Steam pressure 597 PSI — superheat 100°-300°F. Typical serial No. DEB 1-25-37



## TYPE CG

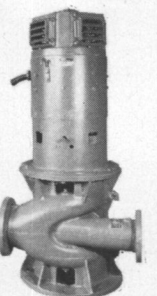
**2 TYPE CG 350 GPM 1880' NET HEAD**  
7220 RPM — 311 HP. Steam pressure 580 PSIG — 0°-100° superheat. Exhaust 15 lbs — typical serial #5437-CG-8-8-33

### • LSM BALLAST PUMPS



1500 GPM @ 56 feet (25 lbs) — vertical bronze ballast pump — 8" suction — 6" discharge. Practically new 30 HP 440/3/60/1750 RPM motor.

### • BALLAST PUMPS



Gardner-Denver — bronze — vertical — total suction lift 15' — 8" suction — 6" discharge — 1500 GPM @ 25 lbs — 1750 RPM. MOTOR: 30 HP — 230 VDC — 112 amps — made by Century.

### • ANCHOR WINDLASS MOTORS

Vertical — 20 HP — 230 volts D.C.

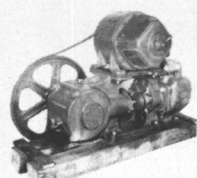
### • RAMP WINCH MOTOR

20 H.P. gearhead deck ramp winch motor.

### • MISCELLANEOUS

- Bronze Triplex Strainers
- Pneumatic Control Stands
- Combination Lube Oil & Fresh Water Pump for Reduction Gear
- 35000 CFM Fans

## WORTHINGTON 2½ x 2 MOTOR DRIVEN RECIPROCATING DUPLEX SANITARY OR DRINKING WATER PUMP

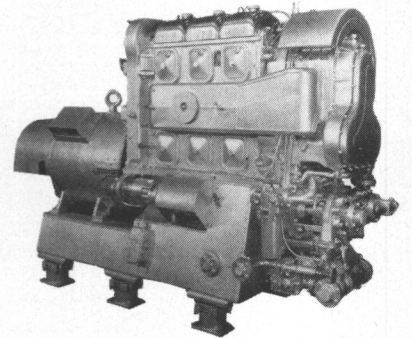


20GPM @ 80 lbs.—Whitney chain drive. SANITARY: 1½" suction—1¼" discharge — 1½ HP motor. DRINKING WATER: 1½" suction — 1" discharge—¾ HP motor. Approx. 3' overall length—20" wide. Motor is presently 2 HP 230 VDC for sanitary service. We will furnish with 440 VAC if required.

## PLEASE NOTE:

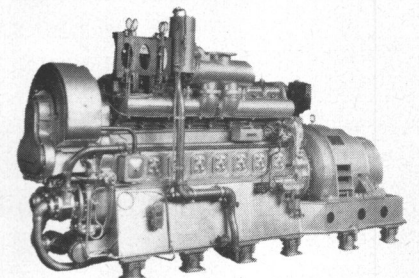
Our Marine Dept. & Warehouse is  
250 Scott St. at McHenry — Baltimore

## G. M. 3-268A 100 KW A.C. DIESEL GENERATOR SETS



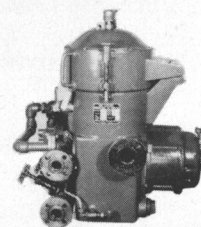
ENGINE: GM 3-268A — 6½ x 7 — 1200 RPM — 80% power factor — electric starting. GENERATOR: 100 KW — 440/3/60/1200 RPM — 161 amps. Dripproof — open — self-ventilated. (Class "A" insulation stator — Class "B" insulation on field). EXCITATION: 2 KW DC unit — 9' 1¼" long — 37" wide.

## G. M. 8-268A 200 KW A.C. DIESEL GENERATOR SETS

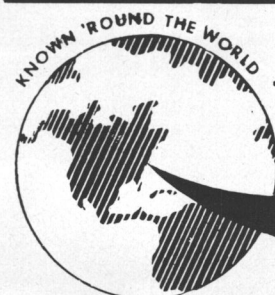


ENGINE: 8-268A — 6½" bore — 7" stroke — 1200 RPM — driving Westinghouse generator — 200 KW — 440 volts — 3-phase — 60 cycle — 321 amps — 80% power factor at 1200 RPM. Switchgear available.

## DELAVAL UNIMATIC PURIFIER



Reconditioned—ready to go. Lube Oil model 65-N-13. 225 GPH—motor 2 HP 440/3/60. Will handle 300 GPH when set for fuel oil.



**THE BOST**  
313 E. BALTIMORE

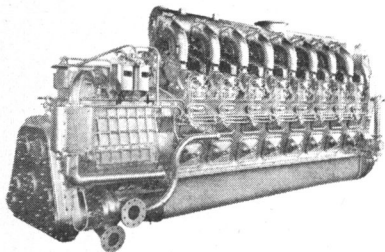
Main Office: (301)  
CABLE: BOSIRON—BALTIMORE



now located at  
Md. 21230

NEW PHONE  
(301)  
752-1077

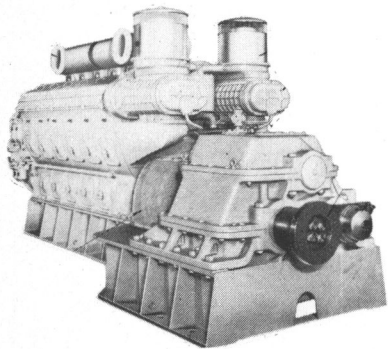
## G.M. 16-278A 1700 H.P. DIESEL ENGINES



Limited supply remaining

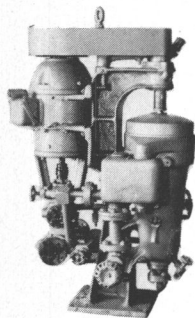
Complete, clean and in very good condition. As removed from U.S. Naval vessels. 1700 HP @ 750 R.P.M. Your inspection invited.

## MATCHED PAIR 900 H.P. G.M. 12-567A DIESEL ENGINES with Falk reverse and reduction gears



ENGINE: 12-567A — 8½x10 — VEE type — 2-cycle — 747 RPM—electric starting—serial Nos. 1041 & 1060. GEAR: Falk Air Flex—reverse and reduction—2.48:1 forward—2.52:1 reverse.

## SHARPLES OIL PURIFIER



Ex U.S.N.—reconditioned—ready to go. Complete with motor starter & pump. For lube or fuel oil. 225 GPH — viscosity 45, SSU @ 100°F fuel oil. 225 GPH—viscosity 180-200 SSU — 130° lube oil. For lube oil models M-85-34-5-23BM-44 — for fuel oil M-85-35-5-8CA-13. Bowl speed 17,000 RPM—1" oil inlet & outlet. Vertical 2 HP 440/4/3400 RPM motor. Many units with stainless steel bowls.

**\$2495 EACH**

# ON METALS CO.

ST. • BALTIMORE, MD. 21202

9-1900 Marine Dept.: (301) 752-1077

MD. U.S.A.

TWX 710-234-1637

## T-2 EQUIPMENT

Selected Items Listed

### UNUSED G.E. MAIN PROPULSION STATOR

Type ATB-2 — serial No. 6978272. 2300/2370 volts — 60/62 cycles — 3 phase — 3600/3720 RPM — amps armature 1237/1315 — 4925/5400 KW — 1.0 P.F.

### T-2 UNUSED G.E. MAIN PROPULSION STEAM TURBINE WITH ROTOR

10 Stage — 435# — 720° T.T.  
Turbine complete with rotor — serial No. 109166 — 4925/5400 KW — 3600/3720 RPM — 10-stage — 435# — 720° TT — 28.5" VAC.

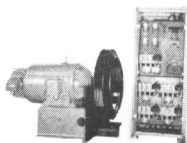
### WESTINGHOUSE MAIN PROPULSION STEAM TURBINES

1 unit shrouded  
WILL SELL ROTOR SEPARATELY

### WESTINGHOUSE MAIN PROPULSION GENERATOR STATOR

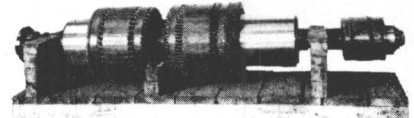
From Ex-Pecos — in like-new condition. With A.B.S.

### 5-SPEED FORCED DRAFT FAN MOTOR WITH IMPELLER



For T-2 Tanker. MOTOR: Totally enclosed—frame 505-S—440/3/60 —1770 RPM—typical serial #673-1807. CONTROLLER: 50 HP — CR-5333-820 — Cat. 932-1485. Drum declutchable through spiral jaw clutch for free spooling. Max. amps 60.

### WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE



We have both types:

110KW — 32KW — 5.5KW  
110KW — 28KW — 5.5KW

## SPECIAL OFFER T-2 AUXILIARY GENERATOR ROTORS

G.E. AUX. TURBINE ROTORS  
DORV-325M — 5645 RPM  
For G.E. 525 KW TURBO GENERATOR SETS



Very little use. In like-new condition. Balanced, and with A.B.S. Certificate.

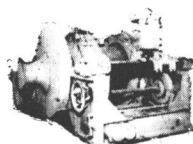
STATIONARY BLADING AVAILABLE

### COMPLETE WESTINGHOUSE 538 KW TURBO GENERATORS

Complete steam end, reduction gear, electrical end. Some units recently overhauled for U.S. Government.

### WESTINGHOUSE 538 KW TURBINE ROTORS

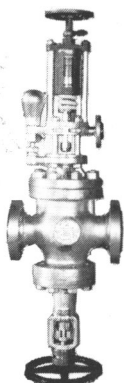
## 100,000 lb. Almon Johnson Constant Tension Mooring Winches



1 Available. In very good condition. Series 232 mooring & anchoring winches — automatic self-tensioning. Wide range from 100,000 lb line pull at 10 FPM to 26,000 lbs at 400 FPM. Gypsy line pull 12,000 lbs at 125 FPM. Drum declutchable through spiral jaw clutch for free spooling.

Driven by 50 HP — 230 VDC motors — Westinghouse CK — 575 RPM — ½ hour — 75°C rise — stab. shunt — 181 amps — max. RPM 1900. Cutler-Hammer brake — 18" — type NM.

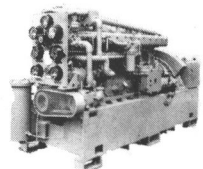
## LESLIE PUMP VALVE GOVERNORS RECONDITIONED



For U.S. Naval vessels. 2" size.  
Type CT-HNS-3 and CT-HS-3

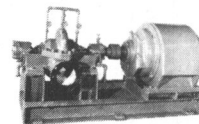
ASK FOR  
OTHER SIZES

## 100 KW GBD-8 DIESEL GENs.



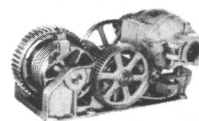
From LST vessels. 120/240 VDC — 417 amps — stab shunt — 1200 RPM — Delco gen.—self-excited. ENGINE: Superior GBD-8 — 8 cyl — 5½x7 — 150 HP — 30 volt electric starting. Reconditioned to ABS. Dry wt 10,000 lbs — DAL 124" — 65-11/16" high — 42" wide. Ht necessary to pull piston 68". Fuel consumption 0.620 lbs/hr

## WORTHINGTON ALL-BRONZE 400 GPM FIRE PUMP



Navy pump—400 GPM @ 150 lbs—73 HP—440/3/60/3550—6" suction—5" discharge. Fully re-conditioned and ready to go. With magnetic starter.

## SPERRY STEERING ENGINE NO. 2 MOTOR DRIVEN DRUM ASSEMBLY ONLY



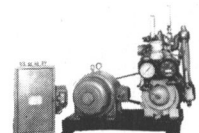
5 HP—120 VDC motor—40 amps—800 RPM—1 hour duty—40° rise—frame 2.5. Electro-dynamic magnetic clutch, mechanical brake & limit switch.

**\$2195 COMPLETE**

Motor, Magnetic Clutch and Brake only

**\$1650**

## 600 LB. DIESEL STARTING AIR COMPRESSOR



Ingersoll-Rand—bronze Navy air starting compressor and motor—4½x1½x3½ type 30—class T—600 lb. discharge pressure. For GM and O.P. Fairbanks engines. CAPACITY: 10 CFM @ 600 lbs.—with intercooler, aftercooler and relief valves. MOTOR: 7½ HP—

440/3/60 — 1760 RPM — with magnetic starter. Total weight about 700 lbs. AOL 3' 6" — OAW 20" — OAH 3' 2". Completely overhauled. Can be demonstrated running.

## C4-S-A1 KAISER VESSEL

Formerly Operated by Bethlehem Steel Co.

- 3 Worthington-Moore 400 KW aux turbine rotors — seven stage — 6097 RPM — form S6
- Two main stop valves — bolier) — 600 series — 5" Crane
- Lube oil transfer pump & motor with Foote Bros. gear



# Ship Performance Analyzer

The SPA Provides A Means For The Shipowner To Keep His Vessel Performing In Accordance With Specifications

E. Schorsch and R. L. Matthews\*

In the design stage, a new ship is the embodiment of a set of carefully devised specifications. Great amounts of labor and capital are expended to insure that the construction of the vessel meets these design requirements. The culmination of a successful building period is a sea trial demonstrating that the specifications have been met.

For purposes of the sea trial, considerable special instrumentation is installed at significant expense and then removed after its one-time use. Typical test equipment usually includes high accuracy Raydist for speed measurement, a test torsionmeter for shaft horsepower measurement, and a specially calibrated fuel-oil meter. All of this equipment is employed in the careful standardization runs during which the shipbuilder demonstrates and the owner confirms that the vessel's specifications of speed, horsepower and fuel consumption have been met. These are the fundamental and principal parameters of the vessel's operating characteristics—at least as far as energy, or fuel consumption, is concerned.

Once a successful trial trip has been conducted, the stage is set for vessel delivery. Seldom are sea trials again run to determine that the vessel remains at its peak mechanical efficiency.

After delivery, deterioration in vessel performance begins. This deterioration occurs in three main areas: exterior hull condition, propeller condition, and powerplant performance. Depending on many factors, the deterioration of each of these items may be rapid or slow. In general, they will be independent of one another although they may occur simultaneously.

Most ships do not have equipment which will permit sufficiently accurate measurement to detect these changes in performance. For example, if you have only an inaccurate speed determination, there is no rational basis for comparison of horsepower. It is un-

common to find vessels fitted with horsepower meters. Virtually never are they found with speed-measurement devices or fuel-oil meters of accuracy comparable to the equipment provided for a builder's trial.

It is less than rational for an operator to expect such accuracy from the shipbuilder and then never require similar accuracy from his own operating staff. The apparent reason has been cost. Until now, means have not been available to make accurate measurements in an economic manner.

## Ship Performance Analyzer

A ship performance analyzer (SPA) has been designed to automatically collect data which facilitates evaluation of these individual elements. The analyzer is a microprocessor-based data-analysis system whose product is ship speed, rpm, horsepower, thrust and fuel rate. Comparison of this fundamental data with previous similar data provides a continuing evaluation of vessel performance. Knowledge of performance deterioration permits early detection of serious operational problems and enables timely drydocking for preventive maintenance.

The SPA is a patented microprocessor which has become possible through the same technological advances that have made the modern calculators so commonplace. The SPA permits rapid on-board calculations and the application of statistical techniques to the Loran readings for speed determination. Concurrently, it provides means for the simultaneous collection and averaging over a very short period of time of a large number of observations of rpm, shp, fuel rate and thrust, providing values which are more accurate than can be obtained manually.

In connection with SPA development, considerable effort has been spent addressing questions pertaining to potential causes of declining performance. For example, the analysis team has special portable instrumentation, independent of the shipboard SPA, which can be used to measure hull roughness on drydock.

## Speed Measurement

Since the 1950s, the authors' company has periodically applied statistics to Loran readings to measure speed to trial-trip accu-

racy. Before the advent of modern microprocessor technology, large quantities of data were radioed to a shore-based computer, with consequent delays while waiting for a reply. These earlier procedures utilized Loran A and not the present Loran C, which is both more accurate and of far greater range (useful to within 1,200 miles from shore). The modern-day Loran C is quite different in principle and is not sensitive to time-of-day use, nor is it subject to attenuation caused by weather.

The SPA system imposes no restraints on vessel course with respect to Loran lines. The vessel may use the system without deviation from its planned course. This was not true in early use of Loran by Sun for speed determination. In the earlier period, it was necessary to sail approximately perpendicular to a set of Loran lines.

The speed that is important for diagnostic purposes is "speed through the water" not "speed over the land." The SPA speed, when obtained from a single Loran run, is speed over the land. To obtain speed through the water, with the most accurate SPA system, it is necessary to sail three reciprocal courses using Loran. The average (counting the middle run twice) is speed through the water.

This means that the vessel must invest time beyond its voyage requirement for two extra Loran runs plus two 180-degree turns. Each SPA run takes eight minutes and a turn about 15 minutes. Accordingly, an investment in extra voyage time of about 45 minutes must be made.

The coupling of a doppler speed log into the SPA system is under consideration. Although the accuracy of a doppler speed log is below that of the Loran C system currently used, it could be a useful alternative system. The authors recognize the value of the extra 45 minutes required for reciprocal runs for the speed. They envision a practical application where the ship's force might use the Loran C option only every three or four months, but use the doppler alternative on every voyage with absolutely no interference in voyage schedule or routine.

## Shaft Horsepower Meter

The Acurex horsepower meter has been selected as the standard

instrument in the system to provide horsepower and rpm. This is a standard piece of equipment, light in weight and easy to install. It has found increasing acceptance by the Navy and in merchant service.

It has been found advantageous to have shipyard engineers available to service this equipment independent of the manufacturer. The same personnel are involved in maintenance of the other components of the SPA system. They are also responsible for the interpretation of data from the system with advice to the ship's force and owner.

## Fuel Flow Measurement

The present SPA fuel flow measurement installations utilize a turbine meter specially installed in a valved by-pass line complete with a thermocouple. The particular turbine meter chosen is sized for full fuel flow. The results sampled by the SPA microprocessor are corrected automatically for density by means of the thermocouple and for viscosity by means of an API gravity typed into the SPA by the ship's force immediately before each use of the system.

A second fuel meter of an oval gear positive-displacement type is currently being investigated. The system is designed to permit this substitution. It would have the advantage of eliminating a non-linear correction required for the turbine meter which is presently incorporated in the SPA.

Either of these fuel meters is installed in a full by-pass line adjacent to the regular coarse-calibrated ship's meter. To obtain long service life and continued high accuracy, the SPA fuel meter is only used when the SPA system is in use.

## Thrust Measurement

Thrust measurement is incorporated into the system by installing strain-gage load cells into each of the main forward thrust shoes and adding an integrating unit which sums the thrust from all shoes before passing this information to the SPA.

The reason for inclusion of thrust measurement is that speed times thrust is basically effective horsepower (ehp). The ratio of ehp to shp is the propulsive coefficient for the ship, a parameter (continued next page)

\*Mr. Schorsch, vice president, and Mr. Matthews, systems engineer, Machinery Sciences, Sun Shipbuilding & Dry Dock Company, Chester, Pa., presented the paper condensed here before the Symposium on Sustaining Design Thermal Performance of Ship Propulsion Machinery held at The United States Merchant Marine Academy, Kings Point, N.Y.



of utmost importance to designers and operators of the ship. The propulsive coefficient is a true indication of the amount of delivered horsepower that is usefully applied to move the ship. The rest is lost energy.

Ehp is the horsepower required to overcome total resistance of a ship at a given speed. Since total resistance is composed of frictional resistance, residual resistance and air resistance, which are all independent of the powerplant, an increase in ehp at constant speed indicates a change in either the hull or propeller condition. A hull deterioration would be indicated by a decrease in both ship speed and rpm at constant shp, whereas a propeller problem would cause speed to decrease and rpm to increase. An increased fuel rate at a constant shp is indicative of a powerplant degradation.

There is a further complication omitted here for simplicity which involves the difference between thrust obtained from the propeller as in an actual installation and thrust obtained in a model basin when measuring ehp. In the latter case, the thrust is tow-rope pull. The actual use and interpretation of SPA information takes this complication into consideration.

#### Techniques of Use

Present ship-performance evaluation is based primarily on observations made and recorded by the ship's engine-room crew. Unfortunately, the instruments from which these observations are taken were designed for plant operation and are not sufficiently sensitive to detect gradual deterioration in performance. The combination of inaccurate instruments and errors induced by the man making observations permits the present performance-analysis methods to detect only serious operational problems. Moreover, the broader question of total performance versus fuel consumption is masked in the large quantity of information recorded in a typical engine log.

