

MARITIME REPORTER AND ENGINEERING NEWS



'M/T Portland'

**Nichols Brothers Delivers
"Reverse Tractor" Tug
To Shaver Transportation**
(SEE PAGE 16)

JULY 1, 1981

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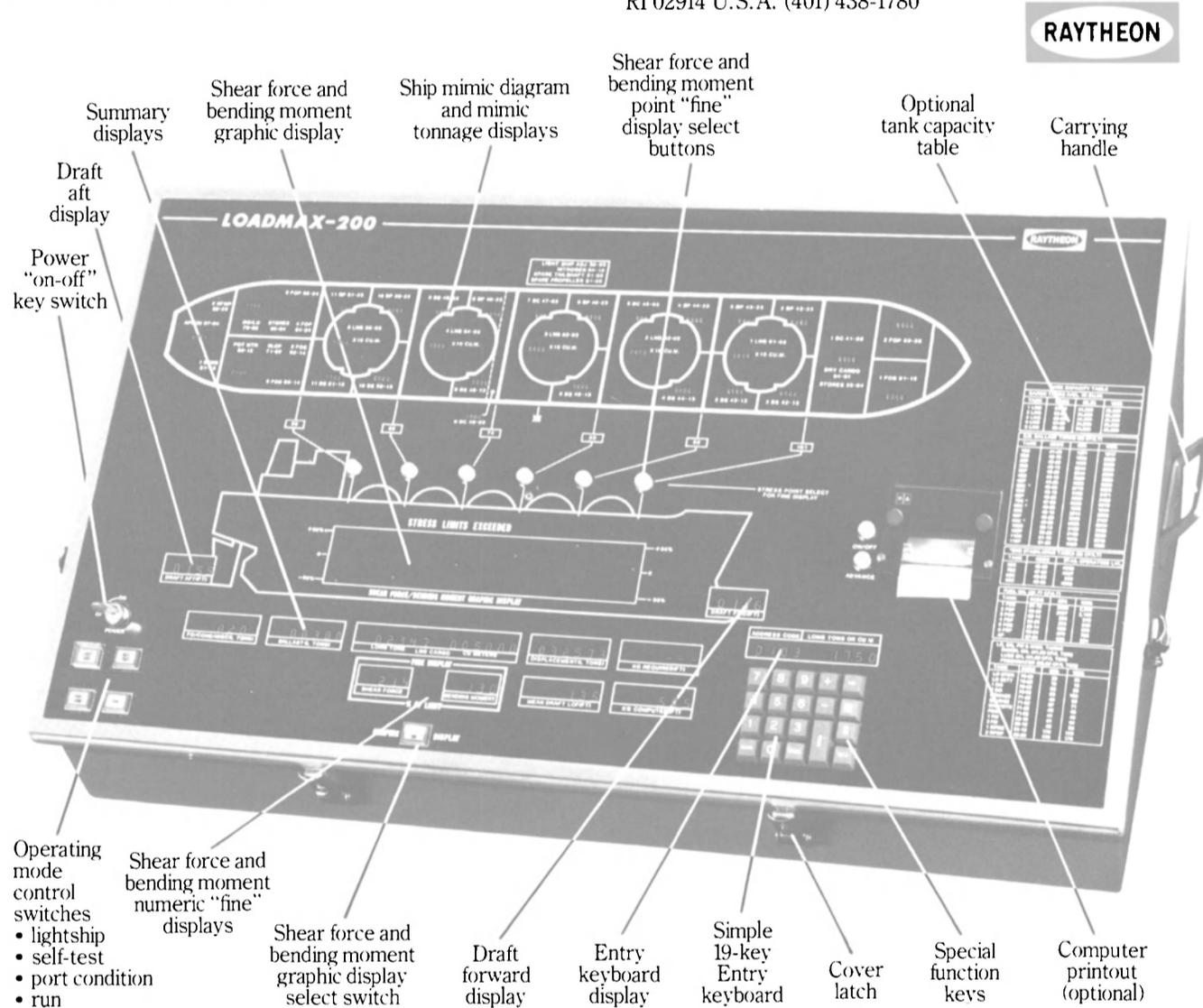
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ON THE COVER

—Special Report—

Shipboard Automation And Monitoring Systems

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—M/T Portland—

Nichols Brothers Delivers 'Reverse Tractor' Tug To Shaver Transportation

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Secretary Lewis Announces Plan To Transfer MarAd To DOT

Secretary of Transportation Drew Lewis announced recently an Administration plan to transfer the Maritime Administration from the Department of Commerce to the Department of Transportation.

"The transfer is the first step in carrying out President Reagan's commitment to revitalization of the U.S. maritime industry," Secretary Lewis said.

"I intend to work personally with the Maritime Administration to promote the President's goals for the development and progress of our marine commerce," the Secretary added.

The proposed shift has the concurrence of Secretary of Commerce Malcolm Baldrige. Secretary Lewis said he had been working closely with the Secretary of Commerce and with Samuel B. Nemirow, the current Assistant Secretary of Commerce for Maritime Affairs, in planning the transfer. The enabling legislation is being prepared for early submission to Congress.

Under the transfer plan, Secretary Lewis said U.S. export performance would be improved "through better coordination of the inland waterways and surface transportation systems, as well as port access and development, with the maritime industry."

The plan is a simple transfer, Secretary Lewis said. No changes in statutory functions would result from the proposed transfer. Rail, truck, air and waterborne

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commerce would be under a single Cabinet department—the plan envisioned when the Department of Transportation was established in 1967.

The Maritime Administration was created in 1950 to promote and sustain the U.S. ocean shipping industry. It assists the maritime industry in ship design and construction, in research and development and in market development.

President Reagan has called the maritime industry a "key contributor to our economic strength and security. Its continued growth and prosperity," he said, "are necessary to the economic renewal we all seek."

When the proposed transfer occurs, MarAd will be the eighth operational agency in the Department of Transportation, which already houses two other marine organizations—the United States Coast Guard and the St. Lawrence Seaway Development Corporation.

Work On Two Tankers At Northwest Marine Will Total Over \$7.8 Million

The Maritime Subsidy Board has determined the fair and reasonable price and construction-differential subsidy (CDS) rates for the reconstruction of two 89,700-deadweight-ton tankers, the Chestnut Hill and Kittanning, operated by Chestnut Shipping Co.

Northwest Marine Iron Works, Portland, Ore., will rebuild the ships at a cost of \$3,930,976 per vessel. This price includes \$308,605 worth of national defense features for each tanker.

The subsidy rate was set at 43.66 percent, or \$1,716,576 per vessel. This figure was based on an estimated foreign cost of \$2,214,400. A regional concept which combined Japan and Singapore as the representative shipbuilding center for the reconstruction work was used in estimating the foreign cost.

The work will include installation of inert gas and crude oil washing systems and the replacement of the vessels' cargo stripping pumps required by the 1978 Port and Tanker Safety Act.

The Chestnut Hill and Kittanning were built by National Steel & Shipbuilding Co., San Diego, Calif., in 1976 and 1977, respectively.

\$2.3 Million Awarded To SeaTec For Mooring And Pipeline Project

SeaTec International, Ltd., Gloucester, Mass., has been awarded a \$2.3-million turnkey project to install two 2,800 meter, 8-inch and 16-inch-diameter pipelines and a SOFEC four-buoy

CBM tanker mooring system at Probolinggo, Java, Indonesia.

The award came from Coutinho, Caro and Company, of Hamburg, West Germany, who are constructing a paper mill and sugar refinery for the P.T. Letjes Consortium. The mooring system will permit the transfer of fuel oil offshore and the pipeline will conduct oil to storage facilities located outside the mill.

SeaTec will perform the entire project on a turnkey basis, incorporating site survey, engineering, project management and installation of the pipeline and mooring terminal. The project is in progress and scheduled for completion by March of 1982.

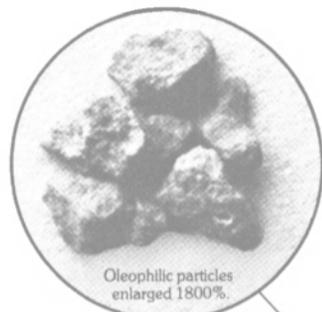
SeaTec International, Ltd. is a marine construction corporation with offices around the world.

\$23.4-Million Overhaul Contract To Todd Pacific

Todd Pacific Shipyards, Seattle, Wash., has been awarded a \$23,453,000 cost-plus-award-fee contract for repair and alterations regular overhaul of the destroyer USS Elliot (DD-967). The Naval Sea Systems Command is the contracting activity. (N00024-81-C-8500)

Oil/water separation made simple.

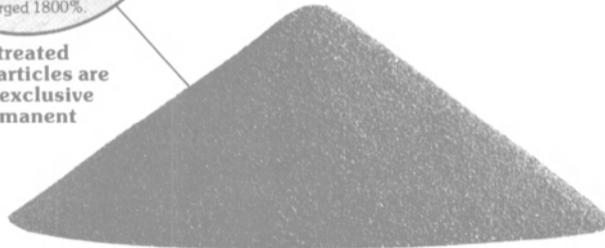
Model separator filter coalescer bilge water (SFC BW).



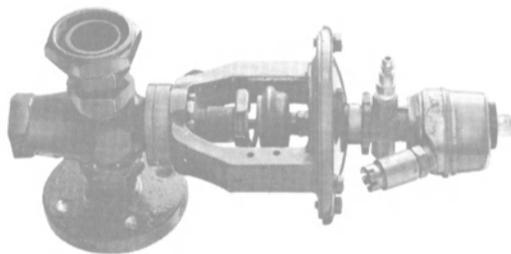
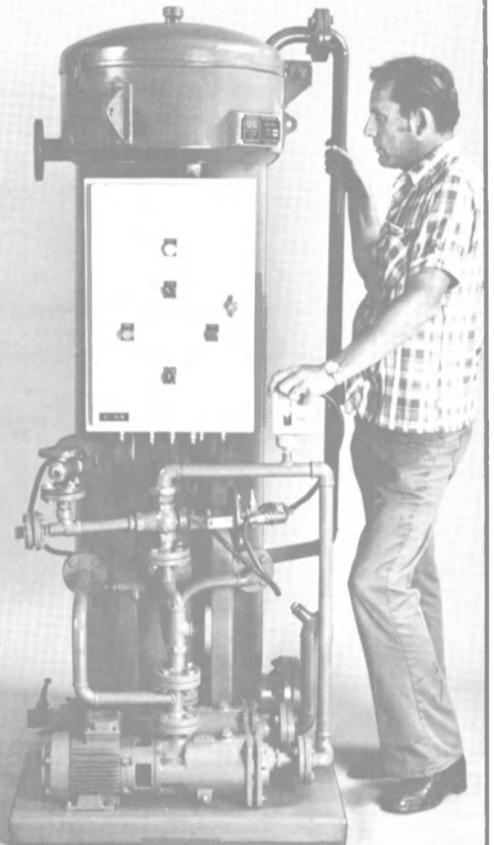
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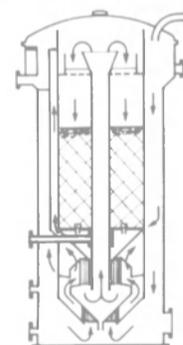
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**Cat Introduces New Family
Of High-Speed Diesels—
Product Bulletin Available**

Caterpillar Engine Division announces a new family of high-speed, heavy-duty diesel engines in the 800-1,600 bhp (600-1,200 kw) class. Designated the 3500 series, the engine family provides optimum value for a wide variety of high-horsepower applications.

The family will ultimately consist of V8, V12, and V16 models. The V12 (3512) is currently produced for limited distribution in the United States and Canada, with continuous and intermittent ratings of 1,055 bhp and 1,200 bhp (787 kw and 895 kw), respectively. Worldwide 3512 availability is anticipated during third quarter of 1981. Limited geographical distribution of the V8 (3508) is planned for fourth quar-

ter 1981. The V16 (3516) is similarly planned for 1982.

A 1.1-million-square-foot (102,000-square-meter) production facility is under construction in Lafayette, Ind., to manufacture the engine family. This facility will enter volume production over the next several years. During the interim, the 3500 Series engines will be manufactured at Caterpillar's Engine Complex, Mossville, Ill.

The 3500 Series is an additive to the current 300 Series engine. The latter will remain in the Caterpillar Engine product line to serve all customers and the company's own product needs.

The 3500 Series will be available in marine propulsion and large marine auxiliary configurations. Typical 3512 applications include workboats, fishboats, prime and standby power installations, oil well fracturing, dredges, and cranes.

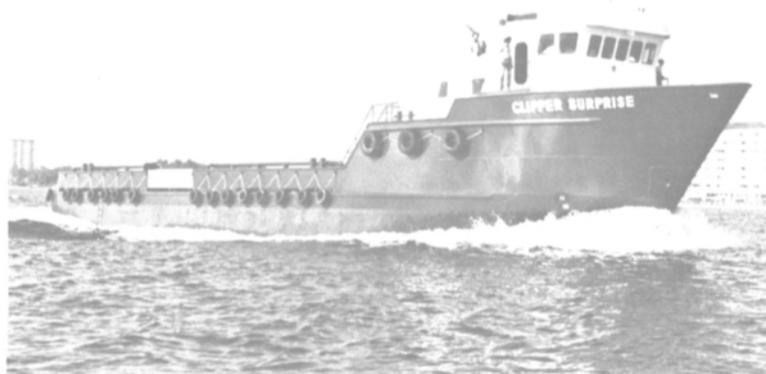
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**Bateman And Hendler
Get New Positions At
Matson Terminals**

Matson Terminals, Inc., has assigned Roger I. Bateman to the new position of vice president-administration, and appointed Dale B. Hendler controller. Mr. Hendler was formerly manager of internal audit for Matson Navigation company. B. Ray Evans, Matson Terminals president, announced the promotions.

Mr. Bateman, formerly vice president-controller, will be concerned primarily with administration of customer contracts and cost control efforts in his new assignment, Mr. Evans said. Mr. Hendler will be responsible for all accounting and budgetary matters. He joined Matson in 1980 after service as a senior accountant for Deloitte Haskins and Sells.

Matson Terminals, Inc., is a terminals and stevedoring subsidiary of Matson Navigation Company.

**Hartzell Appointed To
New Post At Armco
Southwestern Steel**



Richard L. Hartzell

Richard L. Hartzell has been appointed to the newly created position of assistant manager-technical services at Armco's Southwestern Steel Division. Mr. Hartzell's responsibilities will include technical assistance in selection, design, fabrication and welding of products of the division, a manufacturer of carbon and alloy steel plates, bars and shapes. He is located at the headquarters of Armco, Southwestern Steel Division, Houston, Texas.

NICOR Acquires Arthur Levy Enterprises And Offshore Island Boats

NICOR Inc. chairman and president C.J. Gauthier recently announced acquisition, with NICOR common stock, of two marine transportation companies — Arthur Levy Enterprises, Inc. and Offshore Island Boats, Inc. These two companies, along with Acadian Marine Service Inc., will operate as NICOR's offshore marine group. This acquisition will place the offshore marine group among the top 10 offshore service fleets in the world.

Both Levy Enterprises and Offshore Island Boats will operate 16 supply vessels from their Gulf of Mexico headquarters in Morgan City, La., providing logistical support to offshore oil and gas drilling rigs located in the U.S. Gulf of Mexico. Arthur I. Levy Sr., John Alcina, and Tim McKeand will remain as executives of the company. The current management will stay intact.

With this acquisition, NICOR subsidiary companies will operate a fleet of 30 special-purpose vessels serving the offshore oil and gas industry. Their activities include oceanographic and seismographic research, freight and container transportation, vessel chartering, and ocean towing in the U.S. and Mexican Gulf, Caribbean, and offshore West Africa.

"These acquisitions are consistent with plans to expand current marine interests, develop new markets, and encourage continued growth in the currently active offshore oil industry," said Mr. Gauthier.

Tony Varrell Named Datrex General Manager

Tony Varrell has recently been appointed general manager for Datrex, Inc., Miami, Fla., the Southeast's largest certified inspection and repair center and distributors of inflatable boats, life rafts and marine safety equipment.

"Mr. Varrell has been extremely instrumental in expanding our dealer network on local, regional and national levels," John Simonson, president of Datrex said.

Mr. Varrell, who joined Datrex more than two years ago, now coordinates internal customer relations and sales for both the Miami corporate headquarters and the Jacksonville branch office.

New Licensee In Japan For B&W Diesel Engines

Following negotiations between Kawasaki Heavy Industries, Ltd. and M.A.N.-B&W Diesel GmbH on behalf of B&W Diesel A/S, Copenhagen, a license agreement was signed recently authorizing the production of B&W two-stroke diesels in Japan by Kawasaki. The 10-year agreement includes all B&W two-stroke uni-

flow scavenged engines of the types K/L-GFCA and L/GB-GBE.

Three Japanese manufacturers will now be producing B&W two-stroke engines. In addition to Kawasaki, Mitsui Engineering and Shipbuilding Company, Ltd. and Hitachi Shipbuilding and Engineering Company, Ltd. are also B&W licensees.

In the Japanese market, B&W two-stroke engines have accounted for 50 percent of the engines ordered in the past two years.