The high accuracy and consistency of the Ship Performance Analyzer will enable easy detection of gradual deterioration and can signal the need for more detailed inspection of the log book. We believe regular use of the SPA system can detect performance deterioration earlier than it would otherwise be detected from the log book. This is because the SPA has greater accuracy and is simple to use.

#### Benefits

The principal benefit from the SPA system lies in fuel savings achieved through better knowledge of the true condition of hull condition, propeller condition and powerplant performance, all relative to the vessel's original design, or fresh from drydock condition.

Discipline introduced into performance monitoring by a simple system, shipmate to the ship's

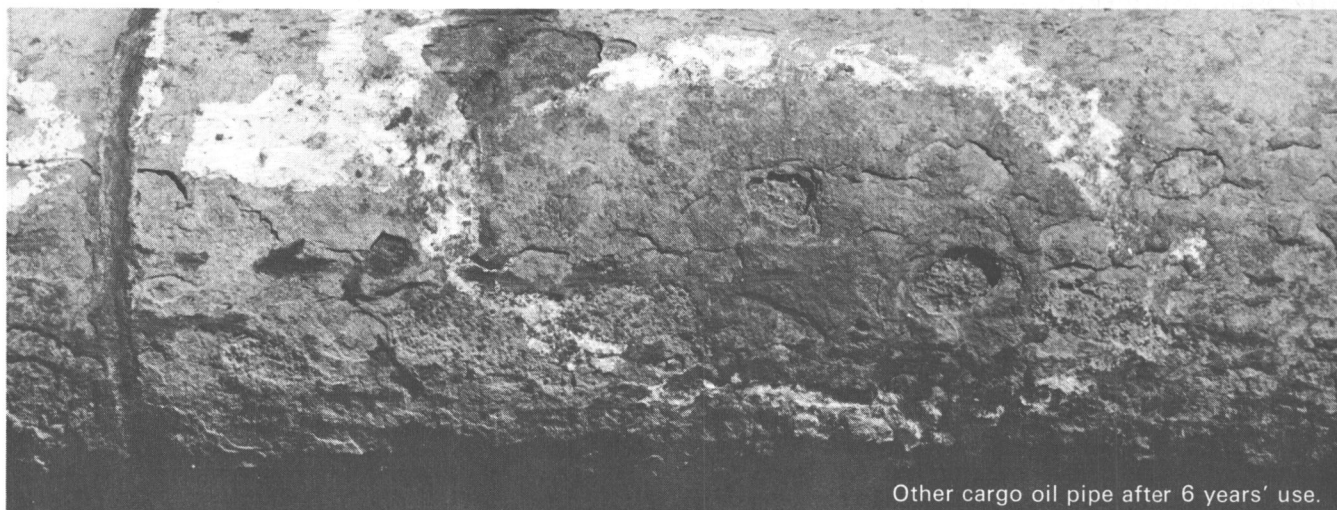
force, leads to heightened interest and understanding of vessel performance with ultimately lower fuel costs. The system can be used by the chief engineer to regularly compare shp and fuel consumption even without regard to ship speed. The master and chief can determine increased fuel costs as a result of increasing hull roughness.

We believe that on one vessel studied, an increase of one mil in hull roughness represented an incremental fuel cost of \$120,000 for the year. In 13 months of service, this particular vessel increased in hull roughness by about four to five mils, which at the time it went into drydocking represented an increase in fuel costs of \$365,000 per year. Alternatively,

that loss could be viewed as a speed loss of 0.7 knots.

In one of the early applications in the Alaska service, the system indicated a significant speed loss due to hull roughness. Inspection by underwater divers with videotape revealed an extent of grass growth not expected in the Alaskan service. Grass growth was thick enough in one area to have actually trapped a fish.

## The same age! So what's the difference?



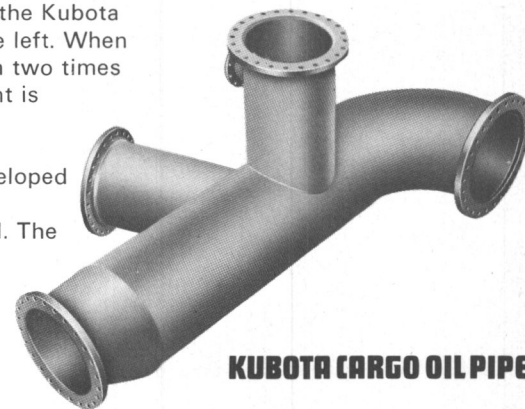
Other cargo oil pipe after 6 years' use.



Kubota cargo oil pipe after 6 years' use.

The pipe above obviously needs replacement, soonest possible, while the Kubota cargo oil pipe, shown below it, still has several years of good service life left. When replacing the pipe in your vessels, consider that Kubota's give more than two times longer service than most others. Fifteen years of use without replacement is ample proof of their superiority. Why?

Kubota materials and methods cannot be found anywhere else in the world. The material is KCP-3L, a chrome manganese steel especially developed by this company. It is made by Kubota's exclusive centrifugal casting techniques, widely acknowledged to be of the highest technological level. The highest degree of weldability gives it the greatest facility of use. That is why fully 95% of all Japanese tankers use Kubota cargo oil pipe. And why shipbuilders and repair docks around the world keep it on hand for installation and replacement. Write today for full information on how to raise the efficiency of your tanker operations.



**KUBOTA CARGO OIL PIPE**



The Basic Necessities Giant

**KUBOTA**

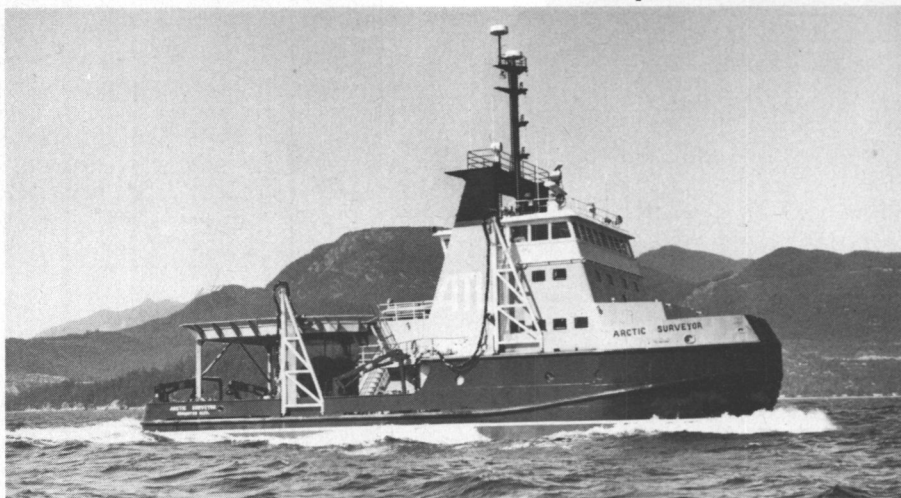
**Osaka Head Office:** 22, Funade-cho 2-chome, Naniwa-ku, Osaka, Japan  
Cable Address: IRONKUBOTA OSAKA. Telex: 526-7785 KUBOTA J. Phone: Osaka 648-2168  
**Tokyo Office:** 3, Nihonbashi Muromachi 3-chome, Chuo-ku, Tokyo Japan  
Cable Address: IRONKUBOTA TOKYO. Telex: 222-6068 KUBOTA J. Phone: Tokyo 279-2111

#### Overseas Offices:

**Kubota, Ltd., Düsseldorf Office:** 4000 Dusseldorf, Georg-Glock-Strasse, 14 Federal Republic of Germany. Phone: 0211-450-907. Telex: 8584498 KBTA D. Cable Address: KBTA-D  
**Kubota, Ltd., New York Office:** 375 Park Ave., Suite 3603, New York, N.Y. 10022, U.S.A. Phone: (212) 751-4077. Telex: 7105816020 KUBOTA NYK. Cable Address: KUBOTA NYO  
**Kubota America Corporation:** 523 West Sixth Street, Suite 1113, Los Angeles, California 90014, U.S.A. Phone: (213) 627-6377. Telex: 673238 KUBOTA LSA  
**Representative of Kubota Ltd. (Jakarta Office):** Skyline Building 8F, J.L. M.H. Thamrin No. 9, Indonesia. Phone: 363977. Telex: 73-46630 KUBOTA JKT  
**Kubota, Ltd., Athens Office:** 20, 28th of October Street, Filothei, Athens, Greece. Phone: 6825646. Telex: 214227 EXSE GR, 216343 EXSE GR  
**Kubota, Ltd., London Office:** 11/12 Hanover Street, London W1R 9HF, U.K. Phone: 01-629-6471 ~ 4. Telex: 263235 KUBOTA G



## Arctic Transportation Ltd. Commissions Research Vessel To Work For Imperial Oil



Built by Bel-Aire Shipyards Ltd., the 115-foot Arctic Surveyor will tow a mile and one-half-long cable in search for potential oil or gas formations in the earth.

Arctic Transportation Ltd. of Calgary, Alberta, Canada, commissioned its new seismic research vessel Arctic Surveyor on July 10 in Vancouver, British Columbia. Sponsor of the vessel was Mrs. Lloyd R. Hatlelid, whose husband is senior geophysicist with the Exploration Department of Imperial Oil Ltd., Calgary.

Built by Bel-Aire Shipyards Ltd. to the design of Cleaver & Walkingshaw Ltd., the 115-foot by 42-foot by 12-foot vessel is powered by two Caterpillar diesel engines which develop a total of 1,700 bhp at 1,225 rpm, producing a free-running speed of 14 knots.

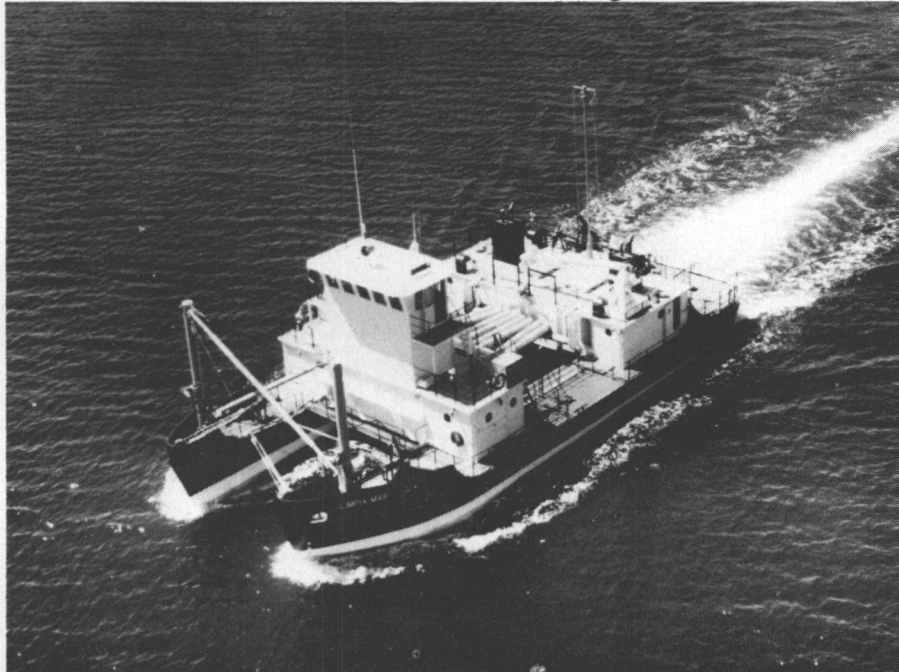
The vessel has a heliport, as well as specialized equipment located in an instrument building on deck. During the exploration process, a mile and one-half-long cable is towed behind the vessel and sonic signals are detonated in the water while the acoustic devices are suspended from deck

outrigger cranes. The sonic deflections or vibrations, sent through the earth formations, are picked up by the trailing cable, monitored and relayed to special seismic recording instruments. Data from this environmentally safe procedure is then processed and used in determining potential oil or gas formations in the earth.

Following commissioning ceremonies, the vessel departed on her maiden voyage for the Beaufort Sea in the western Canadian Arctic, via the ocean route around Point Barrow, Alaska. The vessel will work on long-term charter to Imperial Oil Ltd. in the Beaufort Sea and Mackenzie Delta areas.

Arctic Transportation Ltd. is a Canadian marine transportation joint venture established by Seaspan International Ltd. of Vancouver, Federal Commerce & Navigation Ltd. of Montreal, and Crowley Maritime Corporation of Seattle, Wash.

## Jakobson Shipyard Delivers Innovative Oil Skimmer Catamaran To Lagoven, C.A.



Equipped with duplicate engine rooms, the Limpia Mar has a potential recovery rate in excess of 20,000 bbls. per 24 hours.

Jakobson Shipyard, Inc. of Oyster Bay, N.Y., recently delivered an important and innovative Ocean Service Oil Skimmer Catamaran to Lagoven, C.A. of Venezuela, that country's successor to Creole/Exxon on Lake Maracaibo.

While classed by ABS for ocean service, the Limpia Mar (Quiet Sea) will primarily serve on Lake Maracaibo, and has a potential recovery rate in excess of 20,000 bbls. per 24 hours. Of this, approximately 1,400 bbls. can be retained aboard, with the balance being discharged directly by Wilden air pumps to an accompanying barge. Thus, the catamaran acts as a large portable transfer pump as well as the actual recovery device.

According to George J. Hossfeld Jr., president of Jakobson Shipyard, the basic concept was established several years ago by the American Petroleum Institute and Shell Laboratories, with the design implemented by Pascagoula naval architect Robert Macy. Lagoven, C.A., with Exxon Company U.S.A. as agent, is the first major oil activity to build such a large catamaran—at a cost of approximately \$1,150,000.

Mr. Hossfeld further noted that during construction, the design was constantly reviewed by a Lagoven/Exxon/Jakobson team as new oil recovery equipment became available, with resultant design changes developed by Jakobson.

While the basic catamaran can accommodate various types of recovery equipment, Lagoven has equipped this prototype vessel with eight continuous diesel-driven recovery ropes, designed and manufactured by Centrifugal Systems, Inc. of Houston Texas.

Equipped with duplicate engine rooms, the catamaran is fitted with Detroit GM 12-V71 main engines, 40-kw GM electric gener-

ator sets, 40-hp Joy air compressors, and New England Trawler and Johnson deck machinery.

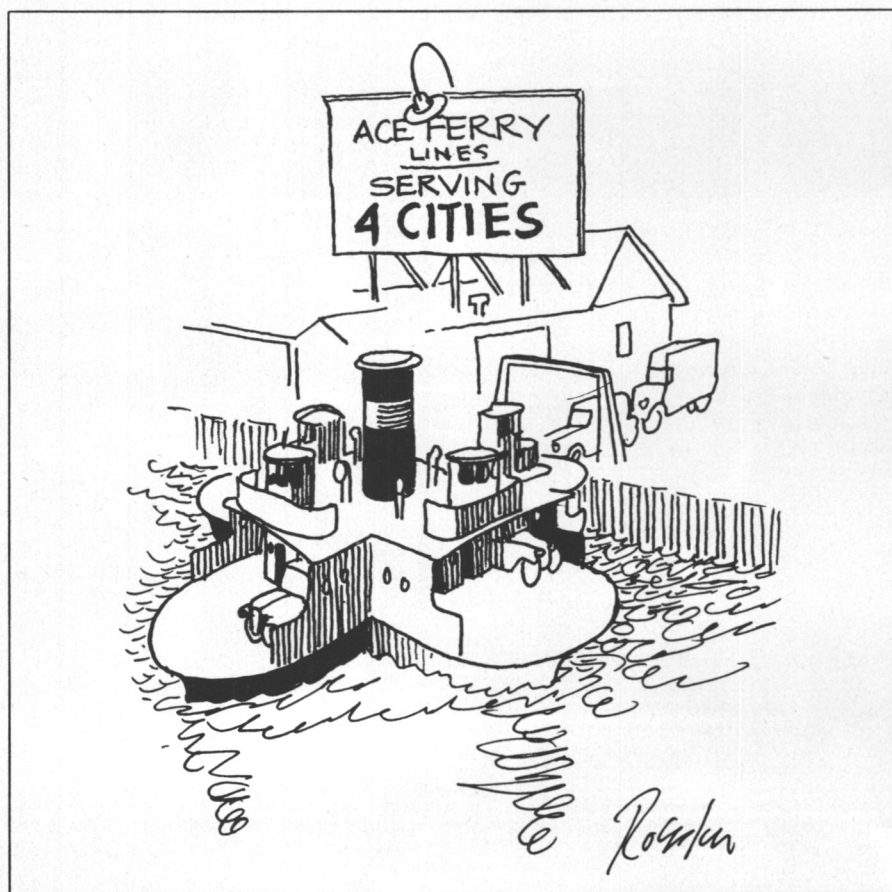
The vessel can be deployed in several ways, positioned downwind or downstream of a spill with its three Danforth anchors and with its floating booms extended from each bow, or by operating the vessel at low speeds through the spill. The recovery system works on a "relative" speed concept, ranging from 0 to 4½ knots vessel speed.

As a result, course stability, low speed control, and minimum 'tween hull disturbance were prime concerns. All were successfully demonstrated during sea trials. By using either or both main engines and the independent control of each rudder, full vessel control at a speed of 1½ knots was demonstrated, together with an ability to turn within the vessel's own length.

The power components of the steering were supplied by Skipper Hydraulics of New Orleans, La., and the highly flexible electrical steering controls by Electro-Nav of New Jersey, who also furnished the electronic navigation devices.

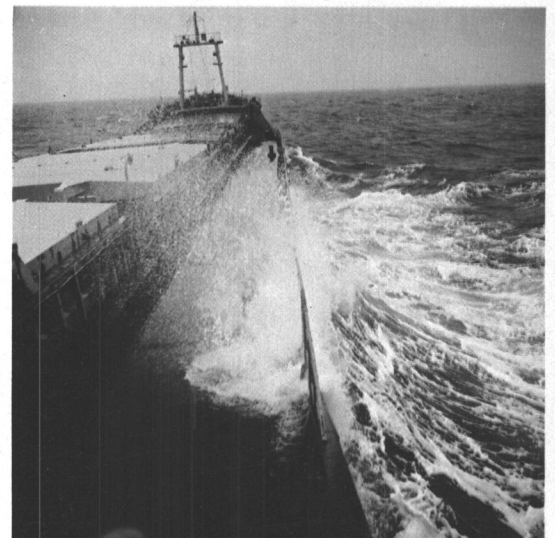
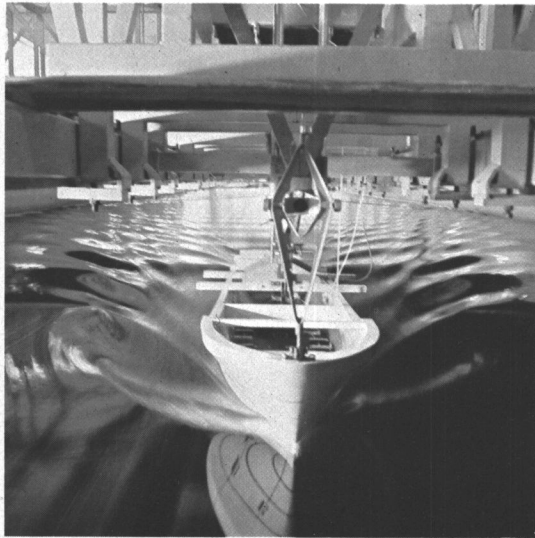
The catamaran design, while classed by ABS for ocean service, permits shallow water recovery—an important environmental concern. This in turn lead to semi-tunnel sterns and the use of in-board turning stainless-steel propellers, manufactured by Columbian Bronze.

In quoting similar catamarans to other users, Mr. Hossfeld notes that such a design offers the advantages of low initial cost, operational and maintenance simplicity, and a high degree of outfit flexibility—inorganic zinc coatings, expandable hull length, crewed or day boat operation, drift-collector equipment, supply vessel functions, and alternate powerplants.