Devoe Introduces New Rust Control Coating— Literature Available

New Bar-Rust is now available from Devoe Marine Coatings Company as an advanced cost-cutting, rust control coating for ballast tanks and void spaces. Bar-Rust is said to cut costs because it eliminates the need for costly blasting. It is recommended to be applied over tight rust. The new

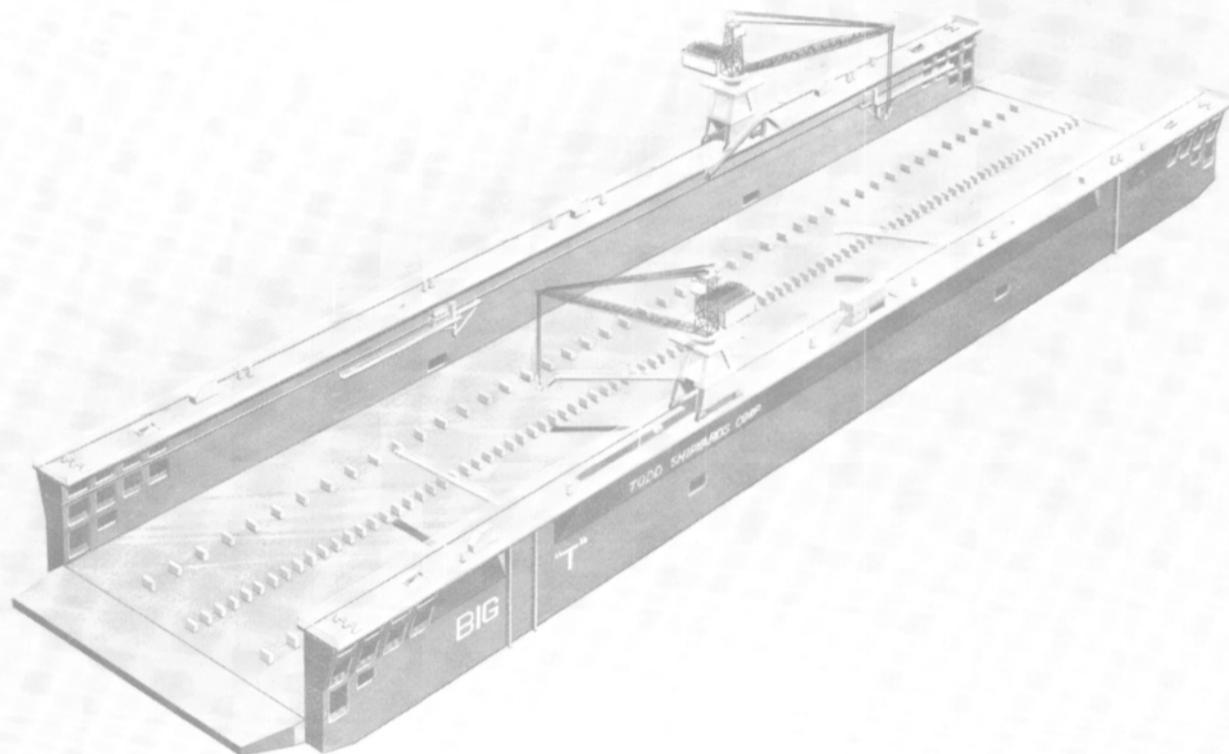
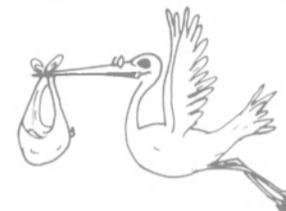
product is water-based, has no solvent fumes, is non-toxic, and will not burn.

Bar-Rust can be applied even over damp surfaces, cures hard rapidly, and is tolerant to humid conditions. It is a tough, light colored, permanent rust control coating that effectively converts rust into an additional protective barrier.

For more details and free literature on Bar-Rust,

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WE'RE EXPECTING A NEW ARRIVAL.



A new steel "super" dry dock will arrive at the Galveston Division of Todd Shipyards Corporation early in 1982, to service ships of almost all sizes and types including offshore drill rigs.

The new arrival will be 853 ft. long and 164 ft. between wingwalls, with a lifting capacity of approximately 40,000 tons for ships up to 225,000 dwt. It will be equipped with four travelling dock arms fitted for high pressure waterblasting; two wingwall cranes, each with 35 ton lifting capacity; and such pollution control features as oily water tanks, sewage treatment plant and a flush pontoon deck.

The huge dry dock, to be named "BIG T" and the largest in the Gulf area devoted exclusively to ship repair, will be ready to serve our customers in April of 1982.

Todd Shipyards Corporation, the largest independent shipbuilding and ship repair company in the United States, operates shipyards in or near Seattle, San Francisco, Los Angeles, Galveston, Houston, New Orleans and New York.



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H.A. Severn Jr. Appointed General Manager At Chesapeake Shipbuilding

Chesapeake Shipbuilding, Inc. recently announced the appointment of **H. Anthony Severn Jr.** as the company's general manager. Formerly with the Electric Boat Division of General Dynamics, Mr. Severn will be responsible for the overall supervision and coordination of the shipyard's operation.

Located in Salisbury, Md., Chesapeake Shipbuilding specializes in the construction of steel vessels up to 280 feet in length, and has the capability to perform major repairs and modification. The company is currently constructing the nation's largest coastal cruise ship.

In addition to construction and repair services, Chesapeake Shipbuilding also offers a full range of professional design and engineering services.

Sondgeroth Appointed VP For Consolidated Grain And Barge Co.



Dale Sondgeroth

Consolidated Grain and Barge Company, St. Louis, has announced the election of **Dale Sondgeroth** to the position of vice president. He joined Consolidated in 1971 as assistant terminal manager at Hennepin, Ill., followed by his promotion in 1974 to assistant barge operations manager, and manager of barge operations in 1976. In 1978, Mr. Sondgeroth was named sales manager, the position he held prior to his recent promotion.

New Product Bulletin Describes Biospherics' Oily Water Bilge Alarm

A new product bulletin is available that describes Biospherics' self-cleaning "Oilarm" oil-in-water bilge alarm. Factory set to trigger a set of Form C contacts at 15 ppm, the threshold is internally adjustable from 0 to 100 ppm of oil in water.

The on-line device samples the overboard discharge seven times per minute without the use of sampling lines, automatically cleaning the optical surface with each stroke of the sampling piston. Oilarm is the newest of a series of self-cleaning instruments manufactured by Biospherics Incorporated, Lanham, Md.

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TIW Industries And DMI Sign Agreement To Build Dredges In Canada

TIW Industries Ltd. of Toronto has signed an agreement with DredgeMasters International, Inc. (DMI) of Hendersonville, Tenn., to cover the manufacturing of portable dredges for Canadian and international markets. The agreement covers complete man-

ufacturing and assembly of a minimum of three DMI dredges per year at TIW's Central Bridge Limited plant in Trenton, Ontario.

TIW Industries Ltd., is a broad-based Canadian metal fabricator, specializing in oilfield and petrochemical equipment and satellite tracking antennas. The company has already produced two dredges for DMI, which are now in use in Columbia and Mexico.

DredgeMasters International, Inc., a subsidiary of Valley Industries, Inc., is a world leader in the design, manufacturing, and marketing of portable dredges for the marine construction, mining, pulp and paper industries, and a wide variety of industrial applications. The agreement will make the complete range of DMI dredges — in pump sizes from 4 to 30 inch — available in Canada, under Canadian manufacture.

Why the Sailor radio is built as rugged as an army tank!



Caba is shown trying unsuccessfully to crush the Sailor VHF radio with half of her 8,000-plus pound bulk.*

The result? The radio's heavy gauge steel case was virtually unscathed — close inspection showed a very small depression (about 1/32").**

Todd Continues Expansion —\$12-Million Drydock Ordered From Bender

Todd Shipyards Corporation has contracted for a 14,000-displacement-ton floating drydock for its Houston Division, to be built by Bender Shipbuilding & Repair company of Mobile, Ala. The dock and related pier and upland facilities improvements will cost approximately \$12 million

and is scheduled to become operational by mid-1982.

The dock, 396 feet long with an inside width of 120 feet, will expand the Houston Division's ability to provide repair and overhaul services for the growing number of commercial ships and large barges entering the port, and vessels serving the offshore oil and gas industry in the Gulf.

The new facility is one of several major projects authorized

by Todd recently to upgrade and expand the company's ship repair capabilities. The company has announced it will install a \$40-million Syncrolift facility at its Los Angeles Division, and will transfer from its San Francisco Division a 40,000-displacement-ton drydock to its Seattle Division at a cost of \$20 million, including modification to the drydock and construction of a new pier and related facilities to house the dock.

Gems Paddle Switches Monitor Flow Conditions —Literature Available

Paddle flow switches are available from Gems Sensors Division of Transamerica Delaval to provide a flow or no-flow condition for shipboard and other marine applications. The FS-550 paddle units are said to offer the same quality and reliability that has been provided by other Gems flow controls over the past 25 years.

One specific shipboard application involves detecting low flow in the cooling lines that reduce heat dissipation of electronic tubes and other expensive communication equipment. The FS-550 provides very inexpensive "insurance" for preventing damage to these costly systems.

The FS-550 is mounted vertically into an existing horizontal pipe, and liquid flow simply deflects the paddle assembly, magnetically actuating a hermetically sealed reed switch. Standard SPDT, 20-watt resistive load output capability to alarm annunciator panels or through accessory relays is sufficient to completely shut down a coolant pump, thereby preventing cavitation due to low flow.

Minimum pressure drop is inherent to the FS-550. Pipe sizes from 1 inch to 6 inches can be monitored with this versatile paddle switch. Made of compatible bronze and/or stainless steel, the FS-550 defies corrosion and other problems related to monitoring seawater and other coolant liquids.

For more information and free literature on the FS-550,

Write 28 on Reader Service Card

Eller & Company Acquires Uiterwyk Cold Storage

Arthur E. Erb, president of Eller & Company, Inc. of Tampa, Fla., has announced the purchase of Uiterwyk Cold Storage Corp. The transaction includes all stock and assets owned by Uiterwyk Cold Storage, one in a group of companies operating out of Tampa under the Uiterwyk name. This new venture will operate as Harborside Refrigerated Services, Inc.

Since it commenced operation in 1974, Uiterwyk Cold Storage has been a leader in the movement of refrigerated commodities worldwide. More than 700,000 tons of refrigerated products including fresh citrus, frozen concentrate, meat, and poultry, have passed through this facility during its seven years of operation.

A tenant of the Tampa Port Authority since 1973, Uiterwyk Cold Storage has owned and operated the largest dockside cold storage facility in the United States. This complex includes a 110,000-square-foot freezer warehouse complemented by two chill buildings totaling 48,000 square feet.

Why, you ask, would anyone build a radio that, like a tank, can withstand a 4,000 pound load?

Because lives can depend on a marine radio working properly in extreme conditions. Violent seas can throw loose gear, or even a crewman, across a wheelhouse, generating a force in the thousands of pounds—more than enough to shatter an ordinary radio!

Not so with Sailor, however. That's why Sailor stays with its 32-year old rugged case design and refuses to follow the industry fashion of thin plastic and sheet metal look-alikes.

Is the rest of the radio as rugged and reliable?

Of course. Sailor takes the same approach throughout every part of this radio. For instance, the hundreds of electrical connections in the Sailor are all "hard-wired." That means they are physically connected and soldered together as if the connection would be permanent. The more conventional approach is to terminate wires into a mechanical connector which allows rapid insertion or removal of a circuit board. Other manufacturers choose these connectors despite the fact that they often come loose under vibration. And they also frequently fail due to corrosion or oxide buildup on the contacts.

Not Sailor. Sailor's *different* approach is so simple, it's brilliant. Sailor makes the components and the circuit boards so reliable that very rarely is there a need to replace *anything*. Instead of designing to make things easy for the frequent visits of a repairman, why not design a radio that hardly ever needs a repairman? Like Sailor.

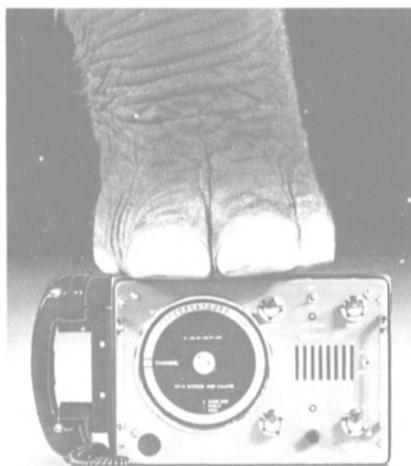
What else is unique about Sailor?

VHF radios usually squeeze the last cubic inch out of their design to be able to fit into small craft. As a result, they have to use a very small magnet in their speakers. Sailor, again, is different.

Sailor's larger case allows the use of a magnet about three times the size of competitors. This results in much more of a "hi-fi" clarity. This design also avoids blowout—a frequent cause of failure in smaller radios.

What do users say?

Commercial fishermen are a tough clientele. They demand the best, then run it night and day in an extremely demanding environment. In Europe, where Sailor is based, over 60% of all fishing boats have chosen Sailor. Sailor radio was designed for and is used in the roughest environments in the world: North Sea fishing boats, Navy ships and lifeboats, as well as outposts in deserts and steaming jungles. In over 60 countries, people know Sailor builds the best possible radio.



Over 60,000 of this model Sailor radio have been sold worldwide—which, to the best of our knowledge, makes it the best selling marine VHF in the world—despite the fact that the price reflects the unique high quality of this radio.

If Sailor is so reliable, shouldn't the warranty reflect it?

It does. The Sailor RT 144 AC VHF Radio carries a *four-year warranty*—yes, four years—on every single part! We believe that this is also unmatched. (Write for full warranty details.)

If Sailor is so great and such a big seller, why is it not more widely known in the U.S.A.?

It is known by leading U.S.A. professionals—ask a leading dealer who specializes in marine electronics (not a ship's store with a few radios around). Sailor is not yet widely known outside this select circle because Sailor radio until recently could not keep up with the demand outside the U.S.A. Now with

expanded production, Sailor is ready to service the large U.S.A. market—and, to that end, has recently appointed Decca® as exclusive sales and service agent. The great Sailor radio line combined with Decca's elite dealer network, standing ready with spare parts and trained technicians, makes an unbeatable combination.

What channel capacity, watts? Is it synthesized?

It is synthesized and has the maximum capacities and features the law allows—write for data sheet containing full details.

Is this the whole Sailor story?

No—but we're running out of space. Listed below are a *portion* of the other important features and also the dimensions: (Please check them—we don't want you to be without Sailor because you assumed it was too large for your boat).

Some other features: hidden anti-theft release mechanism; unusually splash resistant; solid gear drive on channel selector—a more positive feel than push-button; special scratch-proof paint.

- *Dimensions:* 8.7" or 220mm high, 12.6" or 320mm wide, 6.5" or 165mm deep.
- *Weight:* 20 lbs. or 9.1 kilograms (almost 3 times the weight of an ordinary radio)

Become a Sailor owner—even if you don't have an elephant to stand on it, we know you'll be happy. For the names of the Decca dealers near you, please call or write:

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25-Year Leveraged Lease Ship Financing

Arrangements were made through the undersigned for the placement of the equity interest in the leveraged lease financing of the Pride of Texas, a 36,400 DWT U.S. flag dry bulk cargo carrier, representing the first vessel in a Maritime Administration sponsored series to modernize and expand the U.S. flag dry bulk fleet.

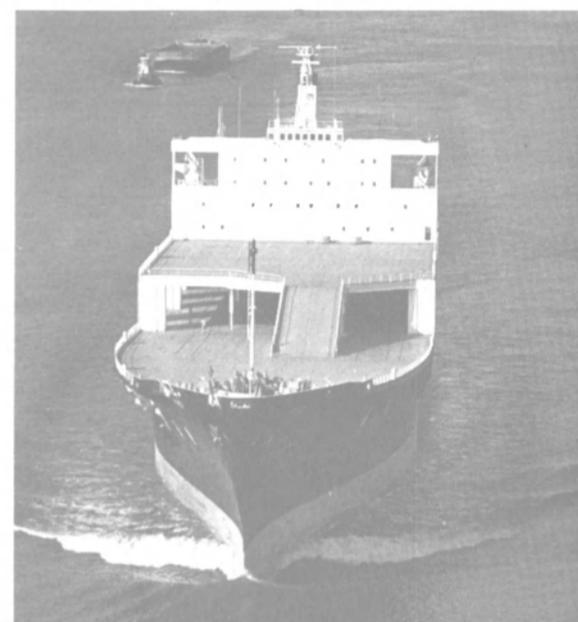
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June 1981

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Conversion Of RO/RO 'Ponce' Completed By Sun Ship



The S/S Ponce (shown above) left Sun Ship Inc. recently after undergoing a 22-month, \$30-million conversion at the Chester, Pa., shipyard. In the unusual project, which began in July 1979, a new hull section was spliced into the center portion of the roll-on/roll-off (RO/RO) trailership, and its machinery plant was modernized.

The new 90-foot hull section increased the ship's length to 790 feet and boosted the Ponce's trailer-carrying capacity by 35 percent to a total of 410 forty-foot over-the-road trailer equivalents. The installation of new boilers, generators, and a variety of other auxiliaries improved both fuel efficiency and operation ease. While on sea trials, the Ponce reached a speed of 25 knots.

The Ponce's first destination after conversion was Port Elizabeth, N.J. The ship will be making scheduled trips between Elizabeth and San Juan, Puerto Rico.

One of 10 RO/RO ships built by Sun Ship, the Ponce was launched in November 1967, and delivered in March 1968. She is operated by the Puerto Rican Maritime Shipping Authority, and is assigned to carry cargoes from major East Coast ports to San Juan.

New Torque Controller Introduced By Delaval —Literature Available

A new device to limit or prevent damage to thickeners, clarifiers, mixers, elevators, hoists, conveyors, or other process or materials-handling systems where large torques are encountered, has been introduced by the Delroyd Worm Gear Division of Transamerica Delaval Inc.

Designated the TQ-8 torque monitor and controller, it is available on any Delroyd worm gear speed reducer. The new unit is adaptable to single or multiple reduction reducers with vertical or horizontal configuration, shafted or shaft mounted, so long as the reducer is driven through an induction motor.

A transducer pickup is installed on the motor mount, the monitor/controller itself being up to 200 feet away. Shaft speed is converted to slip (which varies linearly with torque in the 10-115 percent load range), and is compensated for temperature and line voltage variations with solid state circuits.

For a free data sheet on the new TQ-8 torque monitor and controller,

Write 21 on Reader Service Card

Maritime Reporter/Engineering News

McDermott Receives \$20-Million Amoco Contract

McDermott International, Inc., a subsidiary of McDermott Incorporated, has been awarded a \$20-million contract by Amoco (U.K.) Exploration Company to install and trench a 10-inch gas pipeline and install a 20-inch crude pipeline. These pipelines, each about eight miles long, will connect the NW Hutton Field platform to the WELGAS Tee and the Cormorant "A" platform, respectively.

McDermott will perform the work, located in the U.K. sector of the North Sea, with Lay Barge 27, Jet Barge 4 and Derrick Barge 101.

McDermott Incorporated is a leading international energy services company. The company and its subsidiaries provide engineering and construction services to the offshore oil and gas industry and manufacture steam generating equipment, tubular products, insulating products, and automated machine tools.

Major Work On 'Wavertree' Performed By Bethlehem Yard

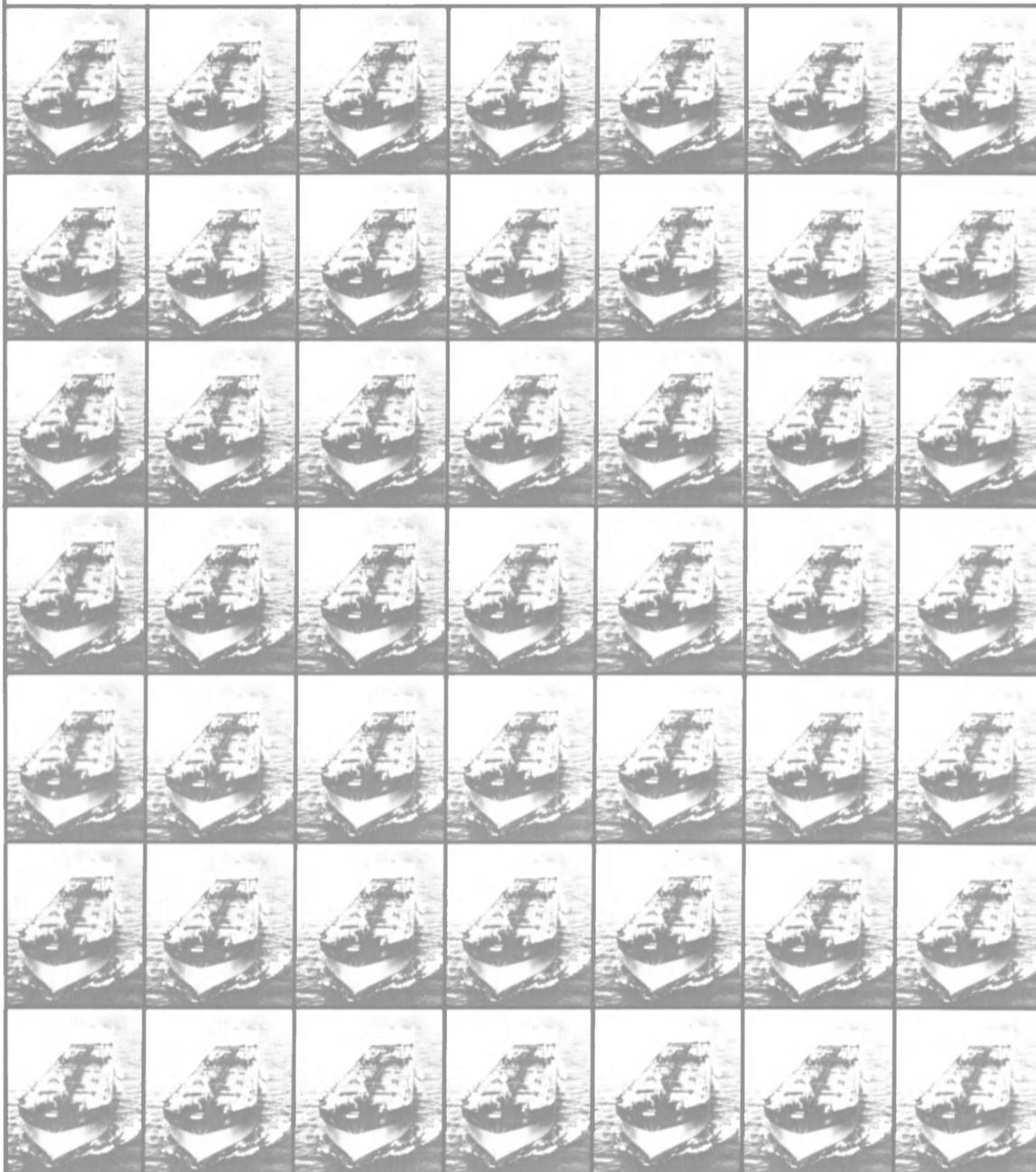


Major steps to reconstruct the nearly century-old sailing ship Wavertree (shown above) to her original design were accomplished at Bethlehem Steel Corporation's Hoboken, N.J., shipyard recently.

Owned by the South Street Seaport Museum, the Wavertree will have 110 feet of her upper deck, from frame 36 through frame 91, restored to its original configuration. Wrought iron was used to construct the Wavertree when she was built in 1885 by Oswald, Mordaunt & Co. in Southampton, England; modern steel will be used in the reconstruction. The vessel was originally built as Southgate, but was given the name Wavertree when Leyland Brothers, one of the great Liverpool shipping establishments, bought her and renamed her for a suburban village.

Richard E. Blackinton, general manager of the Hoboken yard, said: "Bethlehem Steel is proud to play an integral part in the reconstruction of this historic ship. As long as there is commerce between nations, much of the traffic will move by ship. The Wavertree recalls earlier days of commerce when mariners and their sailing ships battled wind and sea to deliver their cargoes."

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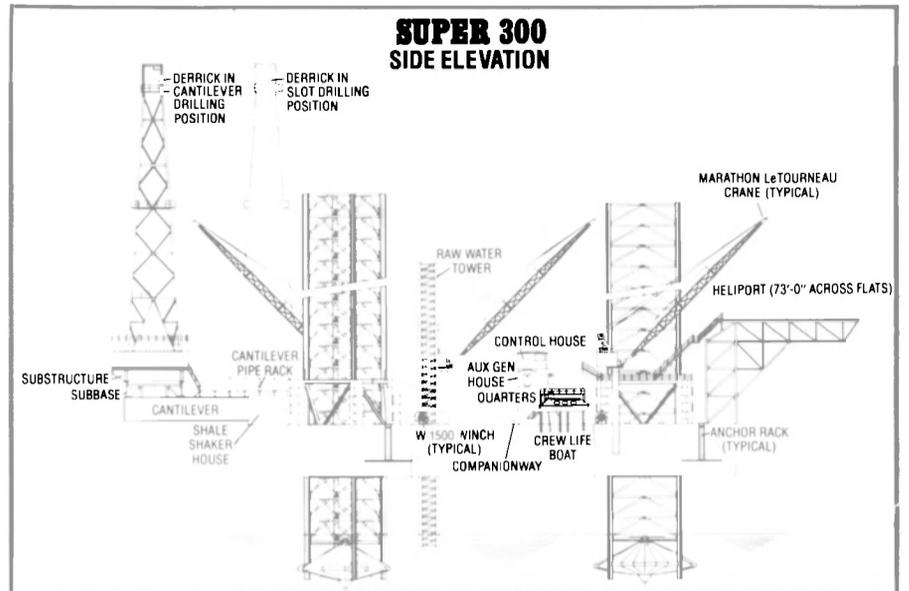
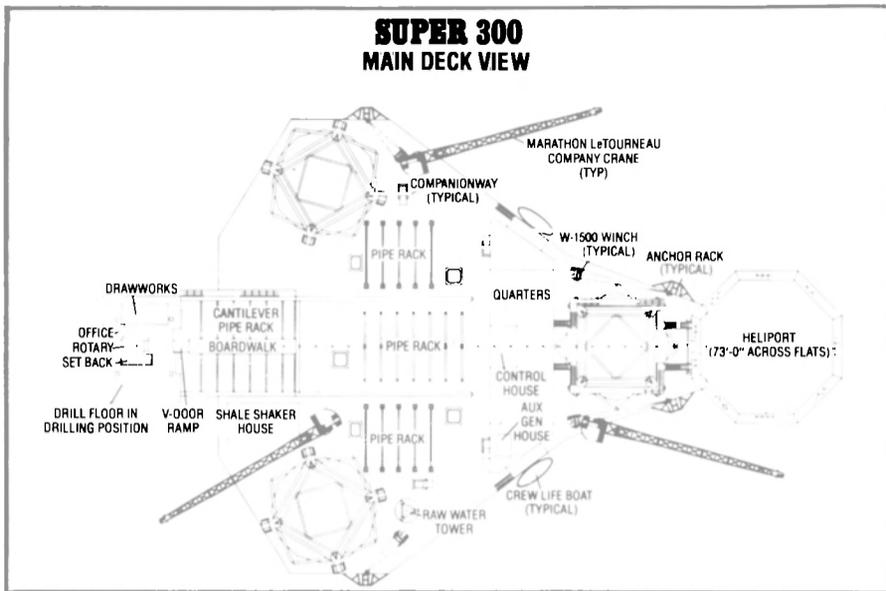
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Marathon Introduces New Super 300 Jackup For Harsh Environments

Marathon's new Super 300 self-elevating offshore drilling platform, introduced during the 1981 Offshore Technology Conference, is designed to meet an offshore

industry need for a jackup compatible with harsh environments too severe for standard 300-foot water depth rigs, but not hostile enough to require a "Gorilla" rig.

Like Marathon's Gorilla, the Super 300 will have both cantilever and slot drilling capabilities.

The Super 300 is engineered to survive 60-foot waves and 100-knot winds in 300 feet of water. Its ample variable load capacity makes this jackup suitable for work in areas where frequent resupply of consumables is impracticable.

With its slot and cantilever drilling configurations, Marathon's newest jackup is capable of operating on those frontiers of offshore drilling where frequent storms or other climatic conditions presently hinder resupply and prohibit exploration or development activities. The Super 300 drilling pattern allows full design storm rating for exploratory wells drilled through the slot. Conventional cantilever drilling can be carried out in lesser weather conditions. In the cantilevered position, the derrick can be extended 45 feet past the stern and 12 feet on either side of the centerline. This results in a total drilling pattern of 70 by 24 feet.

The Super 300 incorporates field-proven features such as the rack and pinion elevating system used for more than 20 years on all Marathon jackups. This system uses four, six-high gear units for each square leg to provide a

constant jacking speed of 90 feet per hour. The constantly engaged pinion gears of this system provide an additive upward and downward fail-safe drive force as the rig is raised or lowered.

Overall length of the Super 300 is 270 feet, while the overall width is 250 feet. With a hull depth of 28 feet, the unit is bigger and heavier than Marathon's Class 116 jackup and can carry more variable and fixed load—up to a total of 10,500,000 pounds.

In an optional version of the Super 300, the 443-foot-long legs can be lengthened to 510 feet to allow drilling in 350-foot waters. Maximum storm conditions for this special configuration are 55-foot waves and 100-knot winds.

Marathon Manufacturing Company is the leading manufacturer of mobile offshore jackup drilling rigs, and is a multiproduct company manufacturing materials-handling equipment, fabricated metal products, steel buildings, white oils, batteries, and consumer goods, and provides civil engineering and construction services. Marathon Manufacturing is a wholly owned subsidiary of The Penn Central Corporation.

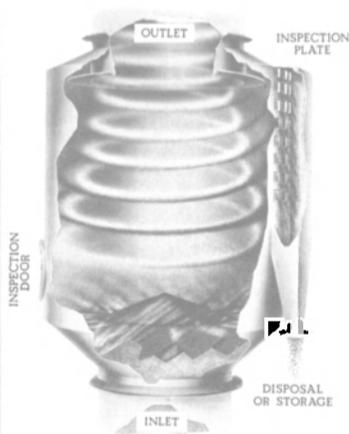
For more information and free literature on the Super 300 jackup,

Write 20 on Reader Service Card

VORTEX SPARK ARRESTOR

Vortex Spark Arrestors, in use for more than 40 years, are custom-designed for specific engine/vessel installations. Although suitable for all size diesel engines, they become most economical in the 5000 bhp range and higher. Vortex was selected for Sun Ship Hulls 676 and 677 powered with 14,400 bhp Sulzer diesels.

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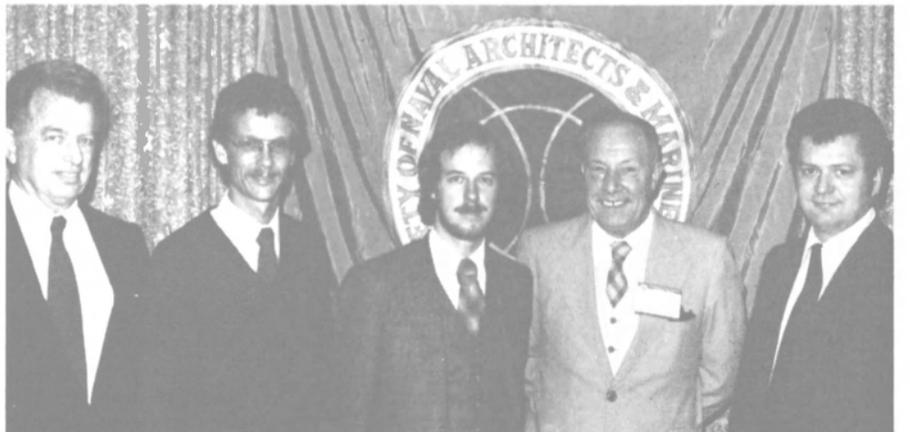


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Paper On Real Time Monitoring Presented At Pacific Northwest SNAME

At the spring meeting in Victoria, British Columbia, Canada, the Pacific Northwest Section of The Society of Naval Architects



At spring meeting of SNAME Pacific Northwest Section (L to R): Ronald B. Thicke; coauthors Robert E. Nichol and Bruce Hutchison; Les Coward, Section chairman; and author Karl Strauss.

and Marine Engineers heard two papers. "Experience with Real Time Motion Monitoring on the Barge Foss 245," presented by **Robert E. Nichol** of Diehl & Lundgaard, Inc. and **Bruce L. Hutchison** of L.R. Glosten & Associates, Inc., was followed by "Selection and Design of Hydraulic Systems Including Arctic Operation," by **Karl H. Strauss** of Western Hydrostatic System Ltd.

The Real Time Motion Paper was brought about by the shipment by barge of a 240-ton failed steam generating unit from the Surry, Va., nuclear power plant in the spring of 1980, which provided an opportunity to apply modern state-of-the-art motion monitoring and damage avoidance techniques to a towed ocean barge. This paper reports on: (1) The project background, including pre-voyage risk analysis which resulted in the recommendation that real time motion monitoring be provided; (2) The design and installation of the motion monitoring system; and (3) The tug master's experience during the voyage with the real time motion feedback. The paper concludes by comparing selected motion records from the motion monitoring system to motion predictions based on log book and hindcast sea state data.

It was concluded that the real time motion monitoring worked well on the subject barge shipment, and achieved the primary objective of providing useful feedback to the tug master concerning the effects of his actions on the barge and cargo. It was suggested that the technique is sufficiently promising to warrant wider use by the offshore tug/barge industry.

The Selection and Design paper was broken into five parts: hydraulics and the arctic environment; key features and capabilities; hydraulic system structure; components—selection and recommendations; and fluids, materials causes and effects. The first four sections of this paper provide a practical guide to the different hydraulic system types, their capabilities and applications. The last section deals more with the theory and principles involved, upon which some of the recommendations made are based.

The material covered is primarily based on hydrostatic systems for northern climates; however, the principles covered apply to most systems in all environments.

Dravo Acquires The Ryan-Walsh Group

Dravo Corporation, Pittsburgh, Pa., announced it has acquired the Ryan-Walsh group of companies following approval by shareholders of the Mobile-based cargo-handling organization. The acquisition was made on the basis of 18.825 Dravo common shares for each of the 21,911

shares of Ryan-Walsh common stock issued and outstanding.

Ryan-Walsh is one of the largest cargo handlers on the Gulf and South Atlantic Coasts. The firm operates bulk terminals or other facilities at New Orleans, Mobile, and 10 other Southern ports, handling both bulk commodities and general cargoes.

Through several subsidiaries, Ryan-Walsh also is engaged in

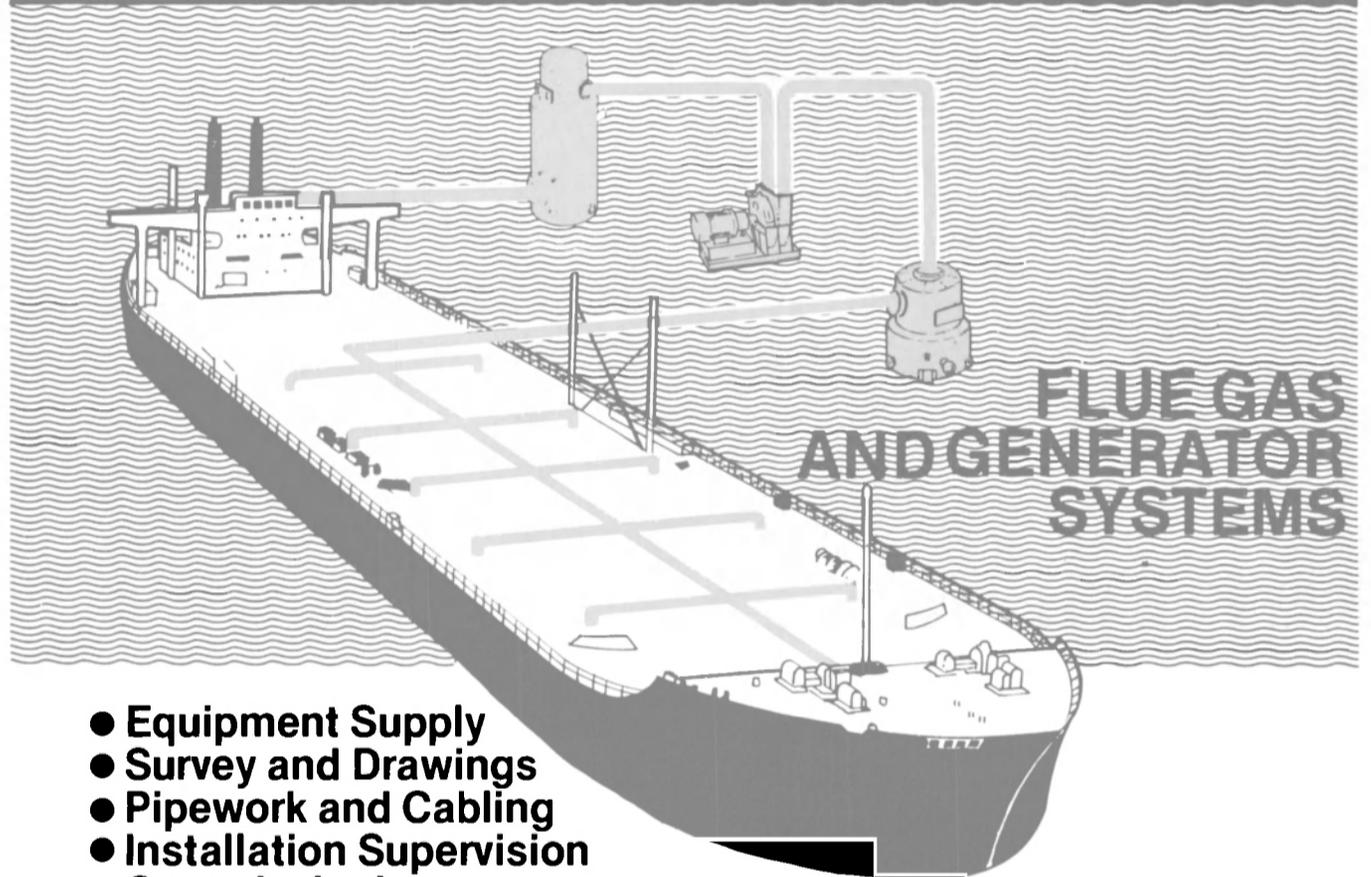
container leasing and repair, crating, and steamship agency and barge fleet services. Ryan-Walsh had revenue of about \$65 million in 1980.