**WE SELL MORE  
BECAUSE WE HAVE MORE  
TO OFFER**



# **CENTROMOR**

**POLISH SHIPBUILDING INDUSTRY—  
—MORE THAN SUCCESS IN WORLD SHIPBUILDING**

**1600 SHIPS DELIVERED TO OVER 100 SHIPPING COMPANIES**

**THROUGHOUT THE WORLD**

**ALL TYPES OF SHIPS. CUSTOM BUILT. HIGHEST WORLD STANDARDS.**



Head Office:

Okopowa 7,  
80-819 Gdansk, Poland  
Phone: 31 22 71  
Telex: 0512 376

Offices Abroad:

OSLO  
Phone: 69 33 09  
Telex: 19979 thomo n

HAMBURG  
Phone: 35 20 45  
Telex: 211914 polsh d

LONDON  
Phone: /01/ 370-6181  
Telex: 916074

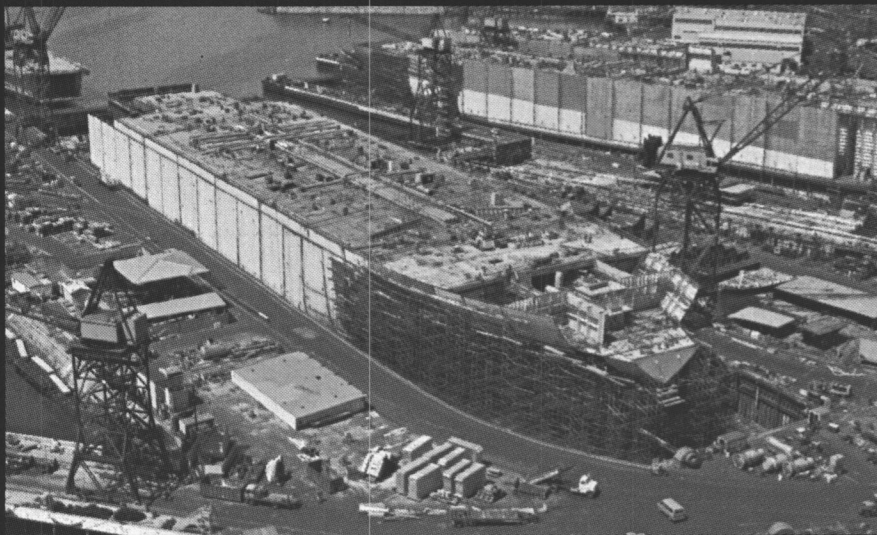
MOSCOW  
Phone: 228-05-85  
Telex: morhan su 7361

NEW YORK  
Phone: /212/ 432-5002  
Telex: wu 128-241

RIO DE JANEIRO  
Phone: 221-1627  
Telex: 212 3396 julo br



# take a closer look...



**...recent additions to our yard capabilities, more production power working for you.**

210' span, 15 ton, magnetic, plate storage crane

1000' x 176' building basin

panel line for assembly of panels up to 40' x 65'

numerical control mold loft development system

new 1090' finger pier

tape controlled plasma arc burning machine



## NATIONAL STEEL AND SHIPBUILDING COMPANY

Owned by Kaiser Industries Corporation and Morrison-Knudsen Company, Inc. San Diego, Ca 92138 Phone (714) 232-4011



### Hitachi To Supply China With Two Jackup-Type Offshore Drilling Rigs

Hitachi Zosen recently received an order from the China National Machinery Import and Export Corporation (MACHIM-PEX) to supply two jackup-type offshore oil drilling rigs (slot type) capable of operating at depths of 300 feet.

The rigs will be manufactured at the Osaka Works (Sakai) of Hitachi Zosen and will have a platform length of approximately 213 feet, breadth of 212 feet, and depth of 26 feet. They will have a maximum operating depth of about 300 feet, a maximum drilling depth of 20,000 feet, and will be classified ABS with complements of 108. The first rig will be delivered in October 1979, and the second in January 1980.

The China order follows a recent engagement with National Drilling Company (NDC) of Abu Dhabi for the delivery of three jackup-type drilling rigs. Hitachi Zosen's order backlog for jackup-type drilling rigs now ranks high among those of the world's oil drilling rig manufacturers.

### Sohio Elected To Membership In AIMS

Following a meeting of the board on July 28 in Philadelphia, Pa., the election of the Standard Oil Company (Ohio) to membership in the American Institute of Merchant Shipping (AIMS) was announced by AIMS board chairman **Adrian S. Hooper**. Mr. Hooper is chairman of the board and chief executive officer of IOT Corporation. Sohio, heavily involved in the construction, chartering and operation of U.S.-flag tankers and bulk carriers, is headquartered in Cleveland, Ohio. As the 27th company on AIMS's roster, Sohio joins an association whose members own or operate over 200 American-flag tankers, chemical, liquefied natural gas and dry bulk carriers in U.S. domestic and foreign commerce. **John T. Jacobson**, manager marine transportation, has been designated to represent Sohio as its principal official.

### Salsola Shipping S.A. Names Three Executives

**O. Arnold Larsen** and **George J. Kunkel** have been named executive vice presidents of Salsola Shipping Lines, S.A. Both will be headquartered at the company's New York office.

Mr. Larsen will be responsible for the overall supervision of Salsola's Far East service. Mr. Kunkel will supervise the line's Mediterranean-Red Sea-India service.

Salsola has also announced that **Song Fong Wu**, formerly a vice president of Ta Peng Line, has joined the company as vice president of its Far East Service. He will be headquartered in Salsola's New York office.

August 15, 1978

### BSRA Confidential Report On Catamarans Can Now Be Purchased

A recently compiled memorandum on catamarans, prepared by the British Ship Research Association and originally confidential to its member companies, is now available for general sale.

The memorandum summarizes

current international design knowledge on catamarans as well as information regarding service performance, and discusses the feasibility of building large, high-speed, oceangoing vessels.

One of the conclusions is that catamarans may be superior to single-hulled vessels for certain applications by virtue of their relatively large deck areas and good transverse stability, maneuvera-

bility and course-keeping qualities ahead and astern.

The 40-page memorandum, "Catamarans—A summary of their features, their use, and current design knowledge" (reference TM 527), by **H.J. Vercoe**, BSc, MSc, is available, price £25, from BSRA, Wallsend Research Station, Wallsend, Tyne and Wear NE28 6UY.

## Foxboro... worldwide control on the high seas.

In every type of marine and offshore application, Foxboro is the name for control. You'll find our instrumentation and control systems measuring, recording, displaying, computing, monitoring, and controlling a diverse range of cargo, ballast, and machinery.

With over 130 sales and service outlets located in 70 countries, Foxboro is uniquely qualified to integrate, supply, and support instrumentation and control systems for marine and offshore applications on a worldwide basis. For more details on how we can help your application, write: *Foxboro Marine Operations*, P.O. Box 435, Burlington, Massachusetts 01803, U.S.A.







**Mobil's EM/PA<sup>®</sup>  
saved Red Star's  
fleet operations  
\$153,000 on two  
vessels alone.**

Red Star Towing Company, Port of New York, runs a fleet of 25 tugs up and down the East Coast.

A Mobil EM/PA program—Engine Maintenance through Progressive Analysis—helps keep these vessels running. And saves Red Star considerable amounts in operating costs.

Reports Red Star's Port Engineer, Jim Patterson, on Mobil's EM/PA with its systematic oil analysis: "EM/PA not only permits us to schedule required maintenance at convenient times, it actually saved the day on several occasions by alerting us to impending engine damage. The evidence showed up in the oil, thanks to laboratory analysis."

In the case of the Red Star tug *Huntington*, EM/PA helped spot leaky fuel injectors, a broken cylinder liner and leaky water seals. An estimated \$75,000 saved in downtime and repairs.

In the case of the Red Star tug *Jefferson*, EM/PA helped show up a leaky fuel return line and faulty injectors. An estimated \$78,000 saved in overhaul and downtime costs.

These are examples of results that have been obtained with EM/PA, Mobil's program that continuously monitors both oil and engine conditions.

There's big money to be saved when you cut down on engine problems by spotting them early. Money saved on man-hours. On repairs. On oil.

That's why Mobil is Number One in marine lubrication. **Mobil<sup>®</sup>**

© 1977 Mobil Oil Corporation



## Dravo SteelShip Delivers The M/V P.N. Ellis For Bunkering Service On the Lower Mississippi



The 56-foot P.N. Ellis, powered by G.M. Detroit Diesel engines, has quarters for six men and complete live-aboard facilities.

Dravo SteelShip Corporation, Pine Bluff, Ark., a subsidiary of Dravo Corporation, Pittsburgh, Pa., has announced delivery of the M/V P.N. Ellis to Koch-Ellis Marine Contractors of Westwego, La. According to **Harry J. Collins**, president of Koch-Ellis, the new vessel will be operated in bunkering service on the Lower Mississippi River.

The P.N. Ellis is a standard SteelShip 56 design measuring 56 feet long by 20 feet wide by 7.5 feet deep. The hull is divided into seven watertight compartments, and has capacity for 11,000 gallons of fuel, 2,000 gallons of wash water, 1,600 gallons of waste, 1,100 gallons of potable water, and 200 gallons of lube oil. The fuel fills and vents are in a central location with a fuel spill containment. The hull is protected with rubber corners, and the push-knees and headlog are faced with Johnson Rubber towknee material.

The SteelShip 56 standard superstructure has been modified to provide inside ladders, watertight doors and portlights on the main deck for coastal operation. A double-plated, 24-inch-high bulwark extends around the perimeter of the hull. Padeyes for tire fenders were provided in addition to the heavy D-shaped steel rub-rails standard on SteelShips. The P.N. Ellis has quarters for six men in two cabins, with full electric galley, lounge area, and complete live-aboard facilities.

The vessel is powered by twin General Motors Detroit Diesel 16V71N engines with Twin Disc MG-521, 5.17:1 reduction gears. It also has two General Motors 3-71 generator sets. The main engines and generators were supplied by Kennedy Engine Company of Biloxi, Miss. The running gear consists of 5-inch-diameter steel shafts, with nickel chrome boron sleeves turning in Johnson Demountable stern tube and strut bearings with Kahlenberg stainless-steel, heavy-duty, four-blade, 60-inch-diameter by 48-inch-pitch propellers.

The P.N. Ellis has Westinghouse Air Brake engine controls and WABCO follow-up steering controls over SteelShip's standard hydraulic steering system. The vessel has two main and four flanking rudders with independent steering systems. As is standard on all SteelShip vessels, the lubrication for the thrust bearings and other steering equipment is piped to a central location in the engine room for quick and easy servicing. The rudder stocks have nickel chrome boron sleeves turning in nylon bearings on the lower end, and have lubricated cast-iron bearings on the upper end.

A SteelShip standard monitoring panel with monitors for low water level, low lube oil level, high bilge water level, high water temperature, low oil pressure, and other warnings of unusual operating conditions was installed. The panel has a visual signal and audible alarm to alert the operator before machinery damage can occur.

The P.N. Ellis is equipped with two searchlights, Perko running lights, electric heating and air-conditioning, quartz deck lights, Nabrico electric over hydraulic deck winches, and many other standard features. Some special equipment for the bunkering operation consisted of a fuel transfer system to provide fuel for the diesel engines on the bunkering barges and air connections on the foredeck to service the air starting requirement for the pump engines on the bunkering barges.

In addition to the production pushboats, ocean tugs and barges which are on contract, Dravo SteelShip is building four stock standard SteelShip pushboats. All of the stock boats are scheduled for completion with delivery ranging at present from 60 to 120 days, depending upon machinery availability.

For more information about any SteelShip or AlumaShip vessel, write Dravo SteelShip Corporation, **Edward D. Fry**, Vice President/General Manager, Route 4, Box 167, Pine Bluff, Ark. 71602.

## ACT/PACE Names Wigglesworth Manager Marine And Terminals

Neil Wigglesworth has been named manager, Marine and Terminals, by Associated Container Transportation/PACE Line, according to an announcement by **Peter F. Vickers**, senior vice president-Operations.

Mr. Wigglesworth formerly served as ACT's terminal manager in Saint John, N.B. He joined the ACT team in North America in 1976, having previously served as ACT's terminal manager in Seaford in the United Kingdom. He sailed with Ellerman Lines, a partner in ACT/PACE, as a first officer, earning a master's license before coming ashore.

## Now... a stronger, low-stretch Tie-up Line

Polyolefin center strands

Polyester jacket strands

### TENSILE RATINGS

SIZE (Dia.)	Dura-Plex 12-Strand <sup>1</sup>	Polypropylene 3-Strand <sup>2</sup>	Poly-Blended 3-Strand <sup>2</sup>
1"	25,000	14,000	14,000
2"	93,000	52,000	60,000
3"	200,000	114,000	117,000
4"	335,000	190,000	190,000

<sup>1</sup>For New Rope under standard test conditions.

<sup>2</sup>From published literature.

## Samson Dura-Plex™ 12 Strand Single Braid

Polyester/polyolefin 12-strand construction makes Dura-Plex stronger, size for size, than plaited or twisted manila, polypropylene, and "poly-dac" type ropes. That means Dura-Plex can handle much higher working loads even under rugged marine conditions.

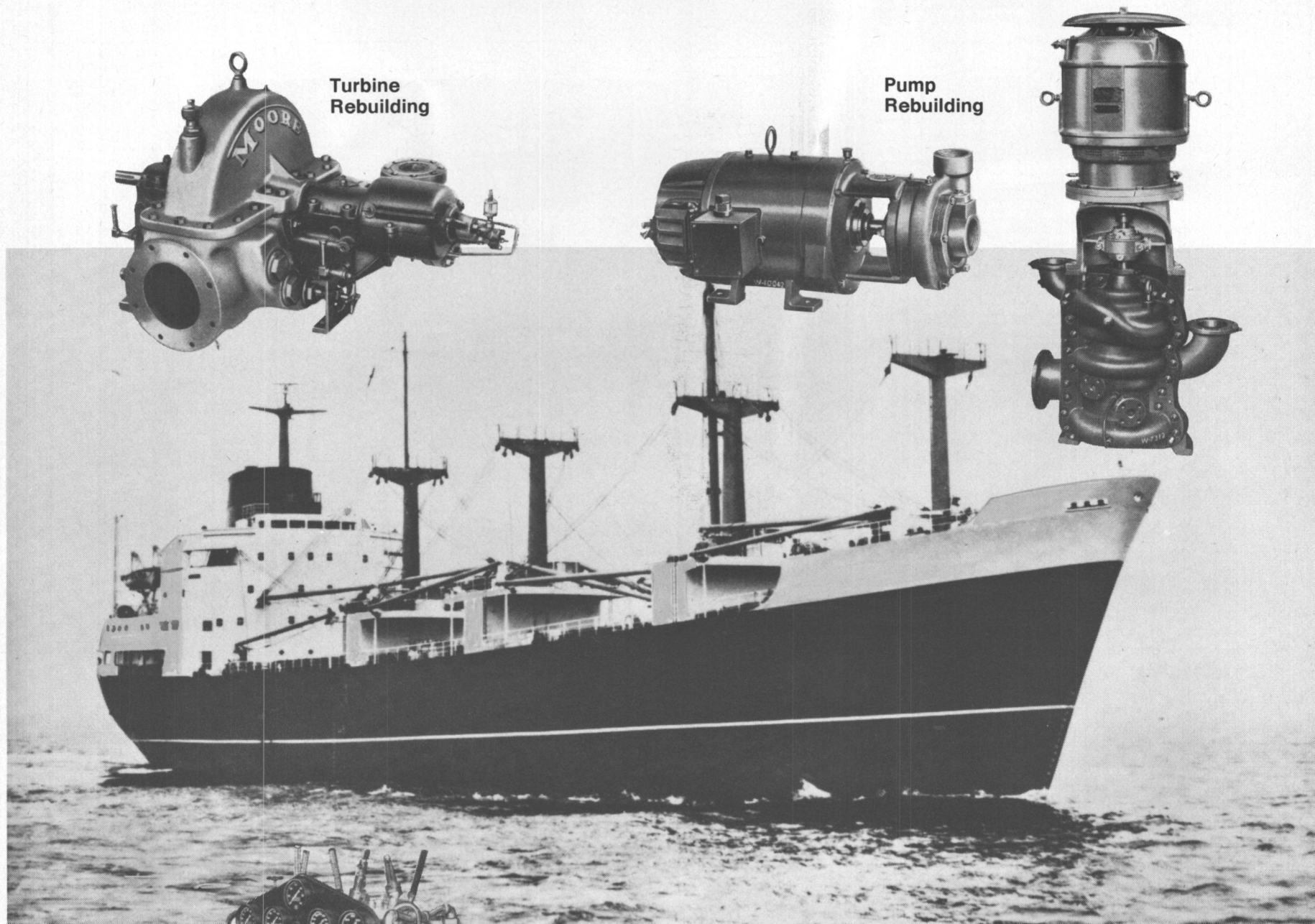
Samson Dura-Plex is non-kinking and torque-free, with low stretch and minimum snapback. It's also very flexible, easy handling, and quick splicing. In fact, Tug and Barge operators find that Dura-Plex is the most cost-effective composite fiber tie-up and locking line available.

Sizes to 4" diameter, strengths to 335,000 lbs. Check the tensile chart above. Send for data and a rope sample, or ask about our special evaluation program. Write Samson, M&I Division, 99 High St., Boston, MA 02110. In Canada: Canada Ropes Limited, Richmond, B.C.

 **SAMSON®**

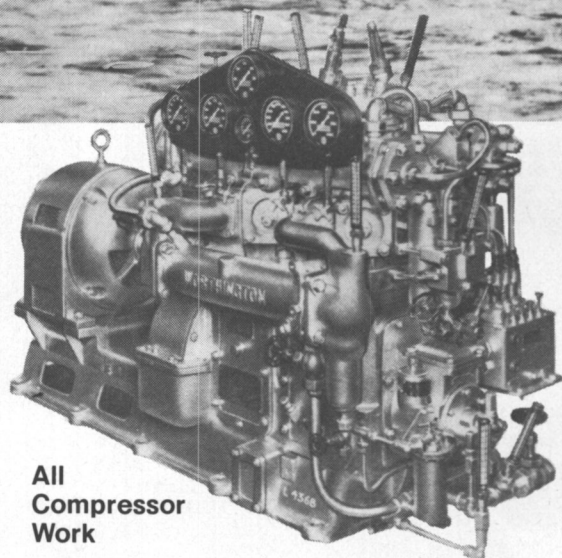


# Total Marine Machinery Repair That's a Job for WSC



**Turbine  
Rebuilding**

**Pump  
Rebuilding**



**All  
Compressor  
Work**

On-board or ashore, WSC-Service can detect and solve problems on turbines, engines, compressors, blowers, heat exchangers and pumps to keep available hours to a maximum. With facilities for machining, welding, balancing and testing — parts procurement or fabrication — complete repair, rebuild or modernization — WSC's marine specialists have unmatched experience with on-board machinery of all makes and types.

WSC's fully equipped and competently staffed service centers near the world's major ports assure that these services are available to you . . . 24 hours a day . . . worldwide.



A Studebaker-Worthington Company

## A WORLDWIDE SERVICE COMPANY

**Worthington Service Corporation locations:** Basking Ridge, NJ (World Headquarters) • Atlanta, GA • Baltimore, MD • Baton Rouge, LA • Boston, MA • Buffalo, NY • Caracas, Venezuela • Cartagena, Spain • Charleston, SC • Charleston, WV • Charlotte, NC • Chicago, IL • Cleveland, OH • Columbus, OH • Dallas, TX • Dayton, OH • Denver, CO • Detroit, MI • Fairfield, NJ • Fort Lauderdale, FL • Genoa, Italy • Houston, TX • Indianapolis, IN • Kansas City, KS

• Knoxville, TN • Los Angeles, CA • Louisville, KY • Midland, TX • Milford Haven, Wales, UK • Minneapolis, MN • Norfolk, VA • Paris, France • Philadelphia, PA • Pittsburgh, PA • Portland, OR • Rotterdam, The Netherlands • Salt Lake City, UT • San Francisco, CA • Seattle, WA • St. Louis, MO • Teeside, UK • Tulsa, OK • Windsor, Ont. Canada • **Export Sales:** WSC International, Fairfield, NJ • Montreux, Switzerland.



## Todd Reports Third Successive Profitable Quarter

J.T. Gilbride, chairman of Todd Shipyards Corporation, told the shareholders at the annual meeting that he estimated profits for the first quarter ended June 30 would amount to approximately \$1.9 million, equal to \$1.28 per share. "This is the third successive profitable quarter and would tend to indicate the company is entering a period of sustained profitability," he said.

Mr. Gilbride reported that work on the 17 guided missile frigates the company is constructing for the Navy is progressing on schedule and within the target cost. The first three ships under the contracts are 55 percent, 50 percent and 43 percent completed, with the first vessel scheduled for delivery in January 1980.

Arthur W. Stout Jr., president, Robert J. Farrington, vice president, Joseph H. Dugan, senior vice president-Finance, and Sir David L. Nicolson were reelected to the board of directors for three-year terms expiring in 1980. William H. Todd, grandson of the company's founder, was elected to a vacant position on the board for a remaining term of two years expiring in 1980. Shareholders also approved miscellaneous amendments to the company, certificate of incorporation, and ratified the selection of Arthur Young & Company as the company's independent auditor for fiscal 1979.