Robert Dickey III, Dravo chairman and president, said that "the increasing volume of grain and coal exports being routed through Gulf Coast ports should provide attractive growth opportunities for Ryan-Walsh, as should the

anticipated completion of the Tennessee Tombigbee Waterway, which will dramatically increase activity at the Port of Mobile."

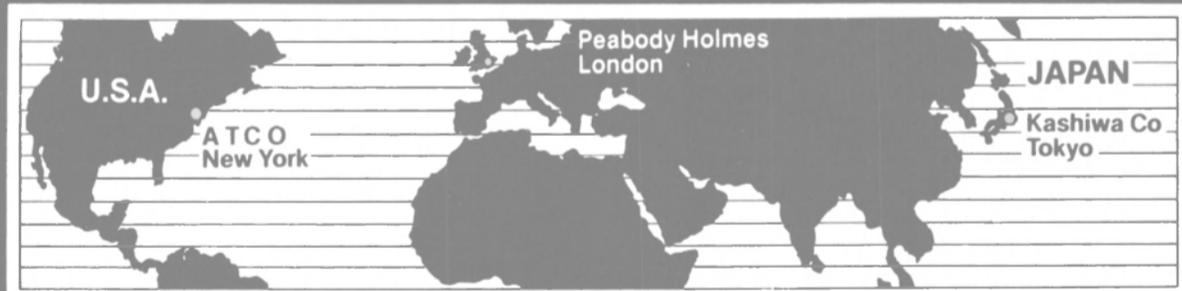
Mr. Dickey noted the expected operating synergies between Ryan-Walsh and several existing Dravo activities including barge transportation, design and erection of bulk terminal facilities and fabrication of bulk materials handling equipment.

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Cooper Named To Head All International Affairs Activities For FMC

Dr. Leslie L. Kanuk, acting chairman of the Federal Maritime Commission, has announced that **James C. Cooper**, the FMC's deputy managing director, has been given responsibility for all Commission international affairs activities. In its role as a regulator

of international ocean trading involving the United States, the FMC deals frequently with foreign companies and governments in liaison with the Department of State.

Mr. Cooper is a veteran of over 20 years of service with the Commission. He has held a number of staff positions, including director, Bureau of Enforcement, and director, Bureau of Ocean Commerce Regulations.



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Union Oil Products Carrier Launched At NASSCO Yard

Christening and launching ceremonies were held at National Steel and Shipbuilding Company (NASSCO) recently for the Sierra Madre (shown above), one of three 37,500-dwt Carlsbad Class product carriers being built for Union Oil Company of California.

A gathering of more than 400 invited guests witnessed the ceremonies. Sponsor for the ship was **Mrs. Verna Burk**, wife of **Glenn O. Burk**, president of West Coast Shipping Company, Los Angeles. **Mrs. Joan Hanley** served as matron of honor. She is the wife of **Donald L. Hanley**, senior vice president, refining and marketing, Western Region, "76" Division Union Oil Company. **Mr. Hanley** was the keynote speaker. Others participating in the program were **C. Larry French**, president of NASSCO, and **John M. Murphy**, NASSCO vice president of corporate relations.

The Sierra Madre is the third of three sister ships to be launched at NASSCO in the past six months. All are scheduled for delivery in 1981. The vessels are

a new NASSCO design. Each is 658 feet in length with a 33-foot draft and carrying capacity of 300,000 barrels. The Sierra Madre will be capable of transporting 10 different products simultaneously. She will carry products from Union Oil's refineries in Los Angeles and San Francisco to Alaska, Hawaii, and the U.S. West Coast.

The new ship will incorporate the most modern equipment available and will meet the latest safety and environmental protection standards including double bottoms, a clean segregated ballast system, an inert gas system, a sewage treatment plant, collision avoidance radar, and a backup steering system.

NASSCO's current backlog of approximately \$665 million includes a total of nine product carriers, three Navy destroyer tenders, and a cable repair ship. NASSCO has been engaged in marine construction for 36 years, and is wholly owned by Morrison-Knudsen Company, Inc., Boise, Idaho.



Participants in recent launching ceremony at NASSCO yard are (L to R): Capt. **Stan Wetherell**, U.S. Coast Guard; **John McCoy**, American Bureau of Shipping; **Ed Hood**, president, Shipbuilders Council of America; **Bob Frazee**, California State Assembly; **C. Larry French**, president, NASSCO; **Mrs. Glenn O. Burk**, sponsor; **Mrs. Donald L. Hanley**, matron of honor; **Glenn O. Burk**, president, West Coast Shipping Company; **Donald L. Hanley**, senior vice president, "76" Division, Union Oil Company; **John M. Murphy**, vice president, corporate relations, NASSCO; and **William McMurren**, president and chief executive officer, Morrison-Knudsen Company.

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M/T PORTLAND

Unusual 360° Steerable Z-Drive Tug Enters Service



Shaver Transportation Company has recently taken delivery of a new ship handling tug, the Portland, for service in the Port of Portland. The Portland is propelled by two Maritime Industries model 1650 H 360° steerable Z-drives, each rated at 1,700 bhp. The Maritime propulsion units are believed to be the largest currently installed in North America for tug application.

Shaver Transportation Company made the decision to build a tug with 360° thrust capability to take advantage of the vastly superior maneuvering characteristics that this type of propulsion offers—particularly for ship handling tugs. The accompanying polar thrust diagrams (Fig. 1) illustrate the superiority of the Z-drive tug over a conventional tug with nozzles and flanking rudders. As can be seen, the improvement in lateral and astern thrust, over the conventional tug, is impressive.

An important factor in making this decision was the ability to change thrust direction rapidly. A typical case where this would

be required is when a tug wishes to switch from the pulling to the pushing mode (see Fig. 2). A tug with 360° propulsion can achieve this in a fraction of the time required by a conventional tug.

A decision had to be made as to where the propulsion units should be located in the vessel. Japanese practice has favored positioning them at the stern, in a location similar to that of conventional propellers, with the tow point forward of the propulsion units. The European practice has generally been to position the units well forward, in what has become known as the "tractor" configuration. This has the advantage that the tow point is aft of the propulsion units, making the vessel, in the pulling condition, very stable and safe from girding (girting). To reduce draft, it was decided to use the reverse "tractor" concept—a joint development of Maritime and Shaver. As can be seen from the drawings of the vessel, the propulsion units are located aft, although slightly forward of the position normal chosen for Z-drives. The Z-drives

are located above the bottom of the hull skeg, thus protecting them from grounding damage and minimizing the vessel's draft. The tug tows off the bow and therefore has the same inherent anti-girding and anti-stemming characteristics as the normal tractor tug.

From the foregoing, it is apparent that the "reverse tractor" tug, as its name implies, will spend much of its time running astern. The hull has therefore been specially designed for astern operation, to optimize the water flow through the propulsion units and minimize wash impingement on the hull.

The Z-drives are controlled by a Maritime Industries single lever system. Thrust direction, engine speed and clutch are all controlled by a single joystick. There is one joystick for each propulsion unit, since it was preferred to retain full operator control of the exact position and rotational direction of each Z-drive. The alternative would have been a combined control, with the position

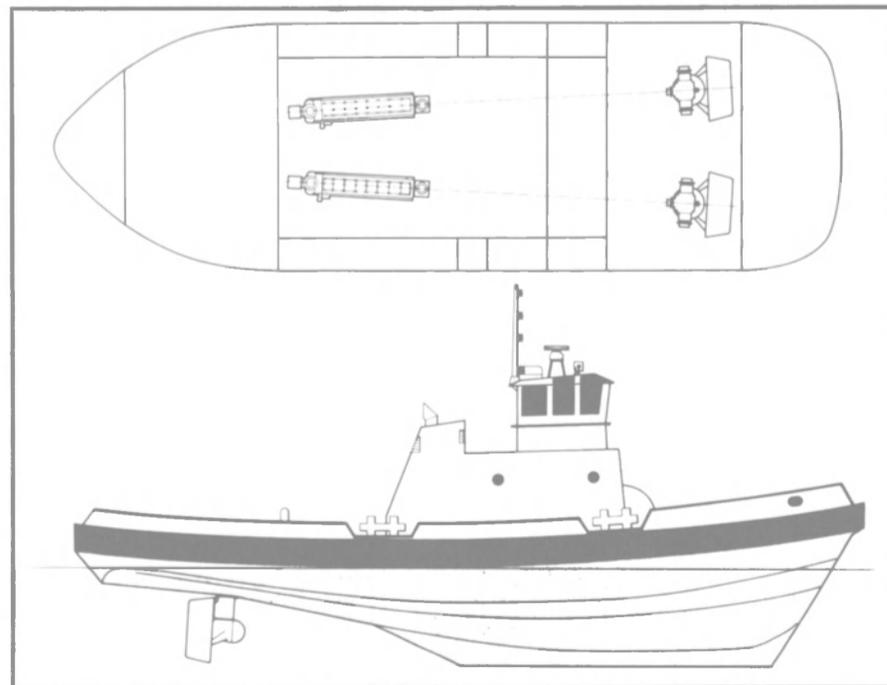
and rotational direction of both Z-drives under the control of a microprocessor. Such removal of intimate control from the helmsman was considered undesirable for tug operation.

The propulsion units incorporate a number of design features to enable them to survive encounters with logging debris—a not uncommon hazard in the Pacific Northwest. Most important of these is the shock absorbing steering system—a unique Maritime development, evolved over years of Z-drive operating experience in the log-strewn waters of British Columbia.

The Portland was designed by James A. Towers and Donald R. Hudson and was built by Nichols Brothers Boat Builders of Freeport, Wash. The principal particulars are as follows: length overall, 107 feet 7 inches (32.8 meters); length between perpendiculars, 100 feet (30.49 meters); beam (molded), 32 feet 6 inches (9.91 meters); beam (overall) 34 feet 2 inches (10.42 meters); depth (molded) 15 feet 3/4 inches



M/T Portland Maritime Industries' Z-drive propulsion units.



Vessel Profile

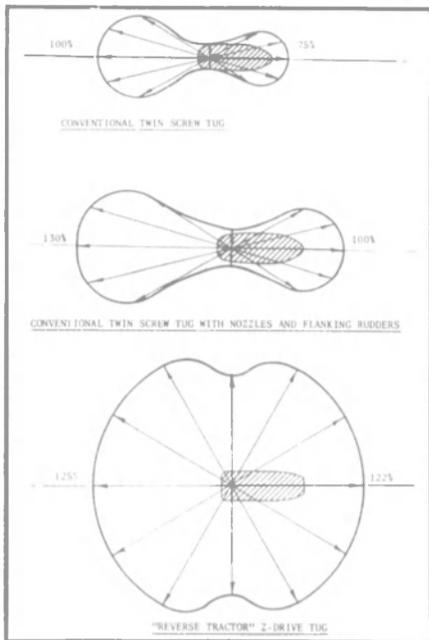


Figure 1 — Tug comparative thrust diagram.

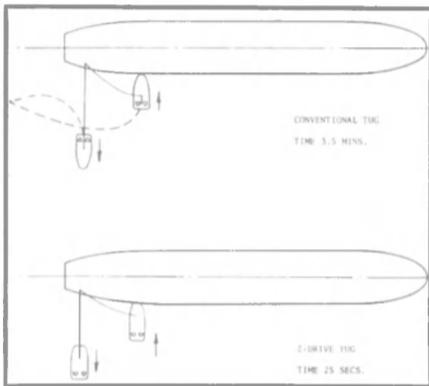


Figure 2 — Changing from pulling to pushing; comparison of maneuvers; conventional tug versus reverse tractor; Z-drive tug.



Pilothouse consoles showing Maritime single lever Z-drive controls.

(4.59 meters); draft, 13 feet (3.96 meters); propeller speed, 300 rpm; and propeller diameter, 86 inches (2.18 meters).

Her main propulsion power is provided by two Fairbanks Morse 38D81/8 diesel engines. Line handling is by means of twin Markey capstans.

New NKK Ship Design Will Reduce Fuel Use By Some 40 Percent

NKK (Nippon Kokan) has developed a new basic ship design promoting greater energy conservation, which will be applied to three vessels (two ore/coal carriers and a bulk carrier) being built for Showa Shipping Company and Nippon Yusen. Shin-ichi Hirayama, president of NKK America Inc., said these vessels

will be used to transport raw material for NKK steel works and are scheduled for completion in 1982.

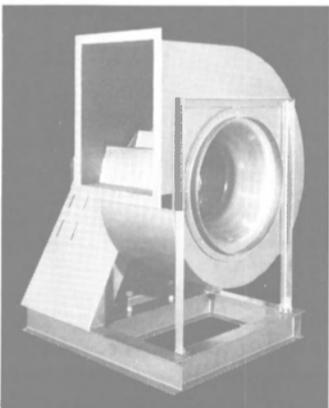
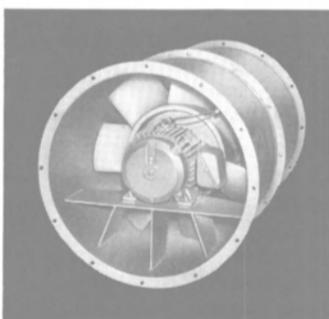
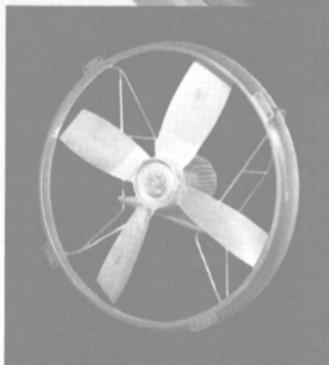
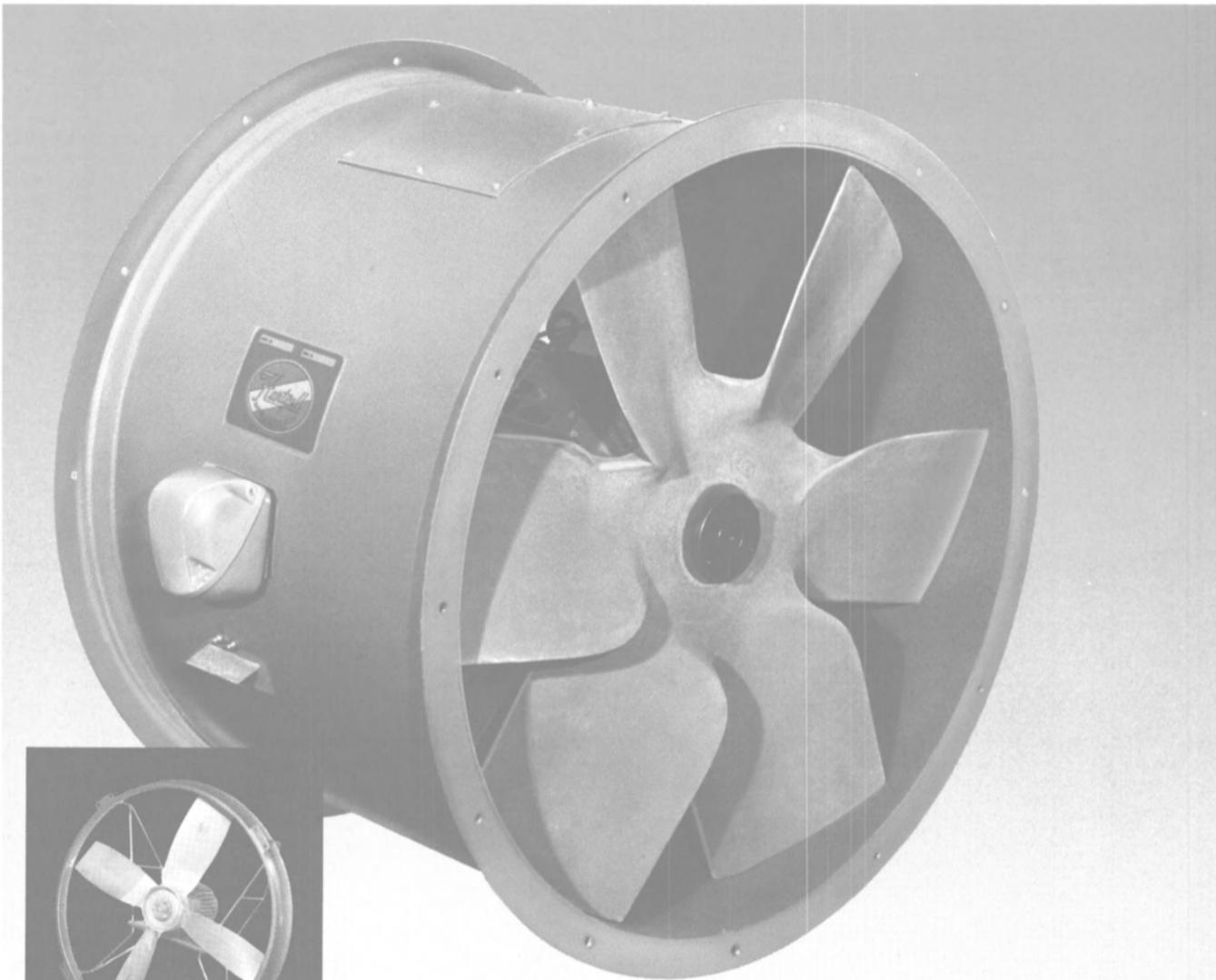
The new design adopts such energy-saving measures as improved propulsion efficiency and waste heat recovery. NKK says these measures will reduce fuel consumption by some 40 percent on the ore/coal carrier. The vessel will have a propulsion plant

that uses the NKK medium-speed PC engine, together with a 9-meter, controllable-pitch propeller.

Another unique feature is the so-called "Shaft-Generator and Motor (SGM)" system that, after supplying the needs of various ship sectors, generates surplus electricity by use of waste heat from the main engine to the motor directly linked to the main

shaft for additional propulsion. The vessel also will be equipped with measures for improved waste heat utilization, including a boiler water heating system.

The hull design also will conserve energy in loading and ballasting conditions, and will be coated with an antifouling paint below the waterline to reduce viscous resistance as well as adherence of marine organisms.



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Los Angeles SNAME Discussed Single-Point Mooring Technology

The final 1980-81 meeting of the Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers attracted 60 members and guests to the decks of the Princess Louise. This session was dedicated to past chairmen of the Section and to the introduction of new officers, selected to serve for the 1981-82 season, which begins in September. The new officers are: **George Stiehl**, chairman of the Section; **George Henning**, vice chairman; **Dr. Maxwell Cheung**, secretary-treasurer; and **Gary Cash** and **Hans Schaefer**, who were drafted to fill vacancies on the Executive Committee.

Prior to the presentation of the evening's technical paper, chairman-elect **Stiehl** presented a certificate of appreciation to outgoing chairman **Edward (Ned) Stewart** for a job well done. He

then introduced **Robert Mende**, secretary and executive director of SNAME, who was in town to discuss arrangements for the annual SNAME Star Symposium, to be hosted by the Los Angeles Section in the spring of 1984 at Century City.

The paper titled "OTEC-1 Mooring" was coauthored and presented by **Harold Ramsden** and **William Watts** of Global Marine. Mr. **Ramsden**, who coincidentally was selected to hold the key position of Steering Committee chairman for the Star Symposium, began by describing the Department of Energy-sponsored OTEC-1 program. That program was officially discontinued in April 1981 after establishing three technological firsts: (1) the world's largest ammonia power plant; (2) the world's first significant large-scale cold water



Shown during the recent meeting of the Los Angeles Metropolitan Section of SNAME are (seated, L to R): **Ned Stewart**, chairman of the Section; **Philip Finkelstein** and **John Marriner**, past chairmen; **Harold Ramsden**, past chairman and coauthor; and **Robert Mende**, SNAME national secretary and executive director. Standing (L to R) are: **George Henning**, vice chairman-elect; **Charles Heil**, **Robert Rourke**, **Charles Pollock**, **Frank Kuntz**, **Louis Dingler** and **Frank Nickels**, all past chairmen; and **George Stiehl**, chairman-elect of the Section.

pipe; and (3) the world's deepest large-capacity, single-point moor. The last "first" was the subject of the paper, and proved extremely interesting as a primer

on a current stage of single-point mooring technology.

The mooring system was tailored to a site, off the west coast of the "big island" of Hawaii, chosen for the OTEC evaluation because it best met the 18 criteria established by the D.O.E. The paper clearly detailed the material and technological trade-offs made by the Global Marine team, led by coauthor **Watts**, in progressing from a preliminary design to the exciting deployment of the operational mooring system that included a 300,000 pound chain "mass anchor." The presentation was followed by a lively question-and-answer session.

For those interested in gaining in-depth knowledge of the trials and tribulations required to design a successful single-point moor, a copy of the paper is available and may be obtained, for a reproduction and mailing fee, by writing to the SNAME Los Angeles librarian: **James Bibeau**, 5316 White Fox Drive, Palos Verdes Peninsula, Calif. 90274.

Oglebay Norton Elects Five Officers—Thompson Named Executive VP

Oglebay Norton Company has announced the election of five corporate officers: **Renold D. Thompson**, executive vice president of the company; **Richard J. Kessler**, vice president-finance and treasurer; **John L. Selis**, vice president-administration and corporate planning; **Robert A. Thomas**, assistant vice president-administration and general counsel; and **David A. Kuhn**, secretary.

Mr. **Thompson**, formerly executive vice president-operations, joined the company in 1952 and has held several executive positions. He is also a director of the company. Mr. **Kessler**, formerly assistant vice president-finance and treasurer, joined the company in 1969. He was elected treasurer in 1974. Mr. **Selis** joined Oglebay Norton in 1974. He was elected assistant vice president-corporate planning and tax counsel in 1980.



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In what may be maritime history, Bay-Houston Towing Company recently christened the four newest members of the fleet all on the same day. Left to right: *The Captain W.D. Haden*, *the W.D. Haden, II*, *the Barbara H. Neuhaus* and *the Mark K.*

'A FAMILY AFFAIR.

The biggest harbor towing company on the Texas Gulf Coast is no faceless corporation. It's Bay-Houston Towing. And it's owned and operated by the Hadens, a family that has been

involved in the towing business for over 100 years.

That's why their fleet of diesel tugs, all the way up to the 4,200-horsepower *Captain W. D. Haden*, bears family names.

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Cummins Powers First Towboat Built By Brice Shipbuilding

Central Boat Rentals of Morgan City, La., recently put to work a unique inland, 60-foot pushboat built by Brice Shipbuilding Inc. of Chauvin, La. The Vail Trail (shown above) is an unusual ship in that it has six rudders for improved maneuverability and control.

The four flanking rudders and two steering rudders are controlled by a mechanical-over-hydraulic steering system with full follow-up. Power for the Vail Trail is provided by two matching KTA-1150 marine engines rated at 470 bhp each at 1,800 rpm. The powerful Cummins diesels drive Twin Disc MG 518 marine gears with 6:1 ratios and Coolidge 62- by 50-inch four-bladed wheels.

"The construction and design exceeds American Bureau of

Shipping requirements for a new boat," said Don Bordelon, president of Brice Shipbuilding and naval architect for the Vail Trail. "The propulsion system will make the Vail Trail a very responsive towboat."

With a 27-foot-high pilothouse, a Vail Trail captain should not have any trouble keeping an eye on barges. In addition, the new boat has a specially designed bow platform located above the main deck for easy access to high barges and for carrying extra equipment.

Electrical power is provided by a Perkins 330 DKM-12 generator set rated 30 kw at 1,200 rpm. The KTA-1150 Cummins engines and the Perkins generator set were provided by Cummins Sales & Service, Inc. The boat will be

serviced by the CS&S branch in nearby Morgan City.

Tom Lemmon, CS&S Morgan City branch manager, noted that

Cummins was proud to be a part of the first boat built by Brice Shipbuilding and the first Cummins-powered one for Central.

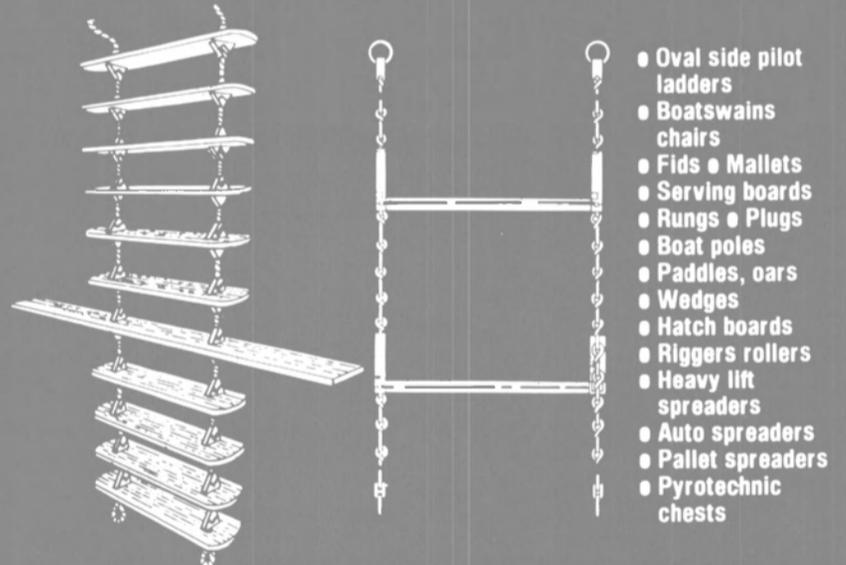


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Brochure On Motorship Protection Program Offered By Drew Ameroid Marine

A six-page, fold-out brochure on its Motorgard™ X Program is available from the Drew Ameroid Marine division of Drew Chemical Corporation, Boonton, N.J. It describes an integrated program for motor vessels incorpo-

rating products for critical ship-board systems and services to protect equipment, improve efficiency, and reduce operating costs.

Among the key features of the program are: diesel system knowledge and experience; integrated product application, including protection, standardization, and efficiency; service and supply capabilities; and simplicity. Some

of the benefits cited by Drew Ameroid are optimum operating efficiency, minimum operating expense, energy conservation, equipment reliability and longevity; and reduced maintenance expenses.

Drew Ameroid Marine capabilities include centralized program management, uniform zone pricing, product and service availability, regional technical exper-

tise and laboratory services, multilingual instruction and literature, research and product development, full product line, and worldwide quality assurance.

For a free copy of the Motorgard X Program brochure, Write 26 on Reader Service Card

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Can help minimize fuel consumption on Marine vessels.

- Positive displacement design.
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The GEMS FLOWRANGER Flow Meter Performance.

This unique Flow Meter was designed to help monitor fuel consumption on marine diesel engines. The Flowranger will measure the total amount of fuel used, thereby permitting you to compensate by adjusting engine performance to maximize efficiency.

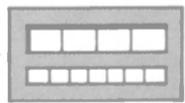
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Bethlehem Steel Names Messenger Assistant To Mgr-Ship Repair Sales

The promotion of James Messenger to the position of assistant to manager of ship repair sales in Bethlehem Steel Corporation's shipbuilding department was announced recently by Louis W. Gomlick, manager.

Mr. Messenger is advancing from sales engineer in the ship repair sales office, which is located in New York.

A native of Brooklyn, he was graduated from the U.S. Merchant Marine Academy at Kings Point, N.Y., with licenses as third engineer and third mate. Mr. Messenger joined Bethlehem Steel that year as a member of the management training program and was assigned to the corporation's shipyard in Baltimore, Md.

After completing a two-year training program, he was promoted to ship superintendent at the yard, and in 1977 was transferred to the New York ship repair sales office as a sales engineer.

J.J. Nevins Appointed Assistant Vice President For Adams & Porter

Adams & Porter Incorporated, New York, has announced that its board of directors has promoted James J. Nevins to assistant vice president. He is an account executive responsible for customer service in the areas of risk analysis, design and management of insurance programs, and negotiations with underwriters. His duties also include new business development.



James J. Nevins

Mr. Nevins joined Adams & Porter in 1978 after working for seven years as a marine insurance underwriter. He is a graduate of New York University. Adams & Porter Incorporated, international insurance brokers and adjusters of average, was founded in 1907.

Marinette Will Build Two 35-Foot Workboats

Marinette Marine Corporation has been awarded a contract by the Naval Sea Systems Command for the construction of two 35-foot workboats.

The vessels are aluminum hull construction, with an overall length of 36 feet 4½ inches, and a beam of 10 feet 8 inches. Power is supplied by twin 100-horsepower diesel engines. The full load speed of the vessel is 11 knots, with a cruising range of 85 nautical miles and a cargo load of 6,500 pounds.

Report Available Comparing Qualities Of Synthetic Ropes

As synthetic fiber ropes are becoming more widely used in various industries and government agencies, there is a need for comprehensive engineering data to compare the various constructions. In a specially prepared technical report for the Offshore Technology Conference, Samson Ocean Systems, Inc. tries to fulfill this need by summarizing the data obtained from a series of systematic tests for strength, elongation and energy absorption.

Currently there are three commonly used constructions: twisted (three strand); plaited (eight strand), and double braided. Due to its tendency to hockle or kink, twisted rope is seldom used in critical applications where hocking cannot be tolerated. In addition, strength and elongation data for twisted and plaited constructions are similar.

Since there are many synthetic materials available, only the most common material — nylon — was used as the basis for comparing the two constructions. This comparison generally holds true for other materials as well.

The strength, stretch and energy absorption of double-braided and eight-strand plaited ropes are discussed in detail in the report. The main points may be summarized briefly as follows:

1. Strength

(a) Size for size double braid is 25 percent to 40 percent stronger.

(b) For equal weight, double braid is 15 percent to 30 percent stronger while being slightly smaller in size.

2. Elongation

(a) Stretch data for new ropes should not be considered since synthetic fiber ropes stretch permanently and stiffen significantly with only a few load cycles.

(b) Plaited eight-strand ropes stretch and stiffen after use much more than double braid. For used ropes, the elongation at the breaking point differs about 9 percent between plaited rope and braided rope. This compares to a difference of 15 percent with new unused rope.

(c) Under frequent cycling of load, synthetic fiber ropes stiffen significantly compared to one-time loading. Plaited rope stiffens more than double braid. On an equal size basis, the difference in elongation at the breaking point is about 3 percent. The performance of plaited and double braid is quite close under these conditions, which is representative of actual service conditions, such as mooring and towing operations.

3. Energy Absorption

(a) On both a size and weight basis, double braid absorbs more energy than plaited rope when loaded to the breaking strength for all conditions (new, used, cyclic).

(b) On both a size and weight basis, double braid absorbs more energy than plaited at the same percentage of breaking strength for the used condition and the cyclic load condition.

4. Fatigue

(a) Under cyclic load conditions, double braid retains its strength much longer than plaited rope.

The complete report, which is an addendum to the Samson Rope Manual, may be obtained from Samson Ocean Systems, Inc., 99 High Street, Boston, MA 02110.

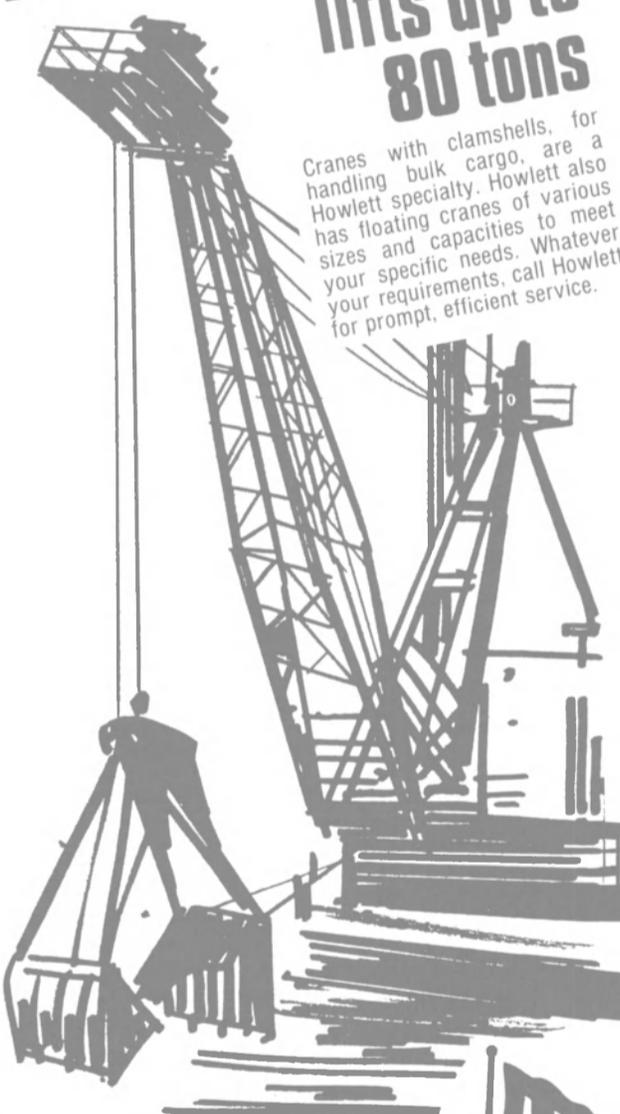
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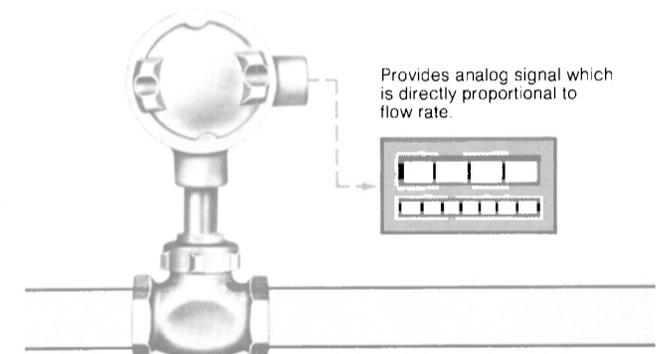
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Provides liquid flow monitoring between the range of 0.2 GPM and 10 GPM. Standard line sizes are 1" Other sizes up to 3" available.

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The FT-200 offers the same high quality that has made GEMS a leader in total flow control products. Ideal for monitoring water, oils, gasoline and water-based chemicals.

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SHIPBOARD AUTOMATION & MONITORING SYSTEMS

With the cost of marine fuel up about tenfold during the past eight years, efficient operation of shipboard machinery has become a must in today's merchant fleets. Manufacturers of automation and monitoring equipment have responded to the challenge with ever more sophisticated hardware to improve fuel efficiency and

safety, and to provide reduced manning.

We surveyed the major manufacturers and distributors of marine monitoring and automation equipment to find out about their latest products, applications, and results. The following review is based on the replies we had received at press time.

ALNOR INSTRUMENTS

A series of continuously-monitoring digital temperature analyzers, incorporating advanced microprocessor technology for continuous protection of diesel, natural gas, or gasoline powered reciprocating engines, has just been introduced by Alnor Instrument Company of Niles, Ill. The new instruments feature high-speed scan rates, temperature averaging and deviation analysis, and extensive alarm capabilities for immediate detection of abnormal engine operating conditions.

Available in single- and dual-engine models, the Micro 5300 temperature analyzer is designed to monitor and analyze cylinder exhaust temperatures and other critical engine operating temperatures from engine startup through peak load.

The 5300DE dual-engine model, which monitors a combined maximum of 32 inputs from two engines, is designed primarily for marine applications involving port and starboard engines, and other dual engine systems. The 5300DE features a complete set of functions for both port and starboard sides.

The Micro 5300 scans temperature zones at the rate of 60 inputs per second, providing nearly instantaneous detection of alarm conditions. As each new thermocouple input is processed, the instrument automatically recom-

putes average cylinder temperature and the greatest deviation of any one cylinder from that average. Temperature deviation is critical because too great a deviation indicates potentially serious engine malfunction and component damage.

In both the single- and dual-engine models, 32 inputs may be monitored. The 32 inputs can be divided into two groups—averaged zones and extra zones. The averaged zones are monitored individually, then an average is calculated as well as deviations from average. The extra zones are only monitored, and are not used in averaging or deviation calculations.

Inputs that are not used for averaging cylinder temperatures up to the maximum number allowed may be used to monitor other internal temperatures, such as turbine or water inlet/outlet, and bearing or oil temperature conditions. These "extra zones" are selected by internal switches, and one of the zones is provided with a HI-TEMP alarm and separate thermocouple relay.

The selection of averaged zones and extra zones is programmed with simple selection switches inside the instrument. If an error is made by the user in the programming, e.g., programming for more than the maximum allowable zones, the instrument will display ERR and a number (the number identifies the type of error so the user quickly knows where to make the correction).

The unit is completely solid-state, designed with fewer component parts than previous models for greater reliability. It incorporates an Intel 8085A microprocessor, 4K of programmable read-only memory (PROM), and 1K of random-access memory (RAM).

Engineered to maintain accu-

racy in the presence of noise-producing equipment typical of engine rooms, Micro 5300 is equipped with advanced shielding and filtering features. This provides noise rejection of more than 50 db in the normal mode and 100 db in the common mode. The unit is completely self-contained in a single enclosure; standard thermocouple alloy wire leads connect directly to the instrument at the rear panel.

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AUTRONICA

Autronica A/S of Trondheim, Norway, designs and manufactures a wide range of shipboard monitoring and alarm systems. Its KM-1 integrated alarm and monitoring systems is intended for monitoring temperatures, pressures, and on/off alarms. Different types of transducers may be connected to the same panel. The analogue value can be read on a moving coil instrument or on an optional digital display with automatic identification. Panels can be supplied in a wide range of sizes.