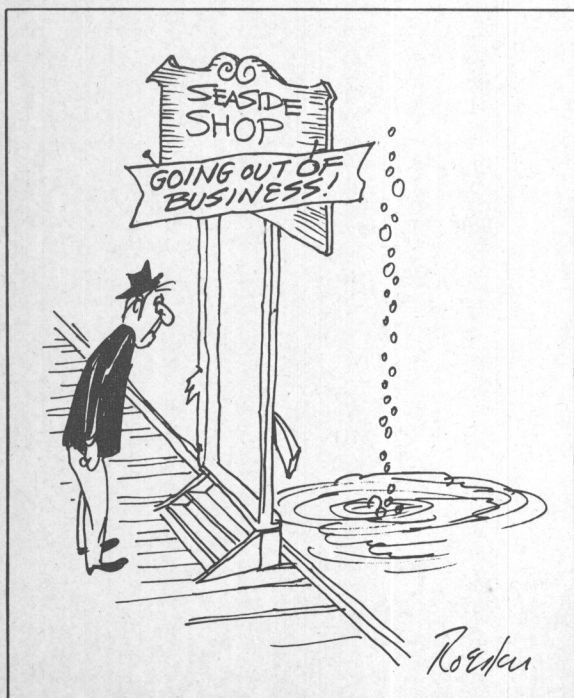
## General Electric Appoints Brown & Ross Of New Jersey

The Silicone Products Department of General Electric Company has announced the appointment of Brown & Ross of New Jersey, Inc. as a distributor of GE's one-part silicone sealants, lubricants and compounds.

Brown & Ross of New Jersey, Inc. is headquartered at 40 Columbia Avenue, Jersey City, N.J., and will distribute General Electric Silicones to the marine industry from their headquarters location.

Vice president Paul S. Appel is well-known to the marine industry from his many years of association with General Electric's Marine & Defense Facilities Sales Operation in New York City.

General Electric Silicone Products Department, manufacturer of silicone fluids, resins, specialties and rubber for construction, industrial and consumer markets, is located in Waterford, N.Y.



August 15, 1978

SALES **NAV-COM** SERVICE

## The Ultimate Navigation Computer! The CC-2 From Simrad



- Displays position in Latitude/Longitude.
- Computes course to steer with up to 9 "Way Points".
- Displays Time and Distance To Go and True Ground Speed.
- Easy to operate.
- May be used with ANY Simrad Loran-C receiver.

Contact NAV-COM For The Special  
LC-204/CC-2 Introductory Package Price.

NAV-COM Inc., 2 Hicks Street, North Lindenhurst, N.Y. 11757

**(516) 957-9070**

For more information, call Gerry Gutman, Al Carlson, or Jack Provenzano.

## A WORLD OF USES ALL OVER THE WORLD!



Harbor Patrol Boat

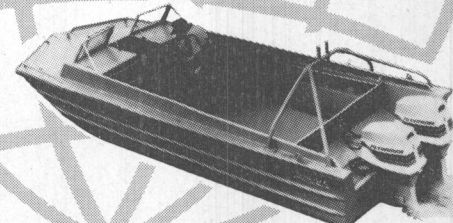
Crew Boat



Debris Boat

Support Boat

**MonArk**  
boats



Pollution Control Boat

FOR CATALOG AND MORE INFORMATION SEND THIS COUPON TODAY

MonArk boats are hard at work worldwide in a variety of tough demanding jobs.

All MonArk workboats feature all welded aluminum construction to give many years of dependable, low maintenance operation. Over twenty stock designs available. Prompt attention to custom quotations for special applications.

Yes, send me more information. My interest is in  
☐ Patrol ☐ Survey ☐ Water taxi/ Crew boats  
☐ Other M88  
 NAME \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

MonArk Boat Company • P.O. Box 210 • Monticello, Ark. 71655 • 501-367-5361 • Workboat Division—501-367-6236



## Murphy Pacific Marine Salvage Promotes Madeo

Murphy Pacific Marine Salvage Company, One World Trade Center, Suite 8833 New York, N.Y. 10048, has announced the promotion of **Joseph F. Madeo Jr.** to the position of general manager of its Merritt Division. This is the former Marine Salvage Division of the Merritt-Chapman & Scott Corporation. As the largest U.S. firm

engaged exclusively in marine salvage, Murphy Pacific maintains marine salvage stations in New York, Key West, Fla., and Kingston, Jamaica, under the cognizance of the Merritt Division. Warehouses at these stations are stocked with all types of portable salvage equipment, including the most advanced pumping systems for the lightering of all forms of liquid cargo. The M/V Rescue M, one of the most completely

equipped salvage vessels in the world, and the 265-ton derrick barge Merritt 400 are maintained on station at Kingston. Merritt equipment and knowledgeable manpower are available to the marine industry, either directly or on a subcontract basis.

In addition to its involvement in the commercial salvage field, Murphy Pacific is the holder of the U.S. Navy's contract for the provision of salvage services on

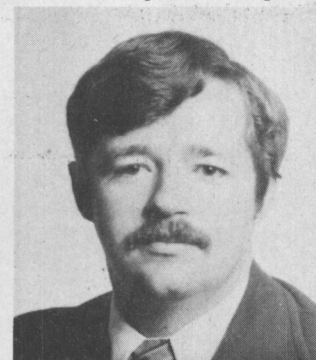
the United States Atlantic and Gulf Coasts and the contiguous waters extending eastward to the European and Mideast areas.



Joseph F. Madeo Jr.

Mr. Madeo joined Murphy Pacific in 1971 as a Salvage Master after 30 years of distinguished service in the U.S. Navy, including a stint as the Commanding Officer of Harbor Clearance Unit One during the heyday of Vietnam. He was promoted to Operations Manager in 1973 and, after receiving the "Meritorious Public Service Citation" from the U.S. Navy for his outstanding performance as Project Manager of the 1974 Suez Canal Wreck Clearance, he was promoted to vice president of the company and assistant general manager of the division in 1975. As general manager, he will provide overall direction to the division and its work in offshore salvage, harbor clearance, and oil pollution control.

## Hansen And Tidemann Names Barry McVey



Barry S. McVey

Barry S. McVey has been appointed assistant vice president by Hansen and Tidemann, Inc., ship agents and chartering brokers, headquartered in the Houston, Texas, office.

Mr. McVey joined H&T at New Orleans, La., in 1973, and was later transferred to the Houston office as assistant to the vice president, West Gulf.

In 1975, Mr. McVey took a leave to join Ozean/Stinnes Line in Hamburg, Germany, where he was involved with liner operations for the entire Hugo Stinnes organization. Ozean/Stinnes is represented in the United States by H&T.

He rejoined Hansen and Tidemann in Houston in 1977.

Mr. McVey is a graduate of the New York Maritime College, where he earned a Bachelor of Science degree in marine transportation.



## CARRINGTON SLIPWAYS PTY. LTD AUSTRALIA

Old Punt Road, Tomago, N.S.W. 2322  
Telephone (049) 64 8071, Telex AA28185,  
Cable "Carringtons"

### M.T. "Broadsound"

35M Tug powered by two 2800 S.H.P. engines producing a bollard pull of 75 tonnes. "Broadsound" is fitted with a high pressure foam/water/jet spray fire monitor installed atop the wheelhouse.

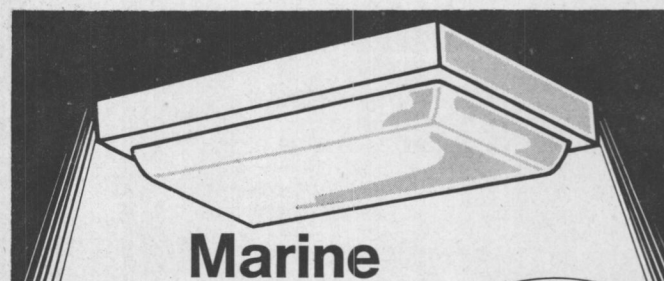
### Middle East

#### Sales Manager:

John A. Skelton, P.O. Box 4134, Nicosia, CYPRUS.  
Telex: 2331 Mickey's Attn. Skelton

#### European Agent:

European Marine & Machinery Agencies, Balmer Lawn Rd., Brockenhurst, Hants  
SO4 766, ENGLAND  
Telex 47509



## Marine lighting fixtures by Murlin

Murlin makes every type of lighting fixture needed for inside marine installations. Many are also available in waterproof models for outside application. All Murlin fixtures are UL tested and approved, and serviceable at any port in the world. Send today for your free copy of our complete catalog for more light on the subject.



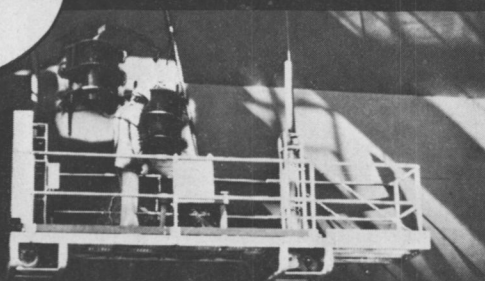
Murlin Manufacturing Corp.  
P. O. Box 757, Quakertown, Pa. 18951

name \_\_\_\_\_ title \_\_\_\_\_  
company \_\_\_\_\_  
address \_\_\_\_\_  
city \_\_\_\_\_ state \_\_\_\_\_ zip \_\_\_\_\_

**MURLIN** Manufacturers of Lighting Systems



## The SHIPYARDER POWERED SUSPENDED PLATFORM



The SHIPYARDER out performs any other powered stage or aerial lift on the market! Work at heights of 20 ft. to over 200 ft. with ease. Allows work to be performed on the ship at drydock or while afloat. Crowded drydocks and gantry cranes do not hinder lateral or vertical travel of the SHIPYARDER. Unit shown is 20 ft. by 3 ft. wide.

Features include: 4 ft. drop down deck extensions — single station controls — Arc-Gard Kilts — Complete handrails — all aluminum heavy duty construction.

Home Office: Spider Staging Sales Co., Seattle, WA  
206-255-8267 Telex 321008

Spider Staging Sales Co. • Box 182 • Renton, WA 98055

Company \_\_\_\_\_ Name \_\_\_\_\_

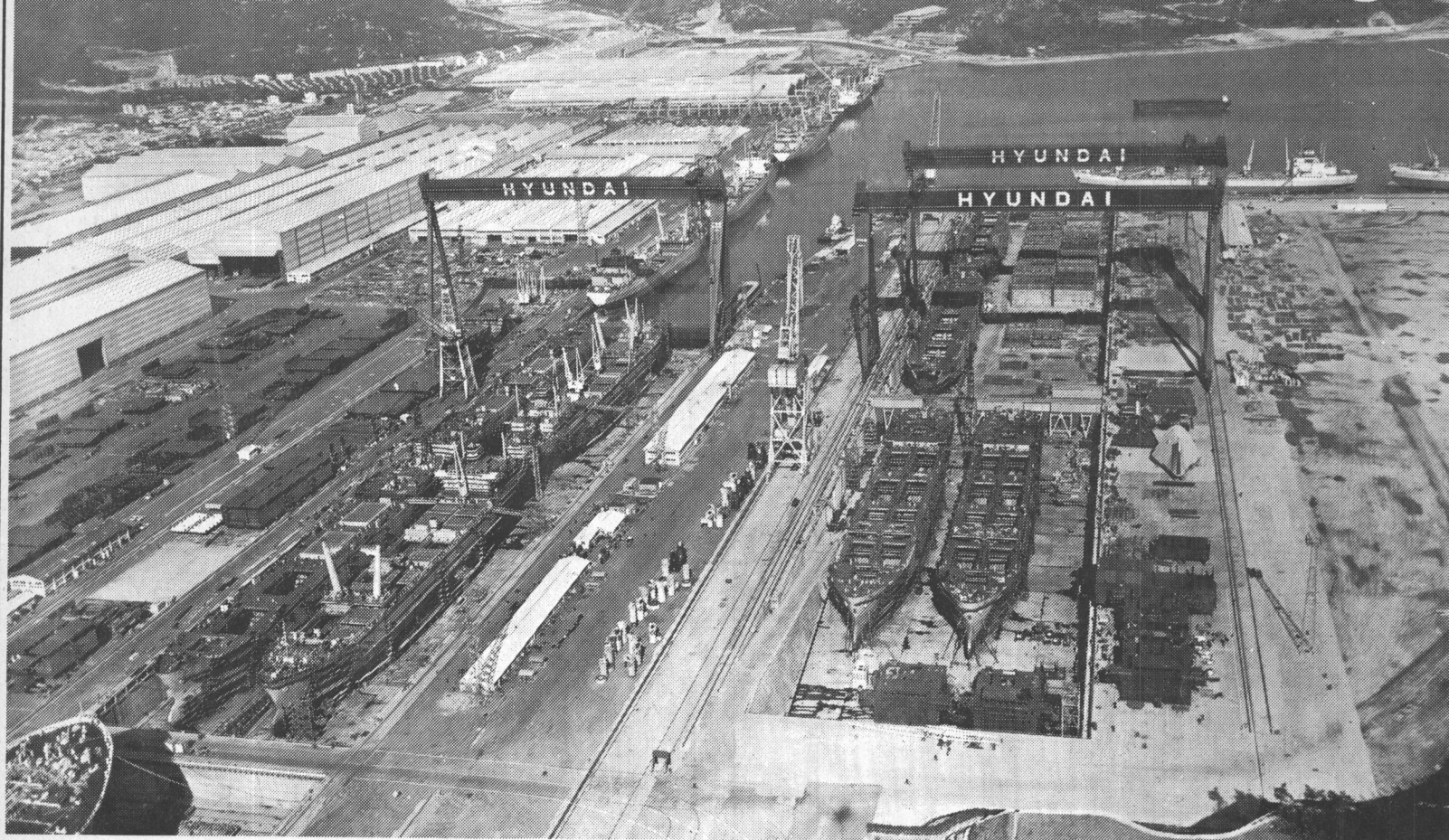
Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

☐ Please send brochure



# HYUNDAI builds tomorrows.

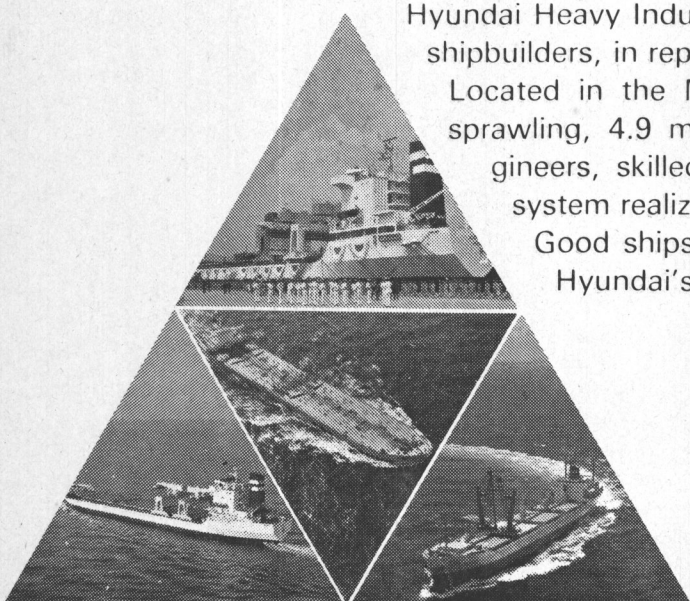


## And ships.

Hyundai Heavy Industries Co., Ltd. is one of the world's leading shipbuilders, in reputation and in fact.

Located in the Mipo Bay at Ulsan, Hyundai Shipyard is a sprawling, 4.9 million square meter complex. Dedicated engineers, skilled workers and a sophisticated computerized system realize the potential of the site.

Good ships start in good shipyards — the best start in Hyundai's.



**HYUNDAI**  
HEAVY INDUSTRIES CO., LTD.

Seoul Office: 178, Sejongro, Jongro-ku, Seoul, Korea. Tel : 70-7711/20, Telex: K28361

Overseas Offices: • London (Tel: 01-235-1266) • New York (Tel: 212-775-1421) • Tokyo (Tel: 03-211-0851/7) • Stockholm (Tel: 08-151020) • Oslo (Tel: 02-415-086) • Hamburg (Tel: 040-346819) • Paris (Tel: 538-6776) • Amsterdam (Tel: 020-220328) • Casablanca (Tel: 27-53-01) • Nairobi (Telex: 22360 MOOGONG) • Lagos (Tel: 24054) • Kuwait (Tel: 611881) • Tehran (Tel: 895675) • Bahrain (Tel: 54697) • Abu-Dhabi (Tel: 29740) • Riyadh (Tel: 64739) • Cairo (Tel: 704887) • Houston (Tel 713-759-1192) • San Francisco (Tel: 415-956-4908/9) • Toronto (Tel: 416-923-7752) • Santiago (Tel: 723750) • Rio de Janeiro (286-7921) • Caracas (Tel: 32,65,69) • Buenos Aires (Tel: 49-7824) • Hong Kong (Tel: 5-446493) • Singapore (Tel: 982460) • Sydney (Tel: 922 2084)

The  
name's  
changed. .

**HYUNDAI**  
excellence  
is not. . . .



## Sulzer Diesels Power First Combined Ro/Ro Mini-Bulk Carrier On Inland Waterways Of Europe



Trimming tanks on the RoRo-Simmental are brought into use during loading and unloading of large and heavy items. Hydraulic winches are employed to pull cargo onboard.

The first combined roll-on/roll-off mini-bulk carrier/inland motorship in Europe—the RoRo-Simmental—belonging to the Swiss company Rohr- und Saar-Kohle AG, was recently commissioned. The vessel is 95 meters long (approximately 312 feet), about 11 meters wide (36 feet), and with a deadweight of 2,400 tons, has a draft of 3.45 meters (11 feet). With this first ro/ro ship for inland waterway traffic, heavy cargoes can be transported by way of an inclined ramp directly in the cargo space. The trimming tanks are brought into use during the loading and unloading operations. Hydraulic winches are employed to pull the cargo onboard. Turbines, transformers, boiler, chemical plant components, and other large installation equipment items can thus be loaded or unloaded at any desired location without the use of large special cranes. The RoRo-Simmental can also transport solid fuels in European inland waters.

As is the case for the vessel as a whole, emphasis is placed on the economy of operation for the engine installation as well. The call for a robust and comparatively simple layout, together with optimal reliability of operation, has been able to be met by means of Sulzer A-type diesel engines. These machines have already

proven their worth in over 2,000 installations as prime movers for fishing, special and inland vessels, or as auxiliary generating sets on large oceangoing ships.

The Haslital, a previous new-building for the same owners, is equipped with two engines, type 6AL25/30, which each have a rating of 735 kw at 720 rev/min. As a result of further development and uprating in power, it was possible to select the smaller type 6AL20/24 for the Simmental, and to retain the same engine room conception.

In this way, powerful engines—designed according to the latest knowledge for continuous operation—may be installed in a relatively small space. Good accessibility for inspection purposes and overhaul work on the main engines, as well as other components, was decisive for the overall layout of the engine room.

Consequently, a two-engine installation (twin-shaft arrangement) with Sulzer four-stroke engines, type 6AL20/24, having the following data was selected for the total power requirements: Design principal—trunk-piston engine with supercharger, nonreversible; Bore/stroke—200/240 mm; Number of cylinders—6; Mode of operation—four-stroke; Rating—620 kw (840 bhp), and Speed—1,000 rev/min.

deliveries included fast, multimission patrol boats, tuna seiners, tugboats, drilling rigs, and offshore supply boats.

Ships presently on order include four twin-screw patrol chasers for the U.S. Navy and four twin-screw medium endurance cutters for the U.S. Coast Guard.

These vessels will be fitted with Tacoma Boat-Escher Wyss controllable-pitch propellers. The propellers for the patrol chasers will have a diameter of 2.7 meters (about 9 feet), and a power rating of 8,500 kw at 350 rev/min. In the case of the medium-endurance cutters, the propellers are 2.7 meters (about 9 feet) in diameter, and have a power rating of 2,600 kw at 260 rev/min.

### Tacoma Boat To Build Escher Wyss Propellers

The Tacoma Boatbuilding Co., Inc., Tacoma, Wash., and Escher Wyss GmbH, Ravensburg, Federal Republic of Germany, recently signed a licensing agreement which will permit Tacoma to manufacture Escher Wyss propellers at its works in Tacoma.

Escher Wyss has been a major manufacturer of controllable-pitch propellers for over 40 years. At present, more than 1,300 Escher Wyss propellers are in service. Two of them, with a diameter of 7.2 meters (about 23.6 feet) and a power rating of 34,000 kw each, are the most powerful of their kind in the world.