The KM-2 is a new version of integrated alarm and monitoring system, with two points per channel and digital reading as standard. Simplicity of channel design has been achieved by adopting thick film technic. This model is available with panel sizes from 12 to 120 points, and has outputs to alarm printer and mimic.

The MN-4 temperature monitoring and alarm system is for temperatures in the 0-100 C range, such as bearings and cooling media. It has high and low alarms with individual settings, and grouped alarm outputs optional. Panel sizes are available with 9, 14, 24, 34, 39, and 54 points. Tailormade sensors and installation material are available for all types of diesel engines.

The MX-5 model is a temperature monitoring and alarm system for exhaust gas in the range of 0-600 C. It has alarms for high temperature and abnormal deviation from average temperature, and common setting for all cylinders. Channels with separate

high alarm adjustment and alarm output are available for turbo-blowers. Panel sizes available for 9, 14, and 24 points. This system is based on thermocouple sensors.

The KB-6 central alarm system is for on/off alarm switches, with cassette sizes for 12, 20, 30, or 40 points. Systems with any number of channels can be supplied. Group alarm units and off/test units are integral parts of the cassette. A range of sub-alarm panels for cabins and wheelhouse is also available.

Among Autronica's diesel condition and monitoring alarm systems is the MJ-1, a thermal load analyzer incorporating an alarm function for each measurement point as well as averaging over four hours for the same points. Capacity is up to 30 points in one panel. This system is based on two measurement points in the cylinder liner (0-300 C) and one point in the top cover (0-600 C).

The MIP-calculator NK-3 is a pressure analyzer with calculation of mean indicated pressure (MIP). This system is based on one piezo electric pressure transmitter to be moved from cylinder to cylinder, on scavenge air pressure transmitter, and one inductive pick-up for piston position information.

The analyzer is connected to an oscilloscope for indication of the time-pressure curve. Optional is a pressure transmitter for injection pressure, also intended to be moved from cylinder to cylinder.

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GENERAL ELECTRIC

General Electric's Integrated Turbine Control (ITC) provides complete and instant control—from both the bridge and engine room—of steam flow, shaft speed, and other essential interfaces with its marine steam plant components. The system meets today's control needs and anticipates future ship control automation and unmanned engine room requirements.

GE's Medium Steam Turbine Department in Lynn, Mass.,

(continued on page 24)

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Maritime Reporter/Engineering News



Alnor Instruments' Micro 5300DE.

Mark Twain, on piloting a riverboat:

"I loved that profession far better than any I have followed since, and I took a measureless pride in it."

"Old Times on the Mississippi"

There's a deep feeling of accomplishment that goes with pushing tons of barge and freight up and down the river. Now, as in the 1850's, it takes superior men and rugged machinery. Gulf Marine Lubricants are manufactured for these men and this machinery. Gulf products and Gulf services meet the standards of the river.

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For information on any Gulf marine product, ask your Gulf pro, or write for the Gulf Inland & Coastal Marine Lubricants brochure and Midstreamers Directory. Gulf Oil Corporation, P.O. Box 1563, Houston, Texas 77001



Gulf Oil Corporation

**Shipboard Automation
& Monitoring Systems
—General Electric**

(continued from page 22)

makes the ITC, and is the only single-source supplier in the industry of both geared marine steam turbines and their controls.

Because of its instantaneous reaction time—an important benefit that cannot be achieved man-

ually—ITC makes it possible to operate more efficiently and safely with the smaller crews commonly found on ships today.

ITC's electro-hydraulic design incorporates proven solid-state components. The system's miniature electronic components fill only nine circuit boards, one-tenth of what is found on some other types of similar equipment. Plug-in boards can be removed quickly for system checks, maintenance,

or replacement with a backup unit.

Malfunction Proportional Control (MPC) is an integral part of ITC. MPC is adjusted to operate between the alarm and trip set points of the monitored conditions. It is designed to suppress normal and maneuvering throttle valve response rates, close down valves as quickly as necessary to track the malfunction, and activate alarms on both bridge and

engine room control panels. It also is designed to restrict turbine speed to a level proportionate to the severity of the conditions during abnormalities such as high drum level, overspeed, turbine vibration, or low boiler pressure—and it reacts to these abnormalities faster than the human eye and hand can function.

General Electric operates an ITC training school in Lynn, where actual shipboard operations are simulated by special classroom equipment. Ship crew members from around the world attend the school, where they learn to operate and maintain the ITC system.

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HENSCHEL



Henschel's Model 2550 Bell Logger.

Henschel Corporation, headquartered in Amesbury, Mass., has long been a supplier of equipment for ship control, interior communication, automation, and monitoring systems. Commercial marine products include engine order equipment, throttle control levers, bell loggers, digital master clock systems, shaft speed and rudder angle indicators, sound-powered telephones, audible signals, alarm/indicator panels, automatic whistle timer, and fire alarm system.

The latest Henschel product for use in automated marine systems is a new generation of bell loggers, the 10-2550 series. These microprocessor-based devices monitor, record, and display ship's control data acquired from existing ship's signals. Henschel's new bell logger may be programmed to acquire and record any user-defined input to satisfy particular automation/control requirements.

Henschel has supplied most of the ship control consoles for the U.S. Navy. Development efforts have produced the first programmed control levers to combine propeller pitch and throttle coordination into a single unit. Other naval products include synchro signal amplifiers, submarine steering/diving instruments, and switchboards for power distribution and combat systems.

Henschel equipment is manufactured to applicable MarAd and U.S. military specifications. As

(continued on page 26)

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These marine and industrial coatings are inherently corrosion resistant. They outperform even traditional epoxy/polyamide systems formulated with costly rust inhibitive pigments. Even through 4000 hour salt-fog and two-year Florida tidewater testing.

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What's more, it is a low viscosity resin and provides the solvent savings of higher solids. And it offers improved cure at low temperatures.

Versamid 280's patented technology makes it the industry standard. Years of use on Navy ships prove it can handle the toughest marine and industrial applications.

So when you need to show your colors in long-lasting marine and industrial maintenance formulations, Henkel's Versamid 280 can help. For more information about this unusual resin system, write: Resins Division, Henkel Corporation, 4620 West 77th Street, Dept. MR-71, Minneapolis, MN 55435.

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Shipboard Automation & Monitoring Systems —Henschel

(continued from page 24)

appropriate, it meets U.S. Coast Guard requirements and is certified by the American Bureau of Shipping for AC/ACCU classifications.

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HYDE PRODUCTS

The Hyde Henschel rudder failure alarm and steering gear monitoring system is designed to actuate an audible and visual alarm in the pilothouse when the rudder differs more than five degrees from the position ordered by the helm for more than 30 seconds for ordered rudder position changes of 70 degrees, or

five seconds for ordered rudder position changes of 1 degree.

This system will also actuate audible and visual alarms if the rudder fails to move within four seconds in the correct direction for the ordered command, or if after seven seconds the rudder is moving at a rate of less than two degrees per second. This mode is non-operative for ordered rudder position changes of less than five

degrees. The alarm is operative in both the auto and hand electric mode of steering, but is deactivated in the non-followup mode.

The system is comprised of three units: rudder failure alarm panel, rudder angle transmitter, and helm-mounted sensor. The failure alarm panel is for bulkhead mounting in the pilothouse and contains an alarm bell and indicating light. A conventional rudder angle transmitter is provided for mounting at the ship's rudder. The third element of the system is a sensor that will be mounted in the steering transmitter in such a way that it is rotated by the operation of the helm wheel or autopilot. All devices are "self-checking" so that a fault in the devices will be indicated.

The Hyde automatic power transfer system is designed to provide automatic pilothouse control of steering systems that currently use manual power unit transfer procedures.

A typical manual transfer procedure consists of: sending one of the ship's crew to the steering gear room; shutting down the active power unit; shifting the transfer valve to the idle power unit; and energizing the idle power unit. In an emergency, precious minutes could be lost in such a procedure. The Hyde design provides an actuator on the transfer valve plus all the necessary electrical logic to perform the transfer in less than 15 seconds.

When a decision to transfer power units is made, a selector switch is rotated in the pilothouse, the transfer valve is shifted automatically, and the appropriate power unit energized. Detection devices monitor the transfer. If the total cycle is not completed within 15 seconds, an audible and visual alarm is energized in the pilothouse and the control room. The existing manual means of transfer is maintained.

The electrical logic in this system can be adapted to interface with a Hyde steering failure alarm and steering gear monitoring system to automatically transfer power units should the active unit fail.

Write 74 on Reader Service Card

MAGNAVOX

Interfacing with any shipboard navigation, logging, or measuring device having a Baudot or ASCII output, the Magnavox MX 111-VMS automatic vessel monitoring system is a complete data transmission arrangement for vessel monitoring via MARISAT. Any such data acquired aboard ship can be transmitted to any shore-side telex number at programmed intervals or upon request. The

PCD81-9

Maritime Reporter/Engineering News



Here's how five shipbuilders and owners fight corrosion with Ameron marine coatings.

Ameron marine coatings meet quick turnaround requirements of tuna fishing vessel owners with high-performance coatings like Dimetcote® E-Z II, a new generation inorganic zinc in single-package formulation which reduces application labor costs and is easily applied.

Commercial vessels around the world depend on Ameron marine coatings like Amercoat® 70, a controlled-release flaked copper coating with economical anti-fouling protection benefits.

Barges protected by exterior Dimetcote/Amercoat marine



coatings are also protected by interior tank lining systems like Amercoat 64/386. This epoxy system resists a broad range of chemicals and solvents.

The world's first fleet of 326,000 DWT Very Large Crude

Carriers depended on the world's leading inorganic zinc primer, Dimetcote 3, as the foundation for an effective marine coatings system which produced dramatic economic benefits.

Find out how Ameron marine coatings can help you fight corrosion effectively. Write Ameron Protective Coatings Division, 201 North Berry Street, Brea, California 92621 for information or call (714) 529-1951.

Ameron



Magnavox MX 111 Shipboard Communication Terminal Operator Interface Unit.

automatic transmissions are made without interrupting the normal communications of the Magnavox MX 111 MARISAT shipboard communications terminal.

Changing weather conditions at sea can be monitored by a shore station without involving shipboard personnel. Cargo conditions, engine performance, and fuel consumption, as well as ship's speed, heading, and position can be obtained at will from a shore-side office.

Data acquired by two independent sensors can be transmitted to different telex numbers from separate schedules. The system can be operated in three modes: schedules (automatic transmission), polling/rescheduling, and conventional.

Write 75 on Reader Service Card

MARCON



The main processing unit for Marcon's Micro-Mate II.

Marcon's Series 6000 Performance Monitor System (PMS) provides an integrated system to monitor, track, record, log, and display parameters of shipboard machinery. It can be described as a linked series of microprocessors with input and output hardware controlled by highly flexible software programs. A typical system could include sensor transducers, switches, and rpm inputs feeding data to nearby Data Remotes. The Data Remote processes information and transmits it to the main processor.

Processed data is displayed in

page format on CRT displays, printed out, recorded on digital tape cassettes and is available for transmission via telemetry to shore or centralized stations. Operators can select and edit the page displays through the operator keyboard.

The Series 6000 PMS is said to have a number of features that set it apart from other types of monitoring systems, and represents a quantum advance in state of the art monitoring. It provides

remote inspection of equipment and monitoring of operating parameters. Sensors installed in key locations within the machinery and spaces track performance and alert the operator to malfunctioning equipment. An alarm sequence warns the operator of machinery hazards and guides him through acknowledgement of alarm conditions.

Marcon recently introduced a new low-cost series called the Micro-Mate. These systems will

provide automatic monitoring displays and logging for up to 136 points at a cost competitive with conventional alarm panels but with added features such as reduced wiring and installation cost, data logging either by printer or magnetic tape, connection to microwave of satellite communication link, and second display keyboard.

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(continued on page 28)

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range, 270, has been specially created to fit small and medium sized vessels. Such as chemical tankers and other vessels containing corrosive cargo. The design is of course approved by leading authorities and is in accordance with IMCO-regulations.

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Shipboard Automation & Monitoring Systems

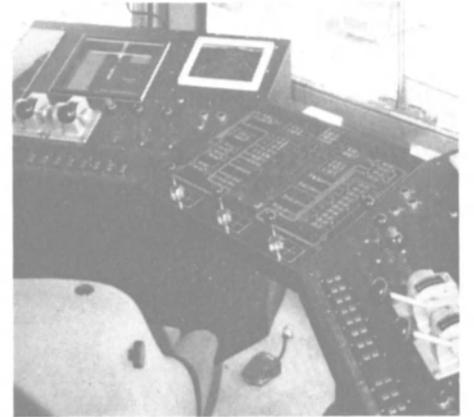
(continued from page 27)

MEGASYSTEMS

Megasystems has been installing its distributed microprocessor-based Seamatic II condition monitoring and trend analysis

systems aboard vessels since 1976. The company, headquartered in Boca Raton, Fla., now utilizes the same type of proven electronics to provide USCG-approved fire alarms, ABS unmanned engine room automation, cargo monitoring and control, data and bell logging systems, dredge automation and controls, tugboat automation, and generator control automation. Megasystems recently delivered

its second complete automation system for a split-hull ocean-going hopper dredge. This ship will have eight intercommunicating microprocessor stations. Each local unit features continuous LED digital display of measured parameters. Only a single multi-conductor cable is required to transmit complete data from one unit to the other, thus drastically cutting the cabling expense



Megasystems dredge drag tenders console.

one normally would require. Drag-tending functions will also be performed by microprocessor.

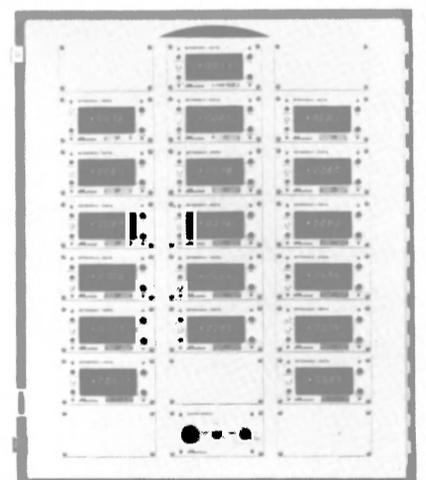
The company is introducing a new generation of solid-state, individual control loop modules. These highly reliable, self-diagnosing units will fit standard Eurocard type modules. Megasystems' solid-state logic control modules and microprocessor instrumentation are being installed in a new Lloyd's Class icebreaking ferry to be delivered to CN Marine later this year.

Megasystems will soon be introducing its new Direct Optical Tuning (DOT) into the market. This new product is said to represent a significant advance over current products on the market, and will be the simplest to operate, the company says. It offers advanced features due to the advances in electronic design that were employed.

The DOT system can monitor several different engine types, be made portable, provide complete injection and waveform displays including the ability to "freeze" and "expand" significant areas, provide exact pressure values for exact points of crankangle position, and provide the first truly practical cylinder load-balancing capability.

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METRITAPE, INC.



Metritape, Inc., Metrimodule System.

A recently introduced tank gauging system from Metritape provides centralized shipboard (continued on page 30)

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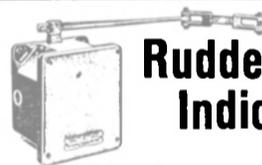
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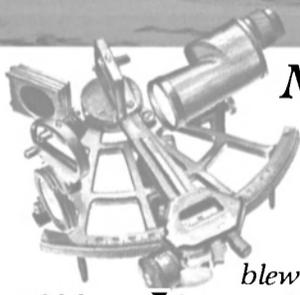
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Shipboard Automation & Monitoring Systems
—Metritape, Inc.

(continued from page 28)

monitoring of liquid level and temperature using standardized plug-in modular components. The new Metrimodule system features individual digital displays, measuring about 3.5 inches high, 7 inches wide by 5.5 inches deep

(89 by 178 by 140 millimeters), that provide level, temperature, and multiple alarm indications plus operational controls for each tank. The displays can be easily recessed into an existing console or panel box mounted in a bow-up tank plan pattern (up to 23 displays plus system control module).

Continuous tank ullage is shown to the nearest centimeter, tenth foot or inch, and product

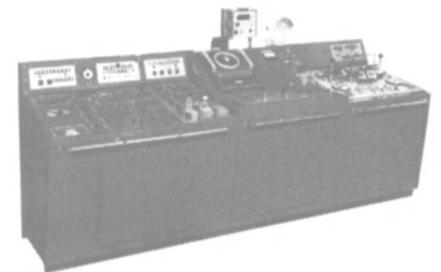
temperature in degrees C or F at the press of a button. Three adjustable audible and visual alarms are for high, overflow and low levels. Low alarm also monitors deck cables for open circuit. The Metrimodule system includes Metritape Level/Temp electric sensors, intrinsic safety barriers, Metrimodule-digital displays and Multifunction-4 circuit cards. These standardized components are separate for each tank, interchangeable

and plug-in. They insure that most component failures will affect only one tank and simplify service by shipboard personnel—maximizing system reliability.

For more information,

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NATIONAL MARINE SERVICE



National Marine Service bridge console built for the dredge YAQUINA.

A diesel-powered vessel may have a complete safety watch and control system tailored to its specifications at economical cost. The key to customizing with economy is the use of standardized components to build the system. National Marine Service of St. Louis designs customized consoles with standardized pushbutton controls and switches, organized into control panels to fit a specific vessel. The monitoring systems permit unattended or reduced manning under U.S. Coast Guard and American Bureau of Shipping regulations.

Modular design with solid-state electronics are said to provide exceptional reliability with low system cost. Included with monitoring and control systems are standard features that eliminate common operating problems. For instance, the system discards normal variations in operating parameters to eliminate false alarms. It also contains controls to activate and deactivate alarm circuits and eliminate nuisance alarms when engines start or stop. An alarm memory feature insures that alarms are not lost when engines are shut down. A front panel test allows testing of all system electronics whether engines are running or not.