Tacoma Boatbuilding's recent

## Middle East Liner Trades — An Economic Analysis

Liner shipping to the Middle East has gone through a succession of fundamental changes since 1973. The tremendous boom in traffic which followed the oil price rise could not be accommodated by existing ports in the region and, as a result, congestion rose to unprecedented levels. Freight rates also soared. A variety of measures were introduced to combat this situation. In shipping, the first significant move was the switching of ro/ro ferries from their traditional short-sea routes (in the North Sea and elsewhere) to deepsea Middle East trades. Port congestion, which reached horrendous levels in 1975-76, has since disappeared much faster than many people had anticipated. This can be ascribed to a combination of "congestion-beater" services (ro/ro and other), the opening of new berths, the introduction of expatriate port management and a range of strong local initiatives. Additionally, the contribution of slower traffic growth should not be ignored.

Looking ahead over the next few years, some important changes in seaborne traffic to the Middle East can be anticipated. The initial boom in imports which followed the 1973 oil price rise has now subsided in most states, with import growth falling back to more sustainable levels. Focusing on the liner sector, it seems likely that declining imports of building materials and steel products (due to peaking of construction activity and increased local steel production) and of manufactured fertilizers (again, due to increased local production) will offset in tonnage terms continued growth in demand for foodstuffs, machinery and transport equipment and consumer goods over the next few years. In the longer term, despite efforts to develop general manufacturing industries and step up local food production, the forces for growth should reassert themselves. On the basis of a 4 percent per annum growth in liner traffic to ports in the Arabian Peninsula and Iran in the early 1980s, liner traffic to this area would reach 32 million tons in 1980 and 39 million tons in 1985, compared with an estimated 31 million tons in 1977 and 25 million tons in 1976.

These statistics are taken from "Middle East Liner Shipping: An Economic Analysis of Traffic, Services, Ports and Future Prospects," the latest in a long line of reports from HPD Shipping Publications.

Although the boom in liner traffic has eased recently, new services have continued to enter Middle East trades at a rapid rate. With the decline in vessel waiting

times, conventional liner tonnage is re-emerging as a major force. In addition to ro/ro services, large numbers of small, geared cellular vessels have been introduced by operators since 1976, and with new, gantry-equipped container terminals opening up, gearless containerships are also beginning to appear. On top of this, there is a noticeable trend toward larger vessels, offering scope for cost savings through scale economies. Add to all this LASH vessels, towed barge systems and hybrid vessels (such as the "Strider" class), and the variety of shipping types competing on Middle East routes can be seen to exceed that of any other major liner trade.

By summer 1977, capacity on ro/ro and container services into the Middle East had reached an estimated 35,000 TEU per month, with 25,000 TEU to the Gulf and around 10,000 TEU to Red Sea ports. Of the Gulf capacity, some 19,000 TEU was being provided by geared containerships, with ro/ro-based tonnage accounting for most of the remainder. In the Red Sea, unitized traffic was largely rolling in either pure ro/ros, ro/ro container hybrids (with ro/ro access but cellular stowage) or towed barges (with ro/ro access and stowage). By March 1978, unitized capacity on Middle East routes had risen to an estimated 58,000 TEU per month, with container services accounting for 39,000 TEU and ro/ro-based services for an estimated 19,000 TEU.

H.P. Drewry calculations suggest that average load factors on Middle East routes have declined over the past year. Other evidence—a fall in freight rates, the financial difficulties of some operators and "rationalization" of services—supports the view that these trades are overtonnaged at present. There would seem to be little prospect of any rapid improvement in fortunes. A significant number of container, ro/ro and even conventional vessels are on order for Middle East routes, and several new services have been announced in recent months, principally from the Far East and Australia. It may be several years before the further penetration of unitization boosts container and ro/ro traffic sufficiently to absorb the surplus unitized tonnage. An anticipated absolute decline in conventional liner traffic will tend to maintain excess capacity in this sector, even though only limited additions to the range of conventional services on offer are foreseen.

As regards the ports, the programs of massive development, spurred on by the post-1973 traf-



fic boom and surge in oil revenues, played only a minor role in the easing of congestion—most of this new development is still “in the pipeline.” As with shipping, there are considerable fears of overcapacity. The new HPD survey reveals that the number of conventional general cargo berths (with depths of water of 8 meters or more) at ports in the region rose from 97 in 1973 to 176 by end-1976 and is scheduled to reach an astonishing 484 by the end of 1983. The first two container-ro/ro berths were designated in 1976; by end-1977, there were 18 such berths. The number of such facilities may reach 74 by end-1983. Comparison of projected port capacity with projected traffic clearly reveals the prospect of a major overprovision of both conventional and unitized facilities at Middle East ports in the early 1980s. Port authorities in general will be unable to cover the capital and operating costs of their new berths, given the low levels of utilization expected, and a substantial element of subsidy in tariffs seems inevitable. This may well affect the competitive position of different vessel types and may favor those (such as gearless containerships) which are heavily dependent on expensive port facilities. Port overcapacity may also reinforce overtonnaging in shipping, by making it easier for operators to introduce additional sailings or new services, should the market begin to show signs of improvement.

In addition to quantifying the growth of Middle East liner shipping and port facilities, and comparing capacity in both sectors with volumes of traffic, “Middle East Liner Shipping” contains quay-to-quay per cargo ton cost comparisons for different sizes and types of liner vessel (conventional, cellular, ro/ro, etc.) on Middle East routes. An assessment is made of which types of service, and which types of operator, are most likely to survive and ultimately prosper in these now highly competitive trades.

“Middle East Liner Shipping: An Economic Analysis of Traffic, Services, Ports and Future Prospects,” priced at U.S. \$160 for all overseas orders or £75 for U.K. orders, is available from HPD Shipping Publications, 34, Brook Street, Mayfair, London W1Y 2LL, England.

### MSC Towing Contract Awarded To Dillingham

Dillingham Tug and Barge Corporation (DT&B), Honolulu, Hawaii, has been awarded a government contract by the Military Sealift Command, Washington, D.C., to provide tug and barge service between Honolulu, Johnston Island, and Eniwetok Atoll as part of the United States effort to restore living conditions on Eni-

wetok following nuclear testing.

In announcing the contract, Dillingham Maritime-Pacific Division president **Thomas D. Opatz** said the long-term contract calls for DT&B to carry construction materials and equipment to the Pacific locations.

“In 1976, Congress appropriated funds and appointed the Defense Nuclear Agency to supervise the removal of all radioactive contamination from several islands



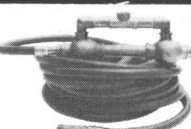
in the Eniwetok Atoll that was the result of nuclear testing more than two decades ago,” said Lt. Col. **Bill McGee**, (Army), Defense Nuclear Agency Public Affairs officer.

The Military Sealift Command is charged with providing all ocean transportation necessary to support the rehabilitation program which is expected to be completed by 1981.

Rehabilitation work began on

the project in 1977, and involves several other Defense Department agencies, including the Army, Navy, and the Military Airlift Command.

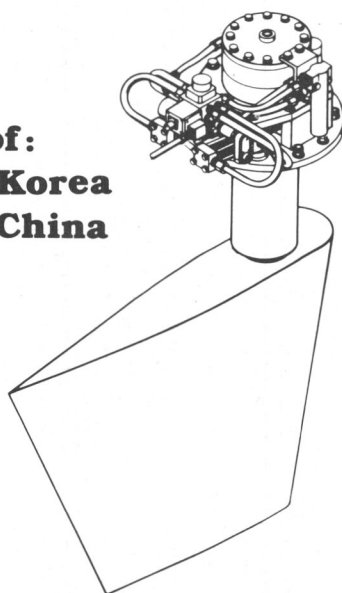
Dillingham Tug and Barge is a subsidiary of Honolulu-based Dillingham Corporation and provides tug and barge charter and contract towing services throughout the Pacific, as well as harbor and interisland service within the State of Hawaii.

 <p><b>VM BILGEMATE</b> Ideal for pumping bilges—stripping ballast, etc. Peripheral jet design handles liquids, solids, air. 2½" to 6" sizes available.</p>	<p><b>pump it dry!</b> with <b>VM EDUCTORS</b></p> <p><b>VM EDUCTORS</b> have been handling pumping jobs aboard ships around the globe for 30 years.</p>	 <p><b>VM PORTABLE EDUCTORS</b> Handy auxiliary pump for regular or emergency pumping of liquids from ballast, bilge, cargo spaces and tanks. Just attach hose from fire main and lower eductor into space to pump large quantities of liquid quickly and easily.</p>
<p><b>NO MOVING PARTS—NO MAINTENANCE</b></p> <p><b>NO PRIMING—CANNOT LOSE SUCTION</b></p>	 <p><b>VM DECK EDUCTOR</b> Only the hose goes into tank to vacuum liquids at rate of 10-15 gpm at suction lifts up to 70' or more.</p>	<p><b>PUMPS BILGES, TANKS AND HOLDS DRY</b></p>
<p><b>VM</b> VITA MOTIVATOR CO. 200 W. 20th St. New York, N.Y. 10011 Phone (212) 675-2265</p>	<p><b>Barrett Equipment Co.</b> 4614 Union Bay Place, N.E. Seattle, Wash. 98105 Phone 206 522-8325</p>	<p><b>Manufacturers Agency Inc.</b> P.O. Box 785 Houston, Texas 77001 Phone 713 675-3211</p> <p><b>Kings Point Machinery</b> 439 Bryant Street San Francisco, Calif. 94107 Phone 415 781-9175</p>

## PACMAR

### Active Fin Stabilizer

**Serving the Navies of:**  
**Republic of Korea**  
**Republic of China**  
**Indonesia**  
**Philippines**



**Pacific Marine Products, Inc.**  
P.O. Box 11  
Kenmore, WA 98028 (206) 789-0660

## another ROSEN public AUCTION



a bankruptcy sale

**OFFERING A MOST UNUSUAL BUSINESS OPPORTUNITY**

THURS. SEPT. 7th • 10:00 A.M. (EDT)

on premises at

**WILSON LINE OF WASHINGTON, INC.**

Pier 4 • 6th & Water Streets

Washington, D.C.

**FEATURING TOUR/CHARTER VESSELS & PIER LEASE WITH SUPPORT ASSETS OFFERING EXCELLENT BUSINESS OPPORTUNITY OR CHANCE TO ADD TO YOUR OWN EQUIPMENT**

**OFFERED ENTIRETY UNITS & SINGLE LOTS**

**LEASE:** 99 year lease on pier 4 giving 75' x 280' pier, office & warehouse bldgs., plus ample parking facilities. **SHIPS:** (3) 400 passenger alum. catamaran hull tour ships built 1974, The AMERICA, LIBERTY & FREEDOM — Powered by 4 Cat. 500 HP diesels. Fully equipped tour ships with two glass enclosed fully air conditioned decks. • 70 passenger charter ship, The MT. VERNON. Powered w/ twin 200 HP GM diesels. Has enclosed air conditioned deck fully paneled and equipped. • The ferry vessel GEORGE WASHINGTON. A 2500 passenger vessel powered by twin 1000 HP diesels. Has five decks and crew quarters. • (3) 34' Ludwig 22 passenger alum. hydrofoil vessels built in 1964. **MARINE DRY DOCK RAIL SYSTEM:** located on leased land on north side of Anacostia River. 400 ton cap. **TRAM:** (2) Deibler 24 passenger trackless trains powered by Jeep. • **TRUCK:** 1975 Ranchero 500 • **MAINTENANCE & DOCK EQUIP.:** • **OFFICE EQUIP.:**

**TERMS:** everything sold as is, where is without warranty or guarantee. 25% deposit when bid struck down, balance at conclusion of sale. All payments in cash or cashiers checks payable to Ralph Rosen Associates. Company check will be accepted only if presented with letter of guarantee from bank.

**TRUSTEE:** Mr. Charles A. Docter  
1707 H. Street  
Washington, D.C. 20006

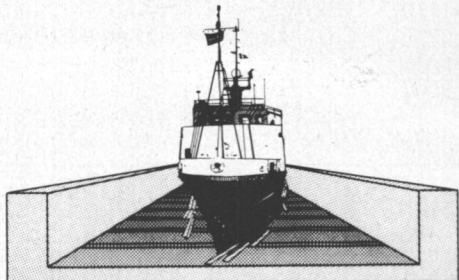
**FINANCING AVAILABLE:** long term financing on entirety bid or catamarans offered to financially responsible bidder. Contact Irv. or Mike Rosen at auctioneer's office for details.

for details & free illustrated brochure contact

**ralph rosen associates**  
2520 W. Mockingbird Ln.  
Dallas, Texas 75235  
Phone AC 214/350-2381  
a division of rosen systems incorporated  
LIC. NO. TX. GS-019-0052



**...a new name  
...a proud reputation  
in shipbuilding & repair**



**NEWPARK**  
shipbuilding & repair, inc.  
(formerly Bludworth Shipyard, Inc.)

Capabilities — Complete repair facilities for inland and offshore marine equipment • new construction-petroleum barges • liquified petroleum barges • open hopper cargo barges • geophysical survey boats • oilfield supply vessels • harbor tugs • river towboats • offshore tugs • and customized vessels.

**For further information write or call:**

Newpark Shipbuilding & Repair  
P.O. Box 5426/Houston, Texas 77012  
(713) 928-5051  
A subsidiary of Newpark Resources, Inc.

### Ship Design Paper Attracts Wide Interest

A paper on direct calculation methods in ship structural design presented by Lloyd's Register of Shipping at a recent international shipbuilding symposium, "Preparing for the Eighties," organized at Newcastle upon Tyne northeast England by Kongsberg Vapenfabrikk of Norway, attracted international interest.

The paper discussed the need for direct calculation methods to complement classification society rules for the design of new or specialized marine structures.

The systematic analysis of the types of loads and the capability of structures were covered, together with failure modes and design criteria. The paper explained how, through procedural documents, such aspects as load intensities, modeling and design criteria levels were defined.

These definitions would assist in the design of bulk carriers, containerships, tankers and ro/ro ships. A short discussion was included about ways of improving and defining future direct methods to include the tolerances associated with modern ship production technology.

Interest was shown, states Lloyd, by companies from the Far East, South America, Asia, West and East Europe, and Scandinavia.

The paper can be obtained by contacting the Hull Structures Department, 71 Fenchurch Street, London EC3. Details and copies of the Society's Procedural Documents are obtainable from Lloyd's Register's Printing House, Manor Royal, Crawley, West Sussex RH10 2QN, England.

### Dravo Corporation Appoints Larry Dyjak

Larry Dyjak has been appointed superintendent of the combined pipe and mechanical department at Dravo Corporation's Engineering Works Division. Previously, Mr. Dyjak was pipe shop superintendent for a year and a half.

A graduate of Ryder College, Mr. Dyjak holds a Bachelor of Science degree and has been with Dravo since 1973.

Dravo's Engineering Works Division operates one of the nation's largest inland waterways shipyards at Neville Island near Pittsburgh, Pa., where it designs and builds a wide range of marine products. It is a leading manufacturer of towboats, barges and bulk materials handling equipment and systems.

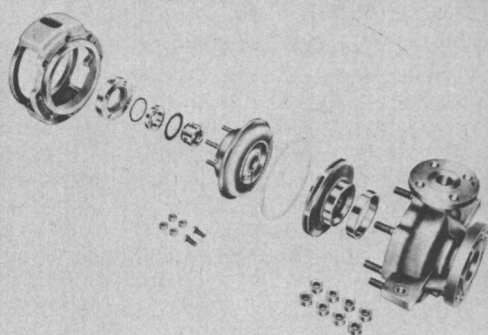
### Warren Thomson Joins ITT Jabsco Products

Warren Thomson has been named marine market specialist for ITT Jabsco Products, 1485 Dale Way, Costa Mesa, Calif. 92626, manufacturer of marine pumps and accessories.

Mr. Thomson assumed his new position following four years' service with Wilcox-Crittendon, where he served as product development manager.

New product development and market development and analysis are included in Mr. Thomson's responsibilities at ITT Jabsco Products. He holds a Bachelor of Science degree in mechanical engineering from the University of Connecticut, and had done post-graduate work in business administration.

## COMET PUMP SPARE PARTS



Allis-Chalmers  
Aurora  
Buffalo  
Coffin  
Dean Bros.  
Fairbanks Morse  
Gould

Ingersoll-Rand  
National Transit  
Pacific  
Warren  
Westco  
Worthington

Write or call for complete information



**COMET**  
MARINE SUPPLY CO.

157 PERRY STREET, NEW YORK, N.Y. 10014  
TEL. (212) 675-8776

## Battery-Operated Barge Running Lights

Automatic Power barge running lights are "ready-to-go" units for all types of unpowered barges. All running lights include an on-off switch, photocell, Saft AN-110 or Pri-Gel 350 batteries, lamp and port/starboard/stern sector screening. Lanterns are available with red, green, yellow and clear lenses.

Types III and IV (60-night battery power) include a fiberglass, top-opening battery box and 4-place lampchanger. Type VI (210-night battery power) includes a galvanized steel, front-opening battery box and 6-place lampchanger. Types I, II, III and IV are portable for easy movement from barge to barge as tow configuration changes.

Call or write for literature and quotations.



**PENWALT™**

**AUTOMATIC POWER**

Post Office Box 18738 • Houston, Texas 77023 • (713) 228-5208 Telex: 76-2853

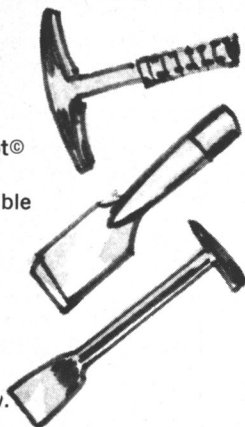
Agent & distributor for **SAT** Saft Corporation of America



## Don't invite Disaster!

Specify the use of Spark-Not® Safety Tools in locations where vapors and combustible residues are present or suspected.

Why look for trouble? Spark-Not Safety Tools are inexpensive insurance. Protect life & property order your safety tools now.



**Spark-Not Safety Tool Co.**  
2407 Independent Square  
Jacksonville, Fla. 32202  
904 353-1404

**BROWN & ROSS OF N. J., INC.**

Authorized Distributor

GENERAL ELECTRIC



**Silicones**

PROVIDING STOCKING & SERVICE FOR GENERAL ELECTRIC SILICONE PRODUCTS FROM OUR COMPREHENSIVE & EFFICIENT FACILITIES FOR THE MARINE & DEFENSE FACILITIES MARKETS

**BROWN & ROSS OF N. J., INC.**  
40 Columbia Ave. — (201) 659-3211  
Jersey City, N.J. 07307 (212) 962-7917

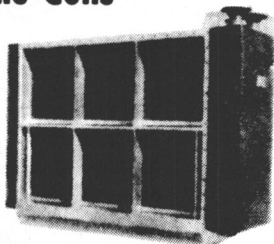
**COLMAC  
COIL, INC.**

Phone (509) 684-2597

COLVILLE, WASHINGTON 99114

**For Your Next Navy Standard  
& Marine Coils**

**Quality  
Products  
Listing**



**BOARDING EQUIPMENT  
TO MEET YOUR NEEDS**

STANDARD SIZES & CUSTOM-BUILT

**SHIPS' LADDERS**

**GANGWAYS**

**PIER**

**STANDS**

SAFETY TREADS  
& GRATINGS



Call Us For Quotes!

**RAMPMASTER  
INCORPORATED**

1226 N.W. 23RD AVENUE FORT LAUDERDALE, FLORIDA 33311  
TELEPHONE 305 584-5990

## Congressman Murphy To Address Offshore Oil Conference

The Energy Bureau announced that Congressman **John M. Murphy**, Chairman of the House ad hoc Select Committee on The Outer Continental Shelf, will keynote its national two-day conference on offshore oil. Entitled "Offshore Oil: Challenge And Change," the conference will be held on November 2 and 3 at The Hyatt Regency Hotel in Dallas, Texas.

This conference will examine, discuss and debate the challenges to U.S. offshore oil potential, supply and the environmental movement, as well as the changes being wrought by new legislation. There are central questions of supply, environmental challenge and legislation that even today remain unanswered. The conference brings together, in addition to Congressman **Murphy**, executives and officials of Government, industry, the professions and public interest groups to probe, illuminate and debate the pivotal issues of offshore oil and gas. The program is designed for executives of oil and gas companies, as well as those financing and servicing the offshore oil industry. The Energy Bureau, which recently sponsored the first national Outlook For Crude Oil conference, believes this is the first offshore program to direct its attention to these critical questions.

For further information, contact **Robert W. Nash**, Executive Director, The Energy Bureau Inc., 101 Park Avenue, New York, N.Y. 10017.

## Ship Delivery Dates

### Programmed By Computer

The British Ship Research Association has designed a computer package for use by the shipbuilding industry in establishing key dates in a ship delivery program.

Produced in the form of a Contract Planning Model, it includes a facility to hold on file all the data necessary to establish the launch and completion dates for a whole range of ship types. Thus, when an inquiry is received, it is possible to quickly establish whether or not the shipyard can meet the required delivery dates and what effect the new contract might have on the existing orderbook.

An accompanying user's manual, recently issued to BSRA member companies, enables them to use the model interactively from their own computer terminals.

## Fleetweather Names

### Schiesser Meteorologist

**Tore H. Jakobsen** and **James F. Witt**, owners of Fleetweather, Inc., have announced that **Robert Schiesser** has been appointed to the position of full-time staff meteorologist with the firm. Mr. Schiesser holds a B.S. degree in meteorology from Lyndon State College, Lyndonville, Vt., and has been employed part time with Fleetweather for the past 12 months. His duties will include forecast preparation and dissemination for Fleetweather's growing list of over 35 steamship companies, agents and stevedores that subscribe to the firm's port forecast services from the Great Lakes to the Gulf Coast.

For a complete description of the firm's forecast service, write to **Tore Jakobsen**, Fleetweather, Inc., Orbit Lane, Hopewell Junction, N.Y. 12533.

# FOR SALE



30 TON @30° USED CLYDE WHIRLEY CRANE WITH 65' BOOM

POWERED BY D1300 CATERPILLAR ENGINE  
EXCELLENT CONDITION WELL MAINTAINED  
USED AT LOCAL SAND & GRAVEL OPERATION  
SHIPMENT BY RAIL OR WATERWAYS

PRICE ON REQUEST

**M & P EQUIPMENT COMPANY**

P.O. Box 4010 Little Rock, Ark. 72214  
(501) 664-5550

## POSITIONS AVAILABLE

**BRASWELL SHIPYARDS, INC.**

has openings for the following positions:

**Production Supervisor —**  
Boston, Mass. Facility

**Hull Superintendent —**  
Boston, Mass. Facility

**Pipe Superintendent —**  
Boston, Mass. Facility

**(2) Ship Supervisors —**  
Boston, Mass. and Charleston, S.C. Facilities

**Production Supervisor —**  
Charleston, S.C. Facility

**(2) Progress Persons —**  
Boston, Mass. and Charleston, S.C. Facilities

**Quality Assurance Representative —**  
Boston, Mass. and Charleston, S.C. Facilities

**Department Q.A. Representatives —**  
Boston, Mass. and Charleston, S.C. Facilities

Please respond to:

P. O. Box 317, Mt. Pleasant, SC 29464

Equal Employment Opportunity Employer M/F



**BRASWELL SHIPYARDS, INC.**



### WILSON is STEAMSHIP!

We have served the Shipping Industry exclusively for nearly 40 years and maintain an active file of people experienced in all of its phases — including Port Engineers, Ship Construction Supervisors, M&R, sales, etc. — to relocate anywhere.

All salaries and fees negotiable.

Inquiries without obligation and in confidence.

WILSON AGENCY, Inc. 150 B'way, NYC 10038

(212) 732-2921-2-3-4-5

## Marine Inspector/ Port Engineer

Dynamic expansion of Atlantic Richfield Company's marine operations has created this immediate and highly challenging opportunity at its Long Beach, CA. facility.

This position requires a professional capable of maintaining and repairing company-operated domestic and foreign vessels. Selected candidate will meet vessels to survey repair needs and coordinate repairs; prepare shipyard specifications and assist in negotiating repair prices; aid regulatory agencies in inspection of vessels; and make related budget recommendations. Will also work on other projects as required.

Duration of intermittent domestic & international travel will depend on assignment.

Qualifications must include a BS degree in Marine or Mechanical Engineering or equivalent experience. U.S.C.G. Engineering license, seagoing experience and a familiarity with tanker or general ship construction and repair industry are all highly desirable.

We offer attractive salary and comprehensive benefits. Send resume, including salary history to: **Supervisor, Marine Employee Relations, Atlantic Richfield Company, Dept. MR-1, 5900 Cherry Avenue, Long Beach, CA 90805**

**AtlanticRichfieldCompany** 

An equal opportunity employer, m/f

### PORT ENGINEER

St. Louis-based bulk liquid barge line has an immediate opening for a qualified professional capable of supervising maintenance and repairs of our boats and barges. Selected candidate will meet vessels to survey repair requirements and coordinate shipyard repairs. Candidate will be required to assist in negotiating repair prices and in the preparation of shipyard specifications.

Starting salary commensurate with experience. Full fringe benefits available. Submit resume, references and salary requirements to:

Box 819 Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

## marine recruiters

Brokers of  
Marine Talent

2200 6th Avenue Seattle, WA 98121 (206) 623-6790

## MARINE FIRM SEEKING

Man with knowledge of marine industry. Preferably with sales experience . . . . to edit a monthly house organ with national coverage . . . for maritime organization in New York metropolitan area. Send resume in confidence to:

BOX 715

Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

**DECK INSTRUCTOR, Assistant Professor:** \$1591-1919/mo. Beginning January 1979. Permanent position (after probationary period). Twelve month contract includes 10 week cruise. USCG Mate's License required. Advanced degree in management / business preferred.

Resumes to: Administrative Officer  
California Maritime Academy  
P.O. Box 1392  
Vallejo, CA 94590

### SALES MANAGER

Major inland shipyard seeks a sales manager to direct the sales force and further develop the overall marketing effort. Division operations include marine overhaul / repair service and parts sales, plus rapidly expanding diesel overhaul sales to industry. At least five years experience as a Sales Manager selling to the marine industry or overhaul/parts sales to industry is essential. A degree is required. We offer an attractive total compensation package and comprehensive benefit program. To be considered for this outstanding opportunity please submit your resume including compensation history and requirements to:

Box 818 Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

## POSITION WANTED EXPERIENCED MARINE MANAGER

Seeking position with established progressive company with high growth potential.

25 years experience in Executive, Administrative, and Operational areas of marine towing and transportation.

Held senior executive position with major U.S. company.

Extensive knowledge of tugs, towboats and barges, and their operation, both inland and offshore. Experienced Manager of all phases of marine towing and transportation. Budget preparation, cost analysis and control, profit plans, sales and sales promotion, turn around time, equipment purchase and repair, salvage, barge structural design, labor negotiations and systems design and analysis.

No geographical preference. Would relocate for suitable opportunity. For complete resume, please reply to:

Box 815  
107 East 31 Street

## MARINE

### MARINE LABOR COORDINATOR

Maritime school graduate with 6 or more months tanker service. Salary dependent on experience and qualification. Work involves personnel assignments, training of growing international proprietary fleet plus related work in labor contracts, insurance, budgeting, and other administrative areas. Contact:

Bruce K. Stephens

Manager, Marine Personnel & Training

**AMOCO INTERNATIONAL OIL CO.**

A Subsidiary of Standard Oil Co. (Indiana)

MC 5006

P.O. Box 8368

Chicago, IL 60680

(312) 856-5745

### ASSISTANT PORT CAPTAIN

Maritime academy graduate with U.S.C.G. Master's License and tanker experience as Ch. Mate required. Will be involved in all phases of operation of growing international tanker fleet with headquarters in Midwest. 50% travel required. Contact:

Captain W. D. Ridell

Manager, Vessel Operations

**AMOCO INTERNATIONAL OIL CO.**

A Subsidiary of Standard Oil Co. (Indiana)

MC 5006

P.O. Box 8368

Chicago, IL 60680

(312) 856-4533



An Equal Opportunity Employer M/F

### FLORIDA

### DEPARTMENT OF TRANSPORTATION REQUIRES

CHIEF MARINE ENGINEERS  
U.S. COAST GUARD UNRESTRICTED  
1200 HP DIESEL LICENSE  
REQUIRED FOR FERRY SERVICE  
SALARY TO \$14,700.00 PER YEAR

CALL MR. RICHARD KLEBS,  
MARINE SUPERINTENDENT  
(904) 246-2922  
AT MAYPORT, FLORIDA



### C-V Marine Consultants Can Find The Key Personnel You Need!

Through our coast-to-coast contacts within the marine industry, we will find the specialists you are searching for. We work with senior and middle management, sales, estimators, engineers, dockmasters, planners, ship's superintendents etc.

Our fees are competitive and we are only paid when we are successful. For more information, call Larry Victor at (713) 682-8217.

#### C-V MARINE CONSULTANTS

1002 ANTOINE DRIVE, SUITE #32 HOUSTON, TEXAS 77055  
(713) 682-8217

### PROJECT ENGINEER

Prefer individual with BS degree in Mechanical Engineering with several years experience in Facility Engineering. Excellent fringe benefits. Salary commensurate with ability.

#### BETHLEHEM STEEL CORPORATION

P.O. Box 3031  
Beaumont, TX 77704  
713-838-6821



An Equal Opportunity Employer

### SENIOR ENGINEER

A Florida based marine repair company with a large volume of medium and slow speed diesel repairs requires a take charge, hands on Senior Engineer. Applicant should be fully conversant with the Metric System and European diesels and have a background as a seagoing engineer with subsequent experience in a marine repair facility. Qualified individual will have at least twenty years experience with marine diesel engines up to 20,000 hp. Please remit detailed resume to

Box 816 Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

**COMMANDANT of MIDSHIPMEN:** \$1919-2317/mo. Apply by 31 October 1978. Twelve month contract includes 10 week cruise. Two years experience at sea or three years in Officer's Training program required. USMM Officer's License and Master's Degree desired.

Resumes to: Administrative Officer  
California Maritime Academy  
P.O. Box 1392  
Vallejo, CA 94590

### POSITION WANTED

20 years experience in the marine field. Latest 16 years of which were spent equally as estimator and design/draftsman in the marine joiner field. Knowledge of the complete joiner package involving arrangements and habitability. Prior 4 years spent as a shipyard sheet metal mechanic. 4 year architectural education. Seeking responsible position where present talents can be used or very adaptable to your needs.

Box 820 Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

### SHIPPING POSITION WANTED

Over 20 years experience in shipping industry in U.K., West Africa and now U.S.A. Knowledge of both tanker and dry cargo operations as well as Marketing and Financial control, also have experience in oil loss control. British citizen. Assoc. Institute Chartered Shipbrokers, Fellow Inst. of Petroleum. Available New York for interview.

Box 801 Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

### EMPLOYMENT SPECIALISTS IN THE MARINE INDUSTRY

Job opportunities in marine professions. Naval architects, marine engineers, shore-based marine administration; mechanical, structural, and other disciplines in offshore, marine and shipbuilding industries.

GLOBE PERSONNEL CONSULTANTS, INC.  
2727 KIRBY, #517 HOUSTON, TEX. 77098  
713/526-3748

### Hull Superintendent

Continued growth of our northeast Florida repair and drydock facility offers excellent opportunity for experienced individual.

Prefer candidate with shipfitting apprenticeship and repair background.

Attractive compensation package including profit sharing retirement plan.

For immediate consideration, please send resume, including salary history, to:

Box 821 Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

an equal opportunity employer male/female

### ISLE MARINA 20 years of service

Marine Engineer • All types of engine service  
Marine Consultants • Marine Surveyors  
World Wide Travel

231 Harrison Ave. Harrison, N.Y. 10528  
(914) 835-1919 After 9 PM (914) 835-4405

### ASSISTANT FOREMAN — MACHINE SHOP

Well equipped machine shop located in Florida needs qualified inside machinist with a minimum of fifteen years experience in all phases of marine repairs, with potential for promotion to Shop Foreman. Only persons with the highest professional and personal integrity need apply with detailed resume and salary history.

Please remit detailed resume to

Box 817 Maritime Reporter/Engineering News  
107 East 31 Street New York, N.Y. 10016

## TANK BARGES

Interested in two self-propelled  
units 500 to 800 tons.

Call: 201/569-5750

### L.A.S.H. BARGES WANTED

Preferably East Coast but will consider  
all locations.

P.O. Box 92  
Canal Street Station  
New York, N.Y. 10013

### OIL & CHEMICAL BARGE

220 x 40 x 11 6 tanks 49,000 gals. each, double skin,  
7,000 bbls. Extra clean \$75,000

Tidewater Pipe Yard  
Box 383 Belle Chasse, La. 70037  
Phone: 504/392-0701



Call  
The Barge People

### WE RENT BARGES

AVAILABILITY INCLUDES:

OIL BARGES  
SHALE BARGES  
DECK SERVICE BARGES  
OCEAN CERTIFIED DECK BARGES

A PART OF OUR LARGE AND VARIED FLEET

### McDONOUGH MARINE SERVICE



NEW ORLEANS

(504) 949-7586  
TELEX 58-4393  
P.O. BOX 26206  
NEW ORLEANS, LA. 70186

HOUSTON

(713) 452-5887  
P.O. BOX 233  
CHANNELVIEW, TEX. 77530

PARKERSBURG

(304) 485-4494  
TELEX 86-9412  
P.O. BOX 1825  
PARKERSBURG, W. VA. 26101

### FOR SALE



Yacht type vessel converted from a tug in 1966. Bow thrusters, shipyard built of 1/2" steel. 76' x 21' x 8.5'—103 tons. 635 H.P. Cummins—6 to 1 gear 70" blade wheel. 60 KW and 100 KW Generators. All Double equipment. Marine survey of 1976 value \$225,000.00. Will sacrifice much less. Send \$5.00 for Nov. 76 Survey, pictures and specifications. Located Lake Superior. Contact:

WILLARD L. CO.

Clyde Fogg  
2451 Lakeshore Rd.  
Holland, Mich. 49423  
Call (616) 335-5791

### ALUMINUM BARGE FOR SALE OR LEASE

90'x30'x5' deck barge—double-raked—280 ton cap.  
Frank Ferri Lantana Boatyard, Inc.  
808 N. Dixie Highway Lantana, Fla. 33462  
(305) 585-9311

### FOR SALE WHIRLEY CRANE

(60/100 TON)

GANTRY MOUNTED

BARGAIN PRICE—

EXCELLENT CONDITION

Clyde — 32' track gage, New Gantry installed 1974. Crane can be seen in operation. Presently rated 60 Ton can be converted to 75 Ton or 100 Ton. Also to self contained. Complete specifications available.

CALL COLLECT

NICOLAI JOFFE CORPORATION

9171 Wilshire Boulevard Beverly Hills, Ca. 90210  
(213) 878-0650 Telex 67-4638



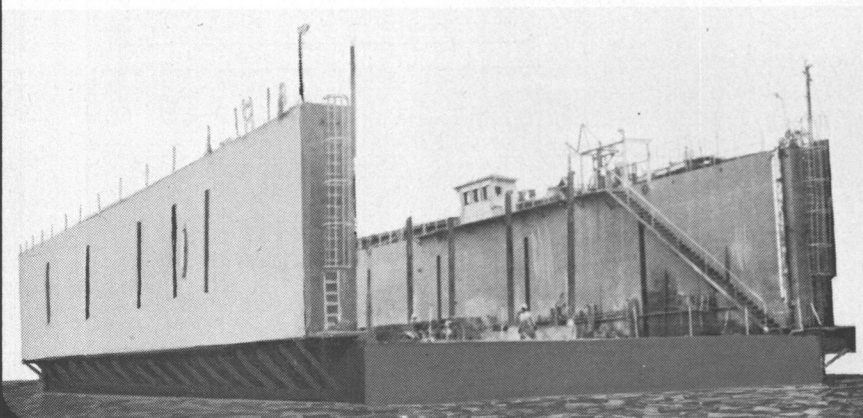
# Zidell has it...

## Floating Drydock

Presently in Use

Length over-all — 160'  
Breadth — 66'  
Total depth — 30'6"  
Breadth between wing walls — 56'  
Capacity — 1,000 tons

Three longitudinal bulkheads; four transverse bulkheads; ten watertight ballast tanks. Ten 8" centrifugal pumps (20 HP motors). Ten electric flood valves; ten manual flood valves. Ten cross-over valves. Total weight — 375 tons. Two ventilation blowers for voids. 4' void full length of each wing wall. Four positioning bilge blocks, electrically operated from control house. Heavy tow pads. Two positioning winches at forward end of port and starboard wing walls. Currently in operation and in use. 4' keel blocks full length included.

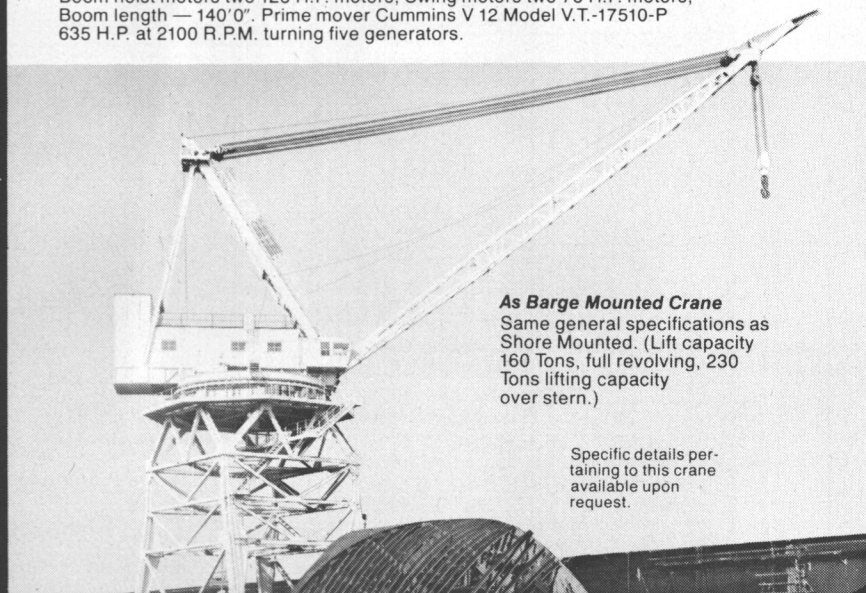


## NEW MODEL, 32 CLYDE Whirley Crane

As Shore Mounted Gantry

Main block lift 175 Tons, auxiliary 50 Ton lift and jib 15 Ton lift, height of crane from track to top of "A" frame 138' 8". Track gauge 32' 0". Broken down at present time for shipment.

Four propulsion trucks, six 20" diameter wheels per truck with four 30 H.P. travel motors at a travel speed of 120 F.P.M. Main hoist motors two 250 H.P. motors, Boom hoist motors two 125 H.P. motors, Swing motors two 75 H.P. motors, Boom length — 140' 0". Prime mover Cummins V 12 Model V.T.-17510-P 635 H.P. at 2100 R.P.M. turning five generators.



As Barge Mounted Crane

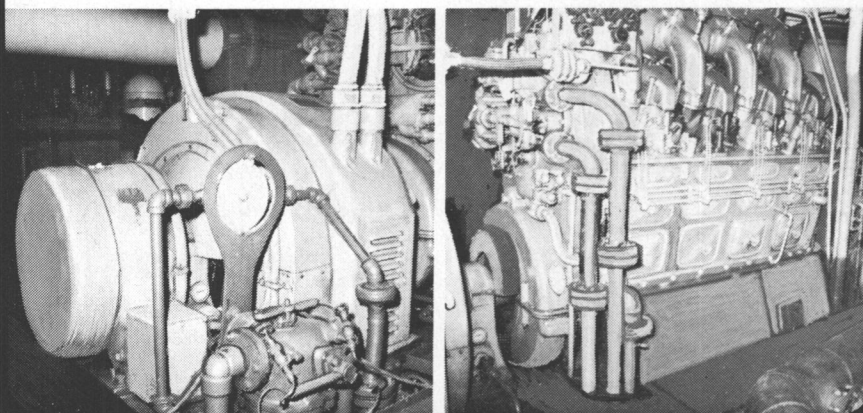
Same general specifications as Shore Mounted. (Lift capacity 160 Tons, full revolving, 230 Tons lifting capacity over stern.)

Specific details pertaining to this crane available upon request.

## Diesel Generators

5-350 KW units in parallel with a 1750 KW capacity. To be used as power package for dredge, drilling rig, repair facility, etc. or as 5 individual units.

General Motors Model 8-278A, typical serial 45004, air start — 600 RPM, driving a G.E. alternating current Generator Type AT1, Model 12G732, 350 KW continuous, or 438 KW for 2 hrs., 440V-3-60, complete with all attached auxiliaries. Other available components include generator control panels, oil coolers, air compressors, air tanks. 5 units available.