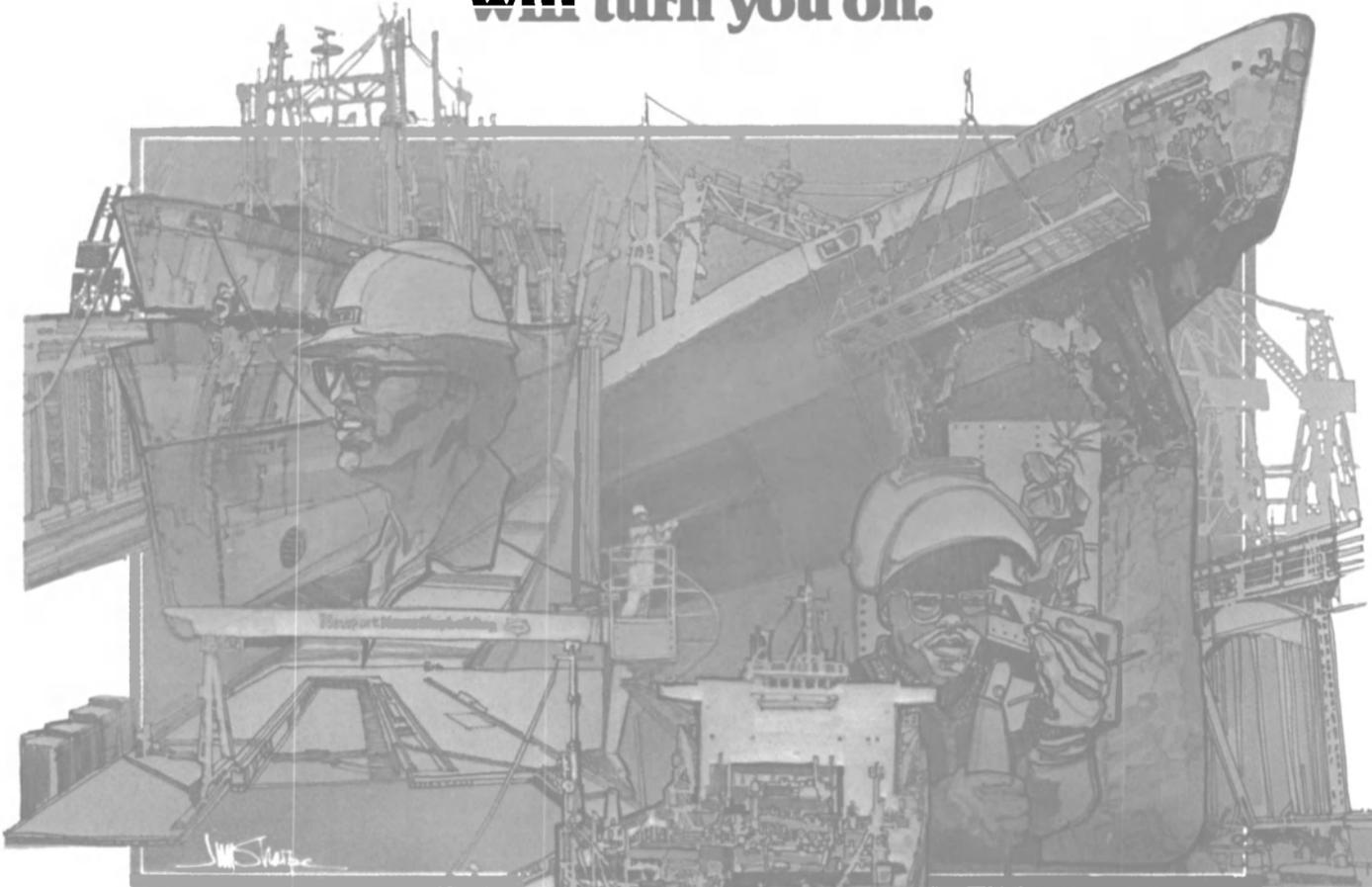
The system includes all alarms and controls for a total engine safety watch: engine control console to bridge console to a monitor panel in the chief engineer's quarters.

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PAN AMERICAN SYSTEMS

Pan American Systems Corporation of Belle Chasse, La. is a leading manufacturer and developer of the marine industry's automation, monitoring, control, and instrumentation equipment. Principal products include unattended engine room automation systems,

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on outside sources contributes to our excellent record for quick turnaround and on-time delivery.

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monitoring and read-out systems, digital tachometer units, generator automatic transfer, and many others.

PAS equipment can be found in all corners of the world onboard many types of vessels, such as an 80,000-dwt tanker; a 200-foot offshore supply vessel; a 140-foot, triple-screw river towboat; a 50-foot, twin-screw pushboat; a 200-foot jackup barge; 65-foot, twin-screw pilot boats; 100-foot, triple-screw, high-speed crewboats; 140-foot oceangoing tugs; and numerous other types.

Starting some 14 years ago in the 650-square-foot garage of its founder's home, PAS was launched into the manufacturing of its first monitoring and alarm panel intended for a dredge. This was to become a total disaster. This failure furnished the management of PAS with many important facts, and renewed its determination to become a leader in the industry.

Many new directions were set by PAS products, among them the philosophy that "if you make the electronics sound and simple enough, it should need no maintenance." To prove that point, in 1970 PAS started manufacturing equipment with the electronic circuitry that carried a five-year unconditional operating warranty.

Write 78 on Reader Service Card

ROCHESTER INSTRUMENT

Series 4644 manufactured by Rochester Instrument Systems (RIS) of Rochester, N.Y., is a family of vibration-monitoring equipment consisting of: primary sensing elements that detect vibration levels and movements; signal conditioning devices that amplify and transmit sensor inputs; and plug-in, electronic modules that continually report these signals as useable data and initiate warnings and/or shutdown when preset limits have been exceeded.

Single- and dual-channel monitoring modules and a common system control module provide the operator's interface with the system to monitor the radial vibration, axial position, and phase reference of rotating machinery.

RIS high-density systems offering eight to 20 rack positions are available in seven standard configurations. All of them conform to, and in many areas exceed, the requirements of API 670. For instance, these systems occupy only about 50 percent of the panel space needed for conformance.

Standard features of a Series 4644 system include a "power-up inhibit" feature to prevent false alarms; a flashing LED to identify first out alert or danger alarms; and field-selectable switching to permit on-site selection of such

operating modes as latch/non-latch danger alarms, time delays, shutdown logic, and relay energize/de-energize for shutdown.

Series TM-2480 from RIS is a line of self-contained thermocouple and RTD temperature monitors capable of monitoring from six to 30 points. The units provide independent alarm and shutdown functions, and incorporate three-channel, plug-in modules to

provide high-density packaging. Three models are available: TM-2481 for monitoring up to six points; TM-2482 for up to 12 points; and TM-2485 for up to 30 points.

Each series TM-2480 unit incorporates a meter/common service module that includes the digital readout, optional integral calibration facilities, plus common alarm and common shutdown re-

lays for all channels. These monitors are intended for use with primary sensors that are T/Gs and RTDs, but they can also accept and condition analog input signals from other types of sensors. Another feature of the units is their ability to detect sensor failure without shutting down the monitoring function.

Write 79 on Reader Service Card
(continued on page 32)



Magnavox Delivers All That Satcom Offers. And Then Some.

The Magnavox MX 111 terminal ties your ship into Marisat's fast, private, clear, worldwide communications network. Our full capability system operates in telephone, telex, data and facsimile modes. And it's completely compatible with all present and known future requirements, including Inmarsat.

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That's Marisat, Magnavox style. It's the only technically proven system that's designed specifically for ships and supported world-wide by a leading marine electronics company.

For details on the best system afloat, contact Marine Systems Operation, Magnavox Advanced Products and Systems Co., 2829 Maricopa St., Torrance, CA 90503. Telephone (213) 328-0770. Telex 696101. Cable MAGNAMAR.

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**Shipboard Automation
& Monitoring Systems**
(continued from page 31)

**SMITH-MEEKER
ENGINEERING**

Smith-Meeker Engineering Company (SMECO) of New York City, established in 1908, has a reputation in the marine industry for quality engineering design

and systems manufacture. A natural spin-off from its experience in switchgear was the shift to automation and monitoring systems in the 1960s.

SMECO expertise in vessel machinery and electrical requirements, coupled with the knowledge of electronics designers, has resulted in a highly flexible and extremely reliable solid-state control and monitoring package to meet the regulatory requirements

for reduced manning and unattended engine room classification. This flexibility has now been extended to the design of dredge machinery control and inert gas control systems. All automation and machinery control systems are custom-tailored and are offered with either electro-mechanical sensors or with RTD and LVDT transducers and electronic meters offering 1-percent accuracy.

All proposals are fully itemized and are accompanied by a preliminary arrangement drawing, eliminating the possibility of hidden factors. Installation documentation is so detailed that, when accurately followed by an installing activity, systems can often be checked out and demonstrated in three working days.

For servicing, each system is accompanied by technical manuals, and installation and logic drawings. With the exception of SMECO-designed and manufactured plug-in, solid-state circuit cards and meters, all console components, sensors, and solenoids are commercially available from other sources, though a large stock is maintained for customer convenience and immediate delivery.

Seminars on operation and service can be arranged upon request, and SMECO field personnel are available if needed. The company is proud to note that most problems can be resolved by verbal communication. SMECO has made extreme efforts in developing its design and selecting components that have been proven most reliable.

Since entering this field, nearly 100 vessels have been equipped with SMECO systems on a nationwide basis. Numbered among Smith-Meeker clientele are major oil companies, dredging companies, offshore supply vessel operators, towboat companies, and the U.S. Navy's Military Sealift Command.

Write 80 on Reader Service Card

**SOLIDSTATE
CONTROLS**

A typical uninterruptible power system from Solidstate Controls, Inc. (SCI) of Columbus, Ohio provides a continuous and dependable supply of ac power to critical loads, and consists of a rectifier/battery charger, battery, static inverter, static transfer switch, and manual bypass switch. SCI has standard UPS systems in stock for immediate configuration and delivery in three inverter kva sizes — 3, 7.5, and 15—with electrically matched rectifiers/chargers in 50-, 75-, and 150-ampere sizes. For applications where batteries/charging equipment already exists, stand-alone inverters can be specified; for installations where no back-up power source exists, SCI can provide most any type of battery.

An SCI static inverter provides extremely accurate, regulated voltage output generated by a ferroresonant transformer. It converts dc power from the rectifier/charger or the battery to ac power for the load. The automatic static transfer switch protects the integrity of power to the load even if the system malfunctions or overloads, while the manual

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bypass switch enables an operator to bypass the electronic portions of the UPS for maintenance purposes. Typical SCI configurations for uninterruptible power systems include float type, rectifier input type, and redundant systems.

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SPERRY

The Sperry division of Sperry Corporation, Lake Success, N.Y., has developed several systems that provide increased automation and monitoring capabilities for commercial ships. Sperry has developed an integrated bridge system that allows all bridge functions to be combined into a single, computerized console area, effectively permitting a decrease in necessary manpower requirements.

The division also has developed an engine control and monitoring system for use on diesel-powered ships. Three such systems have been delivered to Livingston Shipbuilding Company in Orange, Texas, for use on the Pride of Texas and her two sister ships.

The system on the Pride of Texas, a 36,000-dwt dry bulk carrier, permits fully automated control of the unmanned engine room. The system is fully approved by the U.S. Coast Guard for unmanned operations. The engine control and monitoring system permits full display of all engine parameters on a main console, which is also used to control the engine operation. In addition, the Pride of Texas system has seven remote alarm panels placed in key areas of the ship to provide warnings of an engine malfunction.

Write 82 on Reader Service Card

WAGER



Wager's Model M-7 Smoke Indicator.

Photoelectric smoke indicators manufactured by Robert H. Wager Company of Chatham, N.J. automatically monitor, detect, and accurately measure stack emissions, both to help the vessel operator comply with smoke regulations and to monitor combustion for fuel economy.

For sensitive, automatic readout of smoke conditions, these Wager photoelectric monitors employ a light sensor in the stack that detects and measures the opacity of the emissions to with-

in one percent accuracy full scale. Differentiation between black and white smoke is also possible. New models, ideal for diesel and gas turbine emissions, give precise readouts without interference from ambient light.

These precise readings are relayed by cable from the light sensor to an amplifier cabinet that may be conveniently located on or near the main control console in the engine room. On the

cabinet panel a meter displays the smoke readout on a scale of 0-100 percent, with additional scales available for even more precise readings. Panel lights also alert personnel to the presence of smoke, indicate black or white smoke, and show the zone in which the monitor is operating.

Specifically designed to operate in a rugged marine boiler environment, Wager photoelectric monitors are shock and vibration

tested to insure continuous operation and minimum maintenance, with complete reliability for five years or more in monitoring smoke conditions.

Wager PSIs meet MarAd's "Standard Specification for Merchant Ship Construction," December 1972, Section 70. They also conform to U.S. Coast Guard smoke alarm requirements for reduced manning.

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Name _____

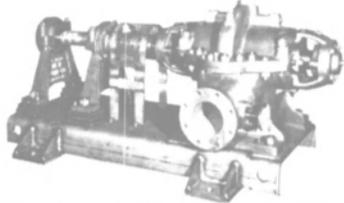
Co. Name _____

Address _____

City _____ State _____ Phone _____

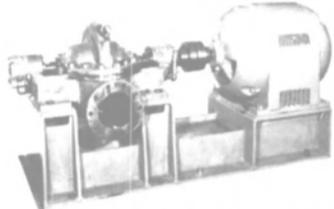
MAIL TO: Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca. 92113 Attn: I. Maggay MR

**WEIL ALL BRONZE
CENTRIFUGAL FIRE PUMP
500 GPM @ 100 PSI HEAD
600 GPM @ 3600 RPM
144 PSI — 100 HP**



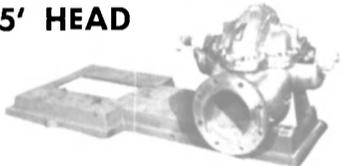
Model 10496—3" X 4"—42.6 BHP @ 500 GPM. 3000 RPM—test pressure 175 PSI. Suction flooded. Requires 50 HP 3000 RPM motor. Offer includes Pump, stainless steel base, coupling & extra pedestal for belt drive if desired.

**WORTHINGTON 300 GPM 150 LB HEAD
CENTRIFUGAL FIRE PUMP**



#1223620—3550 RPM—5½" suction—4½" discharge—Imp. diam. 10¾"—test pressure 225 lbs. MOTOR: G.E. model 5K1405Y—60 HP—400/60/3—Frame 405—type K—72 amps—3550 RPM.

**BRONZE 2000 GPM PUMP
75' HEAD**



75' Head — 1750 RPM — mfg by American Well Works. Horizontally split case size 8X8. (50 HP motor required for pump capacity.) Frame 445. Supplied with 5'8" X 2'5" base.

\$1775 EACH

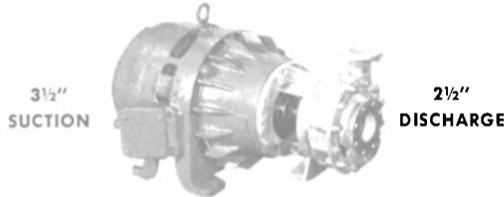
**250 GPM — 150 LBS
WARREN CENTRIFUGAL
FIRE & BILGE
EDUCTOR PUMP**



All Naval bronze. 36.5 BHP—3500 RPM—3" discharge—4" suction. Test pressure 300 lbs. Discharge pressure 150 lbs. Electro Dynamics—Frame FRAC-405—type XNX — #90398—45 HP—3500 RPM 57/5 amps—45° rise—440/3/60.

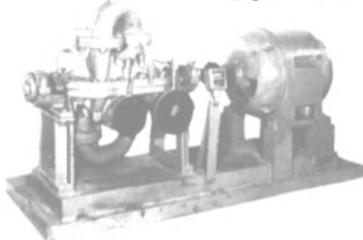
PUMPS

**FAIRBANKS-MORSE
BRONZE FIRE & FLUSHING PUMPS
250 GPM @ 100 LBS.**



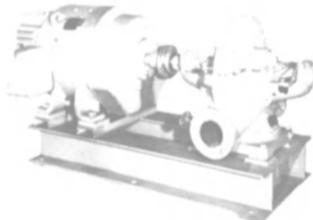
3500RPM — test pressure 250 lbs. MOTOR: 25 HP — 440/3/60—3500 RPM—34.9 amps—frame 404NC—temp rise 50°C. Ex-DD 445 Class & Fram 695 Class.

**BUFFALO 100 GPM — 980' HEAD
BOILER FEED PUMP**



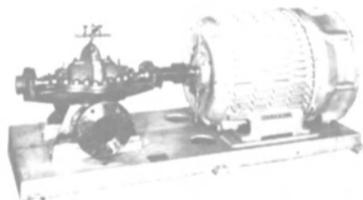
Size 2-RR—2-stage. 3" Suction—2" discharge. MOTOR: 50 HP—220/440/3/60—3500 RPM.

**FAIRBANKS-MORSE 750 GPM — 125 PSI
STAINLESS STEEL CENTRIFUGAL SEA
WATER FIRE & FLUSHING PUMP**



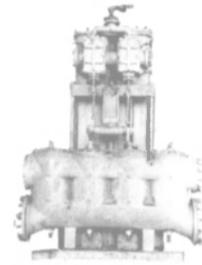
125 PSI (281 Ft.) total head. Suction lift none (flooded) 1750 RPM. With Folk #8F coupling—flexible, all metal, enclosed. MOTOR: Reliance type T—100 HP—1750 RPM —343 amps—230 volts DC—Frame 503A5. Pump has 5" suction—4" discharge. Pump & Motor mounted on base 37¾" wide X 6' 2¾" long X 3' 0½" high. Total weight 3348 lbs.

**NEW 5" ALL BRONZE BALDWIN-LIMA
1000 GPM 150 PSI TOTAL HEAD
CENTRIFUGAL FIRE PUMP**



Single stage double suction type with 6" side suction & 5" side discharge. 3600 RPM—test pressure 250 PSIG. MOTOR: Reliance 125 HP 440/3/60—totally enclosed—fan cooled—Frame D-5003-S—50°C.

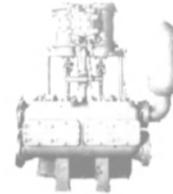
**WORTHINGTON 16" X 14" X 18"
VERTICAL DUPLEX STRIPPING PUMP**



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.

**RECONDITIONED 1980
ABS — READY TO GO**

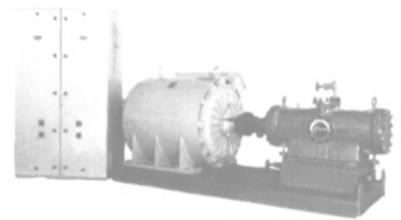
**STEAM DRIVEN VERTICAL DUPLEX
FIRE & GENERAL SERVICE PUMPS**



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

**700 G.P.M. @ 150 P.S.I.
NEW — UNUSED**

**MOTOR DRIVEN ROTARY
HORIZONTAL PUMPS
WITH 4-SPEED 440/3/60 MOTOR**

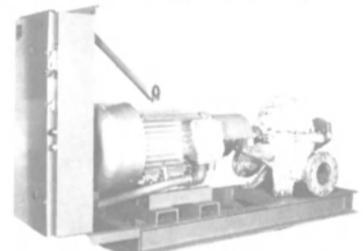


Inlet 8" — outlet 6". Powered by 4-Speed 440/3/60 motor. Motor is 100/75/50/37.5 HP — 1200/900/600/450 R.P.M. Motor has Cutler-Hammer control. Weight 10,000. Inquire for complete details.