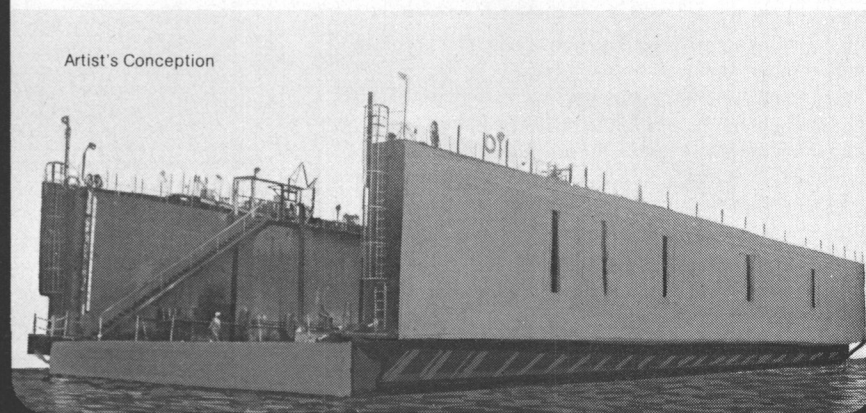
## Floating Drydock

Under Construction

Length over-all — 200'  
Breadth — 84'  
Total depth — 30'6"  
Breadth between wing walls — 74'  
Capacity — 2,400 tons

Three longitudinal bulkheads; four transverse bulkheads; fifteen watertight ballast tanks. Six 8" centrifugal pumps (40 HP motors). Fifteen air operated flood valves. Total weight — 900 tons. Two ventilation blowers — one for starboard pump room and one for port pump room. 4' keel blocks full length included.

Artist's Conception



For additional information and quotations please contact: Stan Rosenfeld or Andy Canulette Marine and Industrial Sales Division of:

**Z**  
**E**  
**ZIDELL**

**ZIDELL EXPLORATIONS, INC.**

3121 S.W. Moody Ave., Portland, Or. 97201

Phone: 503/228-8691 Telex: 36-0503 Cable "Zidell"



# SHIPBOARD EQUIPMENT

From

## ZIDELL

EXPLORATIONS  
INC.

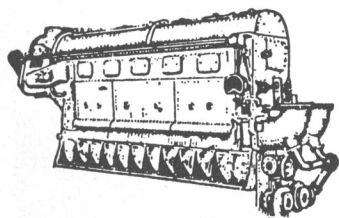
Contact: Hugh Sturdivant

3121 S.W. Moody Ave., Portland, Ore. 97201

Telex: 36-0503 • Cable "ZIDELL"

PHONE: A/C 503 • 228-8691

### MARINE DIESEL ENGINES



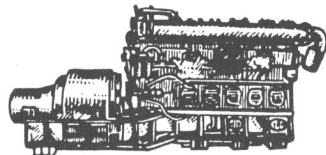
**MATCHED PAIR . . . FAIRBANKS-MORSE Model 38D8-1/2** — 1 Port; 1 Starboard. Used condition, 1800 HP, 800 RPM, 2 cycle, 8 1/2" bore, 10" stroke, Air Start.. Complete with Westinghouse Reduction Gears, 2.216:1 ratio —with Hydraulic Coupling.

### MARINE DIESEL GENERATORS

4—COOPER - BESSEMER, Marine . . . Model FSN 6, 6 cylinders, 375 HP, 900 RPM with General Electric generators, 250 KW 440/3/60.

2—SUPERIOR Diesel Engines . . . Model GBD8 Marine, 150 HP, 1200 RPM, 8 cylinder, with Delco Generators, 100 KW, 120/240 DC.

4—GENERAL MOTORS, Model 3-268A, marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generators, 450/3/60.



3—GENERAL MOTORS, Model 3-268A, Marine, 150 HP, 1200 RPM, 3 cylinders, with Allis-Chalmers Generators, 100 KW, 120/240 DC.

Many other units in stock

### TURBINE GENERATORS—AC and DC Voltage

#### A. C.

4 — 1250 KW, GENERAL ELECTRIC Turbines: Type FSN, 525 PSI, 7938 RPM. Generators: 1250 KW, 450/3/60, 3600 RPM, Type ABT2.

7 — 750 KW, GENERAL ELECTRIC Turbines: Type FN3-FN24, 525 PSI, 10,033 RPM. Generators: 750 KW, 450/3/60, 1200 RPM, Type ATI.

2 — 500 KW, GENERAL ELECTRIC Turbines: Type FN3-FN20, steam 375/425 PSI, 6 Stage, 9987 RPM. Generators: 500 KW, 450/3/60, 1200 RPM, Type ATI.

#### 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.

1 — 300 KW, ALLIS-CHALMERS Turbine, 440 PSI, 470 HP, 8000 RPM, with Allis-Chalmers Generator, 300 KW, 240/240 Volts DC, Type HO, 1200 RPM.

1 — 250 KW, DE LAVAL Turbine, 440 PSI, 360 HP, 10,000 RPM, with Crocker-Wheeler Generator, 250 KW, 240/120 Volts DC, Type CCD, 1200 RPM.

12 — 60 KW, WESTINGHOUSE Turbines, 89.4 HP, 200 PSI, 7283 RPM, Type M-20-EH, with Westinghouse Generators, 60 KW, 120 Volts DC, 1800 RPM.

DELAVAL, 450 PSI, 750°F, 300 KW, 120/240 DC.

**FAST REPLIES  
ON YOUR  
INQUIRIES!**



A partial  
listing of our  
stock from  
**EX-NAVY and  
MARITIME VESSELS**

Certifications to A.B.S.  
or Lloyd's a routine

**SEE OUR 2-PAGE  
SPREAD IN  
ALTERNATE  
ISSUES OF  
M.R.**



Rebuilt  
and Guaranteed

### AXIAL FLOW FANS

LaDel, Sturtevant, etc.

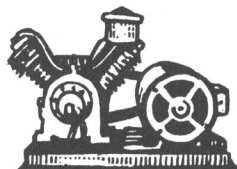
In 440 AC, in 115 DC, and in 230 DC, and in sizes 1 HP through 20 HP. Completely reconditioned.

#### EXAMPLE LISTING:

Size A 1/4	Size A3	Size A8
Size A 1/2	Size A4	Size A10
Size A1	Size A5	Size A12
Size A2	Size A6	Size A16

### Electro-Mechanical STEERING GEAR

1—SPERRY No. 2, 5 HP, 230 Volts DC, complete with Steering Winch, Controller Panel, Ballast Resistor, Electro-Mechanical Steering Stand—with Steering Wheel (with Pull-out Knob).



### AIR COMPRESSORS

1—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5 3/4 x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

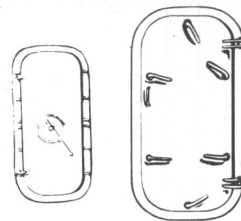
3—INGERSOLL - RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

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

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

### STEEL WATERTIGHT DOORS

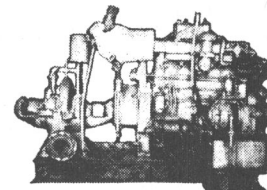
Used, Good  
Condition,  
Trimmed  
Frames.



Many sizes available, priced reasonable. Some Typical Prices shown below. Please Inquire for other sizes.

26"x48"-4 Dogs  
26"x57"-6 Dogs  
26"x60"-4 Dogs, 6 Dogs  
26"x66"-6 Dogs, 8 Dogs  
26"x66"-Q.A. Type

### FIRE PUMPS



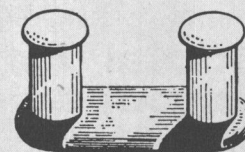
2—BUDA, Model 6-LD-468, Diesel Engine 6 cylinders, 100 BHP, Marine, Gardner Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280' head, 6 suction and 5" discharge.

### HYDRAULIC CYLINDERS

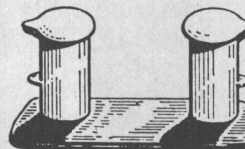


Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
10"	12"	3.75"	45 1/2"	double
10"	26"	3.75"	58 1/2"	double
2"	8"	1 1/2"	20"	double
2.5"	15"	1.12"	25 1/2"	double
3"	8"	1.37"	15 1/2"	double
6"	8"	4"	144"	double

### DOUBLE BITS



STYLE A



STYLE B

Used, clean, good, suitable for reuse. Predominantly 12" and 14" sizes, 2 styles. Many other sizes in stock, ranging from 6" to 18".

Specify quantity, size and style required for fast quotation.

### ANCHOR CHAINS USED - GOOD



1 3/8" Size	2 1/4" Size
1 1/2" Size	2 3/8" Size
2 1/8" Size	

FOR MARINE VALVES AND FITTINGS: A/C 503, 228-8691, ASK FOR "VALVE DIVISION."

FOR ELECTRICAL EQUIPMENT: A/C 503, 228-8691, ASK FOR "ELECTRICAL DIVISION."



## DEPENDABLE

20 KW GM 2-71 & 30 KW GM 3-71

# RADIATOR COOLED DIESEL GENERATOR SETS

**SAVE OVER 50% OF NEW COST!**



Mounted on steel sub-base with radiator

Don't miss this chance at big savings on these world-famous generator sets. Priced in running condition, they may be inspected at your convenience either in Argentine, Kansas (prior to removal) or in Baltimore, Maryland upon arrival.

**DIMENSIONS:**

**20 KW** 71" Overall length; 50" Overall height; 33" Overall width. Weight about 2200 lbs.

**30 KW** 83" Overall length; 46" Overall height; 33" Overall width. Weight about 3500 lbs.

**SPECIFICATIONS:**

**10-WIRE CAPABILITY: CAN BE RECONNECTED FOR OTHER VOLTAGES.**

**2-71**  
220/3/60 Delco or equal generators — 1200 RPM.

**3-71**  
220/3/60 Delco or equal generators — 1200 RPM.

GM 2-71  
**\$3750**

GM 3-71  
**\$4450**

F.O.B. Baltimore

**Special Quantity Discounts**

on AS-IS purchases made at point of origin, Argentine, Kansas, prior to removal to our Baltimore, Md. warehouse.

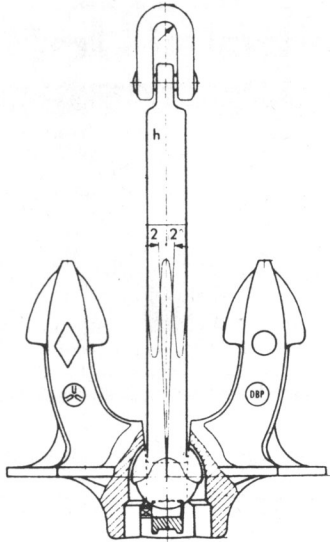
**THE BOSTON METALS CO.**

313 E. Baltimore St. — Baltimore, Md. U.S.A. 21202

PHONE: (301) 752-1077 TWX 710-234-1637

CABLE: BOSIRON — BALTIMORE, MD. U.S.A.

## LARGE STOCKLESS ANCHORS



**FOR SHIPBOARD, CONSTRUCTION AND MOORING USE.**

1 Each available in the following Sizes

29,908 LBS	33,456 LBS
28,277 LBS	32,531 LBS
28,894 LBS	32,751 LBS

**THE BOSTON METALS COMPANY**

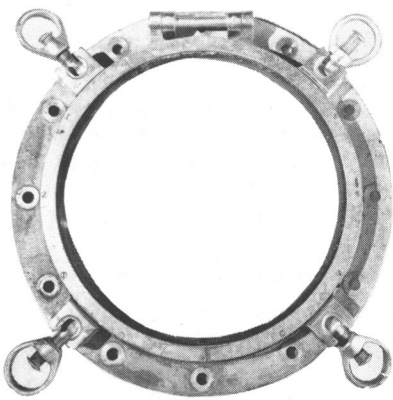
313 E. Baltimore St.  
539-1900

Baltimore, Md. 21202  
(301)

752-1077

## 16" MARINE 4-DOG PORTLIGHTS

**CLEAN BRIGHT BRASS**  
all paint removed



Recently carefully hand removed from ocean vessels. Suitable for re-use on shipyard conversions or for marine ornamental use. Heavy marine standard glass . . . clear or can be furnished frosted for use in special locations. Have 1/2" spigots—depth over dogs 7"—overall diameter from 20 1/2" to 22 1/2". Bolt circle approx. 19 1/2"—12 holes—3/8"—width of flange about 2"—62 lbs. Because each ship varies somewhat in portlight dimensions, all above dimensions are approximate.

**THE BOSTON METALS COMPANY**

313 E. Baltimore St.  
539-1900

Baltimore, Md. 21202  
(301)

752-1077

## FOR SALE

### NEW WATERTIGHT DOORS

With Stainless Steel Dogs



6-Dog right and left hand hinged doors with frames. Constructed of 1/4" steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed.

**SIZE**

26"x48"	26"x66"
26"x60"	30"x60"

EACH DOOR

**IMMEDIATE DELIVERY**



**NEW 7" RADIUS PANAMA CHOCKS**  
(MEET PANAMA REGULATIONS)

With extended legs for welding to deck. 14" Wide on base—length 28"—height 27 1/4". IMMEDIATE DELIVERY FROM STOCK.

**THE BOSTON METALS COMPANY**

313 E. Baltimore St.  
539-1900

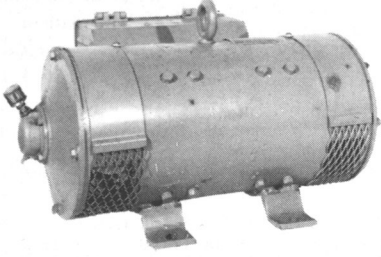
Baltimore, Md. 21202  
(301)

752-1077

## NEW — UNUSED

### M. G. SETS

**FOR GENERAL RADIO AND ELECTRONICS USE**



**1/4 KVA OUTPUT**

MOTOR: 120 volts DC — 4.6 amps .65 HP 1800 RPM. GENERATOR: .25 KVA — 115 volts — 1 phase — 60 cycles — 2.17 amps — .85 PF. 2-Bearing ball-bearing — class B insulation. With radio noise filters. Built by Safety Car Lighting Co. for U.S. Navy. Type CAG-211260 BUSHIPS. Wt. 200 lbs. OAL 22 5/8" — OAW 15 1/2" (including noise filter) — OAH 13 5/16".

**\$169 50 each**

**THE BOSTON METALS COMPANY**

313 E. Baltimore St.  
539-1900

Baltimore, Md. 21202  
(301)

752-1077



# BUYERS DIRECTORY

## AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION

Adrick Cooling Corp., 30 B. Remington Blvd., Ronkonkoma, N.Y. 11779  
 Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231  
 Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 19523  
 Way-Wolff Associates Inc., 45-10 Vernon Blvd., Long Island City, N.Y. 11101

## BATTERIES

Soft Corp of America, Industrial Battery Div., 402 Myrtle Ave., Boonton, N.J. 07005

## BEARINGS—Rubber, Metallic, Non-Metallic

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062  
 Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309  
 Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850  
 Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

## BLASTING—Cleaning—Equipment

Atlantic Sandblasting & Coatings, Inc., 505 Faulkenburg Road, Tampa, Florida 33619  
 Clemco Industries, 2177 Jerrold Ave., San Francisco, Ca. 94124  
 Complete Abrasive Blasting Systems, 18250 68th Avenue South, Kent, WA 98031

## BOILERS

Combustion Engineering, Inc., Windsor, Connecticut 06095  
 Indeck Power Equipment Co., 1075 Noel Ave., Wheeling, Ill. 60090  
 Way-Wolff Associates Inc., 45-10 Vernon Blvd., Long Island City, N.Y. 11101

## BOW THRUSTERS

Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081  
 Omnithruster Inc., 10880 Wilshire Blvd., Suite 614, Los Angeles, CA 90024  
 Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166

## BROKERS

Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153  
 Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004  
 Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006  
 Riggs Marine Corp., 29 Broadway, New York, N.Y. 10006

## BUNKERING SERVICE

Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

## CABLE—Electrical

Seacoast Electrical Supply Corp., 225 Passaic St., Passaic, N.J. 07055

## CARGO TRANSFER & ACCESS EQUIPMENT

MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

## CHOCKING SYSTEMS

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

## CLOCKS

Wempe Chronometerwerke Germany, Stubbenhulk 25 2000 Hamburg 11, Germany

## COILS—Cooling, Heating, Ventilating

Colmac Coil, Inc., Colville, Wash. 99114

## CONTAINERS—Cargo Container Handling

Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

## CONTAINER LASHINGS & COMPONENTS

Line Fast Corp., 805 Grundy Ave., Holbrook, N.Y. 11741

## CONTROL SYSTEMS

Automated Marine Systems Division, Litton Systems Canada Limited, 21101 Oxnard St., Woodland Hills, CA 91364  
 Delaval Turbine Inc., (Gems Sensors Div.) Spring Lane, Farmington, Conn. 06032  
 Foxboro Marine Operations, P.O. Box 435, Burlington, Mass. 01803  
 Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913  
 Marine Electric RPD Inc., 166 National Road, Edison, N.J. 08817  
 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

## CORROSION CONTROL

Carboline Co., Marine Div., 350 Hanley Industrial Court, St. Louis, Mo. 63144

## CRANES—HOISTS—DERRICKS—WHIRLEYS

Clyde Iron, a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702  
 Diamond Manufacturing Co., P.O. Box 608, Savannah, Ga. 31402  
 AB Hagglund & Soner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523  
 M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07087  
 Marathon LeTourneau Company, P.O. Box 2307, Longview, Texas 75601  
 Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

## DECK COATINGS—Non-Slip

O'Neill Company Inc., 5515 Belair Road, Baltimore, Md. 21206

## DECK COVERS—Chain Pipe

Lockstad Co., Inc., 179 West 5th Street, Bayonne, N.J. 07002  
 MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016  
 Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696  
 Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

## DECK MACHINERY—Cargo Handling Equipment

AB Hagglund & Soner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523  
 Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134  
 New England Trawler Equipment Co., 291 Eastern Ave., Chelsea, Mass. 02150

## DIESEL ACCESSORIES

Controls, Inc., 2655 U.S. Rt. 22, Union, N.J. 07083  
 General Thermodynamics Corporation, 150 Ballardvale St., Wilmington, Mass. 01887

## DIESEL ENGINES

Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021  
 Burmeister & Wain, One State Street Plaza, New York, N.Y. 10004  
 Caterpillar Tractor Co., Industrial Division, Peoria, Ill. 61629  
 Electro-Motive Division General Motors, La Grange, Illinois 60525  
 Golden Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231  
 Indeck Power Equipment Co., 1075 Noel Ave., Wheeling, Ill. 60090  
 M.A.N. AG Werke Augsburg Postfach 10 00 80 D-8900 Augsburg 1 Germany  
 Mitsui Engineering & Shipbuilding Co. Ltd., 6-4 Tsukiji, 5-chome, Chuo Ku, Tokyo, Japan  
 MTU/Motoren-und Turbinen-Union, Friedrichshafen GmbH, P.O. Box 2040, D-7990 Friedrichshafen, W. Germany  
 Oosterhuis Industries Inc., 1800 Engineers Road, Belle Chasse, La. 70037  
 Power & Propulsion Systems, Inc., 9821 Katy Freeway, Houston, Texas 77024

## DIVERS

International Underwater Contractors Inc., 222 Fordham Street, City Island, New York 10464  
 RMP Marine Services, Inc., Pier D, Berth 34, Long Beach, Calif. 90802 — Norfolk, VA, Houston, TX, Honolulu, HA  
 Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706

## DOCK BUILDERS

DeLong Corporation, 29 Broadway, New York, N.Y. 10006  
 GHH Sterkrade, Ferrostaal Overseas Corp., 17 Battery Place, New York, N.Y. 10004

## DOORS—Watertight—Joiner

Walz & Krenzer Inc., 400 Trabold Road, Rochester, N.Y. 14624

## EDUCTORS

Vita Motivator Co., 200 West 20th Street, New York, N.Y. 10011

## ELECTRICAL EQUIPMENT

Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013  
 Marine Industrial Products Co., 1275 Bloomfield Ave., Fairfield, N.J. 07006  
 Merrin Electric, 1120 Clinton Street, Hoboken, N. J. 07030  
 Midland Ross Corp., Electrical Products Div., P.O. Box 1548, Pittsburgh, Pa. 15230  
 Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014  
 Port Electric Supply, 157 Perry Street, N.Y., N.Y. 10014  
 Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

## EQUIPMENT—Marine

Alexander Industries, Inc., 1901 Julia Street, New Orleans, LA 70113  
 Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013  
 Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014  
 Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550  
 Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080  
 Merrin Electric, 1120 Clinton Street, Hoboken, N.J. 07030  
 Peck Equipment Co., 3500 Elm Avenue, Portsmouth, Va. 23704  
 Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

## EVAPORATORS

Riley-Beard, Inc., P.O. Box 1115, Shreveport, La. 71130

## EXPANDED METALS

Niles Expanded Metals Inc., 700 North Pleasant Ave., Niles, Ohio 44446

## FANS—VENTILATORS

Coppus Engineering Corp., 344 Park Avenue, Worcester, Mass. 01610  
 Dasic International Corp., 1035 Southeast Ninth Street, Portland, OR 97214  
 Merrin Electric, 1120 Clinton Street, Hoboken, N.J. 07030  
 Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

## FENDERING SYSTEMS—Dock & Vessel

Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004  
 Johnson Rubber Co. (Marine Div), 16025 Johnson St., Middlefield, Ohio 44062  
 Morse Chain Company, Div. Borg Warner, So. Aurora St., Ithaca, N.Y. 14850

## FINANCING—Leasing

General Electric Credit Corp., P.O. Box 8300, Stamford, Conn. 06904  
 Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005  
 Lehman Brothers Inc., One Williams Street, New York, N.Y. 10004

## FITTINGS & HARDWARE

Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207  
 Superior Switchboard & Devices, Division of Union Metal Manufacturing Company, P.O. Box 590, Canton, Ohio 44701

## FURNITURE

Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231

## GANGWAYS

Rampmaster Inc., 1226 N.W. 23rd Ave., Fort Lauderdale, Fla. 33311

## HULL CLEANING

East Coast Marine Associates, Inc., 80 Broad Street, New York, N.Y. 10004  
 MP Industries Inc., 1200 Ponca St., Baltimore, Md. 21224  
 Phosmarin Equipement (Phocenne Sous-Marine S.A.), 21 Boulevard de Paris, 13002 Marseille, France  
 RMP Marine Services, Inc., Pier D, Berth 34, Long Beach, Calif. 90802 — Norfolk, VA, Houston, TX, Honolulu, HA

## HYDRAULIC POWER

Abex Corp., Denison Div., 1160 Dublin Rd., Columbus, Ohio 43216

## INERT GAS—Generators—Systems

Airfilco Engineering, Inc., 1901 Julia St., New Orleans, La. 70113

## INSULATION—Cloth, Fiberglass

Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

## INSURANCE

Adams & Porter, 1819 St. James Place, Houston, Texas 77027  
 Adams & Porter, 5 World Trade Center, Suite 6433, New York, N.Y. 10048  
 R.B. Jones Insurance, 911 Main St., Kansas City, MO 64199  
 R.B. Jones Insurance, 120 S. Central Ave., St. Louis, MO 63105  
 R.B. Jones Insurance, 160 Water St., New York, N.Y. 10038  
 Marsh & McLennan Inc., 1221 Ave. of the Americas, New York, N.Y. 10020

## KEEL COOLERS

Johnson Rubber Co. (Marine Div), 16025 Johnson St., Middlefield, Ohio 44062

## LADDERS

Duo-Safety Ladder Co., 513 West 9th Ave., P.O. Box 497, Oshkosh, Wisc. 54901

## LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights

ACR Electronics, Inc., 3901 North 29th Avenue, Hollywood, Fla. 33020  
 Automatic Power Inc., 213 Hutchinson Street, Houston, Texas 77003  
 Midland Ross Corp., Electrical Prod. Div., P.O. Box 1548, Pittsburgh, Pa. 15230  
 Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014  
 Perko Inc., P.O. Box 6400D, Miami, Florida 33164  
 Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014  
 Tideland Signal Corp., P.O. Box 52430, Houston, Texas 77052

## MACHINE TOOLS

Master Machine Tools, Inc., 1300 East Avenue A, Hutchinson, Kansas 67501

## MARINE MACHINERY REPAIR

Worthington Service Corp., 233 Mount Airy Road, Basking Ridge, N.J. 07920

## MARINE VALVES—Manhole Covers Gauge Hatches

J.M. Huber Corp., P.O. Box 2831, Borger, Texas 79007

## MOORING SYSTEMS

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

## NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., Suite 500, 2341 Jefferson Davis Highway, Arlington, Va. 22202  
 Alpha Engineers, 7215 N.E. 13th Ave., Vancouver, Wash. 98665  
 American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004  
 Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015  
 Anchorage Marine Services Incorporated, 844 Biscayne Boulevard, Miami, Florida 33132  
 J.L. Blutworth, P.O. Box 5217, Houston, Texas 77012  
 Boquer & Associates, P.O. Box 30184, New Orleans, La. 70190  
 Breit & Garcia, Naval Architects, 441 Gravier St., New Orleans, La. 70130  
 CADCOM Inc., 2024 West St., Suite B, Annapolis, Md. 21401

R.A.CADY-Marine Survey Practice, 2301 Leroy Stevens Road, Mobile, Ala. 36609

Catalina National, Inc., 1725 Monrovia Ave. (Suite A4), Costa Mesa, CA 92627

C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., Jacksonville, Florida 32211

Childs Engineering Corp., Box 333, Medfield, Mass. 02052  
 Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517

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

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

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

C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048

Daniel Yacht & Ship Brokerage Ltd., 1861 S.E. 17th St., Suite 206, Ft. Lauderdale, Fla. 33316

Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119

Designers & Planners Inc., One State Street Plaza, New York, N.Y. 10004

M. Mack Earle, 103 Mellor Ave., Baltimore, Md. 21228

Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034

Christopher J. Foster, Inc., 14 Vanderventer Ave., Port Washington, N.Y. 11050

Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112

Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006

John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110

Arthur A. Grant & Son, Inc., 1745 First National Bank of Commerce Bldg., New Orleans, La. 70112

Phillip Gresser & Associates (PTE) Ltd., 122 Eng Neo Ave., Singapore 11

Morris Guralnick Associates, Inc., 550 Kearny Street, San Francisco, Calif. 94108

J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048

HydraNautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810

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

James S. Kroger & Co., Inc., 3333 Rice St., Miami, Fla. 33133

Littleton Research and Engr. Corp., 95 Russell St., Littleton, Mass. 01460

Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567

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

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

Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106

Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225

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

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

Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742

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

Proto-Power Management Corporation, P.O. Box 494, Mystic, Conn. 06355

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

Schmahl and Schmahl, 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 Maritime 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

Uhlig & Associates, Inc., 8295 S.W. 188th St., Miami, Florida 33157

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

ACR Electronics, Inc., 3901 North 29th Avenue, Hollywood, Fla. 33020

American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526

Anschuetz of America, 444 5th Ave., New York, N.Y. 10018

Automated Marine Systems Division, Litton Systems Canada Limited, 21101 Oxnard St., Woodland Hills, CA 91364

Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746

Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024



## BUYERS DIRECTORY (continued)

### OIL PURIFIERS—Separators

Goldten 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

Carboline Co., Marine Div., 350 Hanley Industrial Court, St. Louis, Mo. 63144  
Devco & 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  
Petterson 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 Mamaronck 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., Elmsford, 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., Elmsford, N.Y. 19523

### RIGGING & BLOCKS

Superior Switchboard & Devices, Division of Union Metal Manufacturing Company, P.O. Box 590, Canton, Ohio 44701  
D. Van Beest En Zn.B.V., P.O. Box 57, Merwestraat 1-5, Slidrecht, The Netherlands

### ROPE—Manila—Nylon—Hawser—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 Larv 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  
Zidell 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  
Blohm + 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  
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 Corporation, One Oliver Plaza, Pittsburgh, Pa. 15222  
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  
Gladding-Hearn Shipbuilding Corporation, 1 Riverside Avenue, Somerset, Mass. 02725  
Granges Repair Service GmbH, P.O. Box 3166, Gutenbergring 64, D-2000 Hamburg-Norderstedt Germany  
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126  
Harland & Wolff Shipbuilding & Engineering, Queens Island, Belfast, Northern Ireland  
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 Mipo Dockyard Co., Ltd., 456 Cheonha-dong, Ulsan, Korea  
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, Kutsu-Ku, Kobe, Japan  
Kockums Shipyard, S-201, 10 Malmo 1, Sweden  
Lantana Boatyard, Inc., 808 N. Dixie Hwy., Lantana, Fla. 33460  
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  
Neorion Shipyards Syros, Ltd., Syros, Greece  
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  
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan  
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402  
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27  
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  
Terrin Shipyards, Societe Provencale des Ateliers Terrin, 287, Chemin DeLa Madrague, 13345 Marseille—Cedex 3, France  
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

### SHIP STABILIZERS

Pacific Marine Products, Inc., P.O. Box 11, Kenmore, Wa. 98028  
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

### SHOCK CORDS

Wm. B. Bliss Inc., 381 Park Ave. So., New York, N.Y. 10016

### SMOKE INDICATORS

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

### STUFFING BOXES

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

### SURVEYORS AND CONSULTANTS

Hull & Cargo Surveyors Inc., 59 John St., New York, N.Y. 10038

### TANK CLEANING

Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932  
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

### TANK LEVELING INDICATORS

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

### TERMINALS—Oil-Transfer

DeLong Corporation, 29 Broadway, New York, N.Y. 10006  
Transportation Concepts & Techniques, Inc., 551 Fifth Avenue, New York, N.Y. 10017

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

Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002  
Chofin Transportation, Inc., 1414 One Shell Square, New Orleans, La. 70139  
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  
Turecamo Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305  
B.V. Bureau Wijsmuller, Postbus 510, Ijmuiden, Holland

### TURBINES

Nicolai Joffe Corp., P.O. Box 2445, South San Francisco, CA 94080

### UNDERWATER SERVICES

International Underwater Contractors Inc., 222 Fordham Street, City Island, New York, N.Y. 10464  
Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706

### VACUUM RECOVERY SYSTEMS

Key Houston Division, Jacksonville Shipyards, Inc., 13911 Atlantic Boulevard, Jacksonville, Fla. 32225

### VALVES AND FITTINGS

American-Darling Valve, Div. of American Cast Iron Pipe Co., P.O. Box 2727, Birmingham, Ala. 35202  
Contramatics Div., Litton Industrial Products, Inc., 222 Roberts St., East Hartford, CT 06108  
Demco, Inc., P.O. Box 94700, Oklahoma City, Okla. 73109  
Dover Corporation/Norris Division, P.O. Box 1739, Tulsa, Oklahoma 74101  
Leslie Company, 399 Jefferson Road, Parsippany, N.J. 07054  
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696  
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027  
Stow Manufacturing Co., 86 Bump Road, Binghamton, N.Y. 13902  
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928  
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186

### WATER PURIFIERS

Everpure Inc., 600 North Blackhawk Drive, Westmond, Ill. 60559

### WEATHER FORECASTS

Fleetweather, Orbit Lane, Hopewell Junction, N.Y. 12533

### WINCHES

Clyde Iron, a unit of AMCA International Corp., Suite 200/Stockton Bldg., University Office Plaza, Newark, Del. 19702  
Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134  
Victoria Machine Works, P.O. Box 1939, Victoria, TX 77901

### WINDOWS

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

### WIRE AND CABLE

Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076  
Elkan Electric Cable Co., 248 Third St., Elizabeth, N.J. 07206

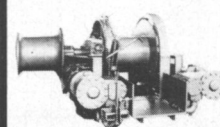
### WIRE ROPE—Slings

Arco Steel Corp., 703 Curtis St., Middletown, Ohio 45042  
Bethlehem Steel Corp., Bethlehem, Pa. 18016

### ZINC

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

## STEAM MOORING WINCHES 12" x 14" — AUTOMATIC TENSIONING with foot brake & declutchable gypsy head



CAPACITY: 20,000 lbs at 100 FPM  
—first layer; 16,000 lbs at 150 FPM. Drum will show 1500 feet of 1½" wire in 9 layers. Steam inlet 3½"—4" exhaust. Base dimensions 6' x 6' 3½"—overall 8' 4½" wide x 9' long. Mfg by Friedrich Kocks—Bremen, Germany. Recently removed from ARCO "Challenger".

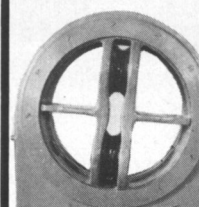
### ALSO IN STOCK

12" x 14" Double Gypsy Unit

ALL UNITS CAN BE DEMONSTRATED RUNNING

## THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202  
539-1900 (301) 752-1077



## 2 COMPLETE SETS MOORING CHOCKS

For 1½" wire. With mounting brackets for deck. With cable guide sheave not visible in photo. When they leave our plant, they are re-conditioned, ready for use. Mfg by Friedrich Kocks—from ex-ARCO "CHALLENGER".

## THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202  
539-1900 (301) 752-1077





# Only one type of material is accepted for a B&W spare part



## The right one...

Spare parts for diesel engines can be manufactured from different materials and in different ways.

Original B&W spare parts can only be manufactured in one way. That is, according to the demands and specifications laid down when the engine was designed and built, - and the careful choice of materials for every single part was made with respect for optimal efficiency and durability even under continuous hard stress.

Nothing is left to change in the manufacture and control of B&W spare parts.

And they are manufactured at the same place where

B&W engines have been built for more than 65 years.

This is why we give a 6 month B&W guarantee on original B&W spare parts.

B&W Marine Service produces and stocks original B&W-engine spare parts for the 5,000 ships powered by B&W engines.

A comforting thought.

## B&W Marine Service

### Spare Parts & Technical Service

2, Torvegade, DK 1449 Copenhagen K

Cables: BWMARINESERVICE Teleph.: 45-1-542501

**B & W Marine Service Centres:** • **AUSTRALIA**, Sydney, telex: 24830 bwserv • **BRAZIL**, Rio de Janeiro, telex: 2123699 burm br • **BENELUX**, Rotterdam, telex: 24334 bwnl • **DENMARK**, Copenhagen, Spare parts: Telex: 31 197 bwpart dk., Technical service: Telex: 31 151 bwserv dk., Purchase: Telex: 31 196 bwpurc dk., Forwarding: Telex: 19023 bwforw dk., 19042 bwforw dk. • **FRANCE**, Paris, telex: 290006 • **GREAT BRITAIN**, London, telex: 883124 bwolg • **GREECE**, Piraeus, telex: 212413 burw-gr • **HONG KONG**, telex: 65732 bwlok-hk • **INDIA**, Bombay, telex: 0115159 noverit, c/o Norske Veritas A/S • **JAPAN**, Kobe, telex: 5623-115 bwokj • **NORWAY**, Oslo, telex: 16612 bwain n • **PORTUGAL**, Lisbon, telex: 16478 catela p • **SINGAPORE**, Singapore, telex: rs-25181 bwserv • **SOUTH AFRICA**, Cape Town, telex: 57-7530 sa - Durban, telex: 6-4175 sa • **SPAIN**, Madrid, telex: 22819 burwa-e • **U.S.A.**, New Orleans, telex: 810-951-6167 bw marine nin - New York, telex: 42 1374 Burwain.

**B & W Authorized Repair Shops:** Australia, Bahrain, Belgium, Brazil, Canada, Curacao, Egypt, France, Germany, Greece, Holland, Hong Kong, India, Italy, Malta, New Zealand, Norway, Portugal, Singapore, South Africa, The Canary Islands, Taiwan, U.S.A.

### B&W Marine Service can also give you

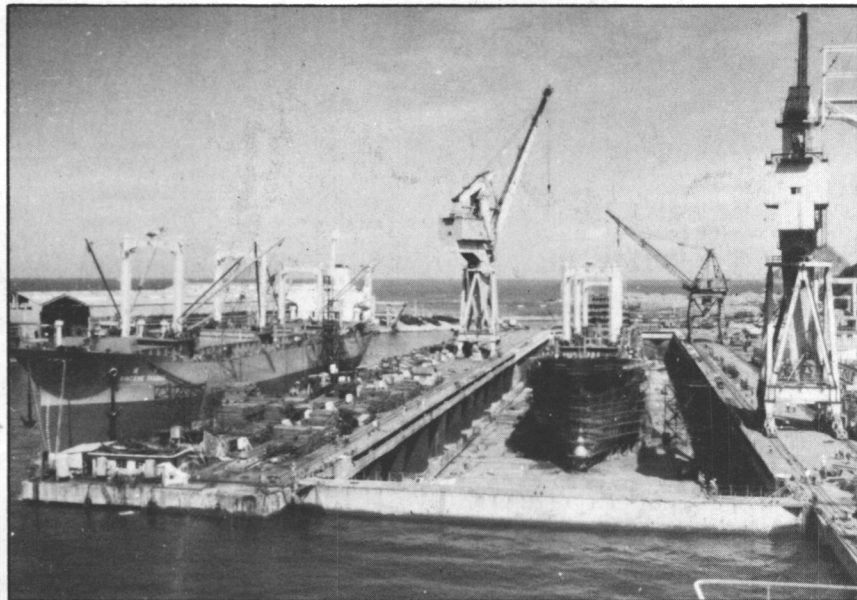
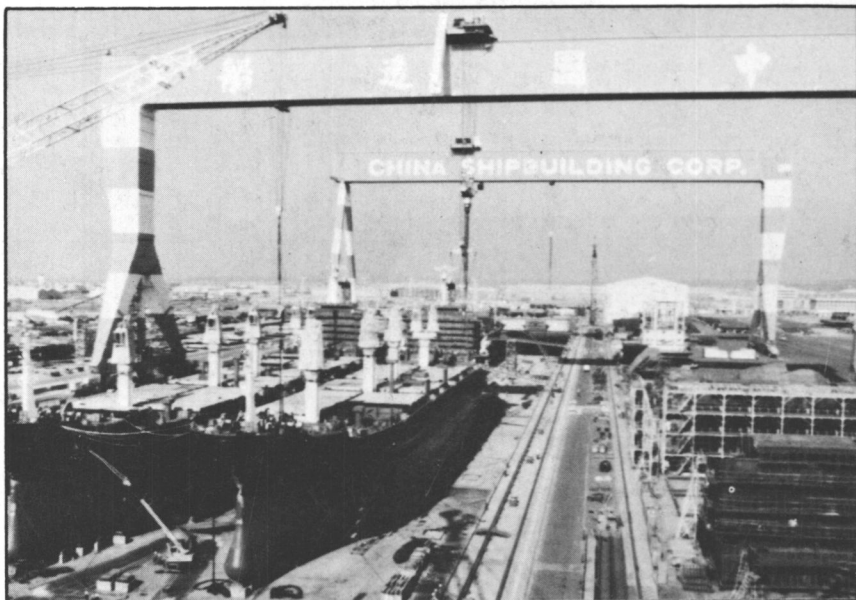
**MULTI SERVICE**  
Four modernization "kits" for your B&W engine.

**EXCHANGE SERVICE**  
Favourable trade-in arrangement for reconditioned components.

**CRANKSHAFT SERVICE**  
Complete maintenance and repair - carried out on board.







# CHINA SHIPBUILDING

## BUILDS THE FINEST SHIPS *for less money*

*China ShipBuilding quotations are surprisingly attractive*

Give China Shipbuilding the opportunity to quote on your next new ship. We have an enviable record for building the very finest vessels at substantially lower prices than those quoted by other shipyards.

China Shipbuilding offers the most efficient shipbuilding facilities incorporating the very latest techniques, developments, machinery and equipment...two complete yards...integrated complexes...more than thirty years experience...carefully planned from conception to completion for the fastest and most cost-efficient operation available anywhere.

There are over 8,000 highly skilled and experienced employees, including the very best and most experienced technical and design staff, at your disposal at China Shipbuilding. We will welcome the opportunity to be of service at any time.

- LARGEST SHIPBUILDING AND REPAIR FACILITY IN THE FAR EAST.
- 3 DRYDOCKS—TOTAL CAPACITY 1.16 MILLION TONS.
- OVER 100 SETS OF CRANES—CAPACITIES RANGING FROM 3 TONS TO 350 TONS.
- ONE OF THE WORLD'S LARGEST HULL CONSTRUCTION SHOPS—2,460 FT. LONG, 690 FT. WIDE, 1,130,000 SQ. FT.
- 8,000 EXPERIENCED EMPLOYEES, INCLUDING A COMPLETE TECHNICAL AND DESIGN STAFF.
- CURRENT NEW BUILDINGS—34 VESSELS—FROM A 150 DWT CUSTOMS BOAT UP TO A 447,000 DWT ULCC.

Write for full color brochures describing complete facilities and services available.



# CSBC

## CHINA SHIPBUILDING CORP.

6th Floor, Tai Tze Building, 20, Pa Teh Road, 3rd Section,  
Taipei (105), Taiwan, Republic of China,  
Tel: (02) 771-0181 (6 lines) • Telex: 11705 Taipei • Cable: CSHIPSCO, TAIPEI

U.S.A. REPRESENTATIVE—Allegro Transportation & Supply Corp.  
393 7th Ave. (Room 234) New York, N.Y. 10001  
Tel. (212) 868-3188 • Telex: 425375/WU 12-7867