FIRE PROTECTION FOR SHIPYARDS!

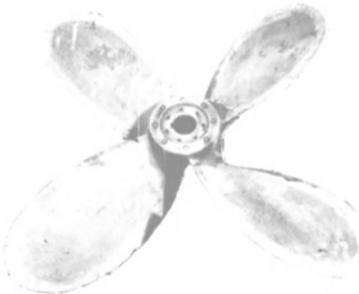
(Several installed in yards doing Navy work)

**BRONZE FIRE PUMPS
1000 GPM @ 150' HEAD**



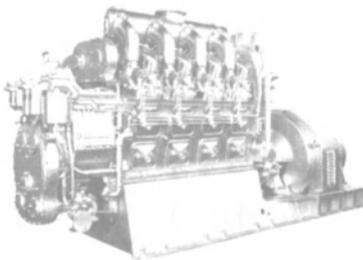
6" Suction—5" Discharge. 1750 RPM—motor driven—100 HP—440/3/60/1750. Motor control & pump on pre-fab base for portability. New motor, base and coupling. Gardner-Denver reconditioned pump.

4-BLADE LST BRONZE PROPELLERS



Starboard — 7' diameter — pitch constant 4.699: Bore tapers from 6½" to 4¾". 14½" taper equal to 1"/foot on diameter. U.S. Navy reconditioned. Average weight 1760 lbs.

**GM 8-278A 350KW 440/3/60
DIESEL GENERATOR SET**



GM 8-cyl. engine—8½X10—2-cycle—Vee type driving 350 KW G.E. generator—440/3/60—600 RPM—430 KW 2 hours. 3 Units available. Your inspection invited.

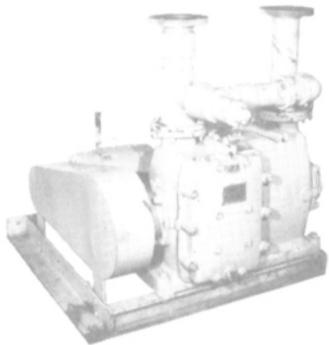
PLEASE NOTE:

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



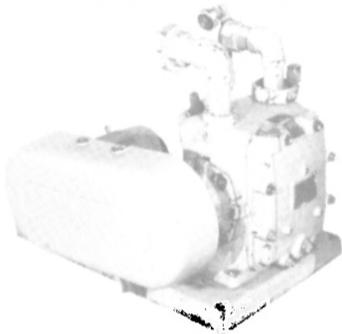
Main Office: (313)
CABLE: BOSIRON—BALTI

MEGATOR L-400 4"X4" BILGE & BALLAST PUMP



Sliding shoe—self-priming. 240 GPM — 45 PSI. MOTOR: 15 HP 440/3/60/1750 RPM.

MEGATOR L-125 1½"X1¼" FRESH WATER PUMP



Sliding shoe—self-priming. 20 GPM—45 PSI—1½ HP—440/3/60 — 1750 RPM.

OTHER MEGATOR PUMPS

L-150 FOR SANITARY SERVICE

40 GPM—45 lbs—1½" X 1½"—3 HP—440/3/60—1750 RPM. Self-Priming.

H-125 FOR GENERAL SERVICE

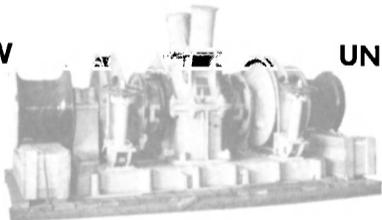
20 GPM—75 PSI—1¼" X 1¼"—2 HP—440/3/60. Self-priming.

L-300 FUEL OIL TRANSFER BILGE & BALLAST

120 GPM—45 PSI—3" X 3"—7½ HP—440/3/60—1750 RPM. Self-Priming.

LINK BELT WINDLASS

NEW UNUSED



Handles 7000 lb anchors—1½" windlass—56" centers—50 HP—230 VDC—with controls and spares.

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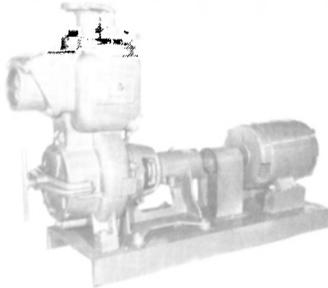
n METALS CO.

ST. • BALTIMORE, MD. 21202

7-1900 Marine Dept.: (301) 752-1077
AID. U.S.A. TWX 710-234-1637

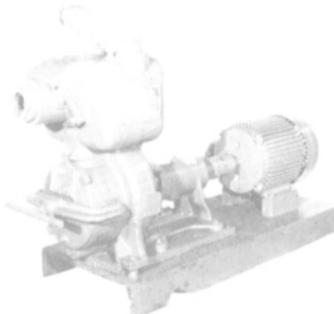
PUMPS

GORMAN RUPP TYPE BILGE SERVICE PUMP



Size 4—70 GPM @ 60 PSI—for raw sewage overboard service. 7½ HP.

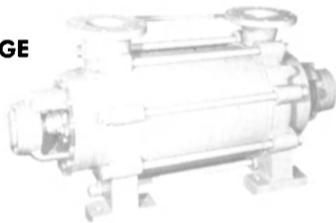
GORMAN RUPP OVERBOARD DISCHARGE TRASH PUMP



Self-priming—50 GPM @ 25 PSI—2" X 1½"—1.5 HP—220/440/3/60—3450 RPM. Model 13A2B.

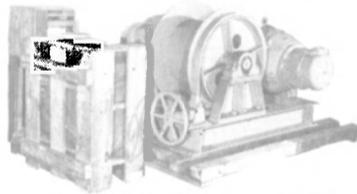
NEW — UNUSED NIJUIS FIRE PUMP

5-STAGE 5" X 3"



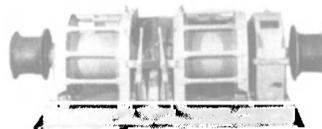
550 GPM @ 323' head @ 1800 RPM

GENERAL PURPOSE WINCH 3500 LBS AT 200 FPM



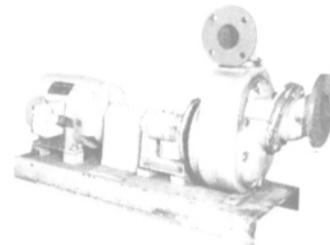
A.C. Motor drive—25/12.5 HP—GE 440/3/60—40°C AB—1750 RPM—type KR—full load amps 32. Motor drives winch through Folk reduction gear. Has compressor hand brake.

CARGO WINCH — UNUSED 2-DRUM 2-GYPSY DECLUTCHABLE



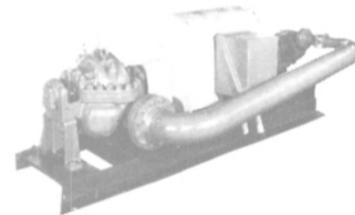
DUTY: 7400 LBS @ 220 FPM. Mfg by Western Gear Works. With repair parts. Model CWE50. Capacity of each drum 600 ft. of ¾" wire rope. MOTOR: 50 HP—230 VDC with control. 14" Cutler-Hammer brake control—1 master switch—enclosed contactor panel & resistors.

I.T.T. MARLOW EMERGENCY BILGE & BALLAST PUMP



Self-priming—3" X 3"—150 GPM @ 150' head. Model 37HEL-15E. RELIANCE MOTOR: 15 HP—440/3/60—3505 RPM.

GOULD HIGH PRESSURE WATER INJECTION PUMP

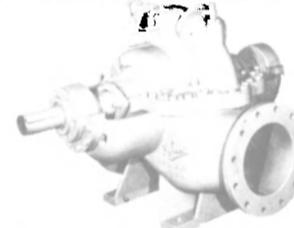


STAGE 1: Gould Figure 3755—3X4X7—150 PSI—#700B396. STAGE 2: Gould Figure 3316—4X6X11—#224B-274. MOTOR: Double shaft—200 HP Westinghouse—440/3/60—3550 RPM. Frame 444 T5—style 680B400GMI.

WITH SPARE MOTOR

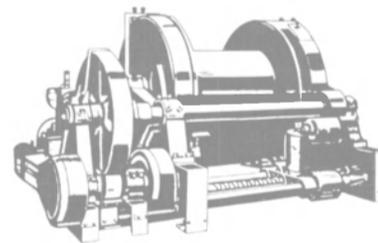
FACTORY NEW

NIJUIS 10"X8" SPLIT CASE HORIZONTAL PUMPS



Best efficiency 3400 GPM @ 160 PSI—1500 RPM or 5220 GPM @ 30 PSI—1500 RPM maximum capacity. 4500 GPM @ 125 PSI 1800—RPM. Requires 500 HP. 2000 GPM @ 110 PSI—1450 RPM (using 6-V-71 engine reducing 8" to 6" suction).

LARGE STEAM TOWING ENGINE 9 X 10 TWIN ENGINE DRIVE Air or Steam — 125/250 PSI



Heavy-duty Clyde with 36" diameter X 51" Face single drum. Flanges 68". CAPACITY: Up to 2800' of 2" wire rope. Normal line pull 40,000 lbs @ 50 FPM. Steam or air pressure required 125 to 250 PSI. Can be adapted to electric drive or increased steam or air pressure to a capacity of 82,000 lbs @ 20 FPM. Pawl holds 270,000 lb. pull from any layer. Equipped with level wind device. Approximate weight 30,000. DIMENSIONS: 12'6" wide—6'6" high. Write for details.

ALSO AVAILABLE

Large towing ring — 36" I.D.

Port Handbook Makes Museum Donations

The Port Information Resources Committee, Inc., has made donations totaling \$8,000 to two leading marine historical groups. In a recent ceremony at the Seamen's Church Institute, Committee chairman and president **James P. McAllister** presented \$4,000 checks to **John B. Hightower**, president of the South Street Sea-

port Museum and **Peter Stanford**, president of the National Maritime Historical Society.

The Port Information Resources Committee is responsible for the production and distribution of the annual New York Port Handbook, which details the organizations and facilities of the bistate port. Sold worldwide, the Handbook is



Shown at recent ceremony at Seamen's Church Institute (L to R): **James P. McAllister** and **Clifford B. O'Hara** present checks to **Peter Stanford** and **John B. Hightower**. Looking on are **Randolph R. Brown**, **Bruno Augenti**, **N. Nick Cretan**, **Donald Seymour**, and **Walter Maloney**.

ARE CLOSED TANKS CLOSING YOUR EYES?

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Closed Tank Portable Gauging Systems

Today's record petroleum prices command extreme accuracy in gauging cargos, bunkers and slop tanks.

MMC's Portable Gauging Systems eliminate hand-held error and provide fast, direct ullage, interface and temperature readings.

Their accuracy—ullage and interface—to $\pm \frac{1}{8}$ " (3 mm) and temperature to $\pm 0.5^\circ$ F (0.2° C)—makes them ideal for calibrating the ship's fixed in-tank ullage system.

Equally significant, MMC Systems allow ship's crew or independent cargo surveyors safe entry into closed tankage with no accidental venting of toxic fumes or inert gases into the atmosphere. Sampling with MMC Closed Tank Systems is equally safe and easy.

The Systems comprise two major components. The first, MMC's patented Vapor Control Valves are installed at strategic tank-top locations. Situated at ullage hatch level, they provide fixed datum reference points for MMC's Exclusive Portable Gauging Tapes. The ullage, ullage/interface and temperature tapes are all delivered intrinsically safe (FM & BASEEFA approved). A separate non-electric tape is provided with a snap-hook for attachment of standard sampling devices.

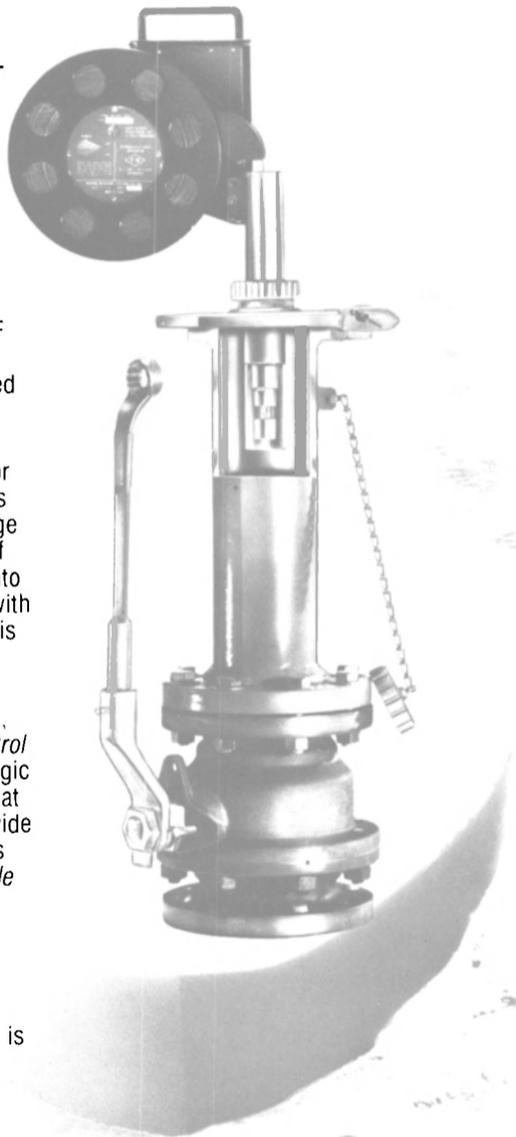
For detailed information, contact:

MARINE MOISTURE CONTROL CO., INC.

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a valuable resource for both domestic and international trade executives.

Other committee members attending the presentation included **Clifford B. O'Hara**, secretary-treasurer; **Bruno Augenti**, chairman of the Marine Index Bureau, Inc., representing the late Adm. **John M. Will**; **Donald Seymour**, standing in for **Howard Seymour** of Mohegan International Corporation; **Walter Maloney**, general counsel for the Committee; **N. Nick Cretan**, executive director, Maritime Association of the Port of New York; and **Randolph R. Brown**, representing the New

York Chamber of Commerce and Industry.

The South Street Seaport Museum is striving to bring a mix of commerce and culture to South Street in order to revive the Seaport district's 19-century character. They plan to expand from the existing base of the collection of ships to include shops, exhibitions, and educational programs.

The National Maritime Historical Society is devoted to furthering the understanding of our maritime heritage through research, preservation, restoration, and publication.

Great Lakes/Great Rivers SNAME Spring Meeting Held In Cleveland

The Spring Meeting of the Great Lakes and Great Rivers Section of The Society of Naval Architects and Marine Engineers was convened recently at the Westlake Holiday Inn near Cleveland. Total registration was 85.

Following registration and the business session in which the next year's officers were elected, three papers were presented as follows: "Ice Breaking by Tow on Mississippi River," by **S.L. Denhartog**, U.S. Army Corps of Engineers, Cold Regions Research

and Engineering Laboratory; "Narrative of Harbor Services on the Illinois River," by **Ed Trumbull**, vice president, Trumbull River Service, Lacon, Ill.; and "Great Lakes Export Coal Potential," by **G.J. Ryan**, Great Lakes Region director, MarAd and **A.H. Ames Jr.**, chief, Region Port and Intermodal Development Office, MarAd.

For those who wished, the afternoon provided an opportunity for a tour of the Lorain Pellet Terminal owned by Republic Steel



Shown at recent meeting of SNAME Great Lakes and Great Rivers Section are (seated, L to R): **Ray Yagle**, instructor; **Tom Stewart**, vice chairman-Great Lakes; **John Colletti**, chairman; **George Ryan**, Great Lakes chief, Maritime Administration; **A.H. Ames Jr.**, chief of Region Port & Intermodal Development, Great Lakes, Maritime Administration. Standing (L to R): **Steven Newell**, **Dan Springer**, **Doug Donermuth**, **Kurt Hagemester**, **Ron Nix**, and **Paul Vickers**, students.

Corporation and the newest iron ore dock on the Great Lakes.

The Fall Meeting of the Section will be at Ann Arbor, Mich., October 23, 1981, held in conjunction with the 100th anniversary celebration of the School of Naval Architects and Marine Engineers at the University. A full technical session is planned and festivities will continue into Saturday, including the football game for the many alumni expected to attend.

Gulf Fleet Marine Names Vaccaro Contracts Manager

Gulf Fleet Marine Corporation, headquartered in New Orleans, recently announced the following appointments:

Ralph A. Vaccaro Jr. has been named contracts manager and will be responsible, on a worldwide basis, for the administration, negotiation and finalization of all contracts. Mr. Vaccaro joined Gulf Fleet in 1974 as insurance manager, and was appointed assistant secretary in 1979. He is a graduate of the United States Merchant Marine Academy at Kings Point, N.Y.



Ralph A. Vaccaro Jr.

Raymond L. Stratton has been named insurance manager and will be responsible for the placement, administration, and claims handling of Gulf Fleet's total insurance program. A graduate of McNeese State University, Mr. Stratton joined the company in 1976, and has served as insurance analyst since that time.

Jim Castle has joined Gulf Fleet's marketing staff as a sales representative in Houston, Texas. Mr. Castle has 10 years of sales experience in the oil and marine fields. He is a graduate of Sam Houston State University.

Gulf Fleet Marine Corporation is one of the Houston Natural Gas group of companies, and provides a wide range of services to the offshore petroleum and construction industries on a worldwide basis.

Chris Clark Named Vice President And COO Of Tickle Engineering

Arthur B. Tickle Jr., chairman of the board and president of Arthur Tickle Engineering Works, a Brooklyn-based engineering firm specializing in all phases of

marine repairs, has named **Chris Clark** as vice president and chief operating officer. The announcement was made by **Girolama Corso**, executive assistant to the chairman.

Mr. Clark, a 1965 graduate of the U.S. Merchant Marine Academy, was previously general manager of the Marine and Industrial Divisions of the company.

Raymond Unit Awarded \$4.7-Million Contract

Henry F. LeMieux, chairman of the board and chief executive officer of Raymond International, Inc., Houston, Texas, recently announced that a unit of its wholly owned subsidiary, Raymond Offshore Constructors, was awarded a \$4.7-million contract to fabri-

cate an offshore platform jacket and pilings for Atlantic Richfield Company.

The jacket will be a conventional eight-pile steel structure weighing 1,350 tons and containing a 16-slot drilling template. Upon completion in early 1982, it will be installed in water 180 feet deep on High Island Block 466 in the U.S. Gulf of Mexico.



HERE'S A DRAMATIC WAY TO PROVE THAT FERROUS CATALYST CAN LOWER PROPULSION PLANT OPERATING COSTS ABOARD YOUR VESSELS.

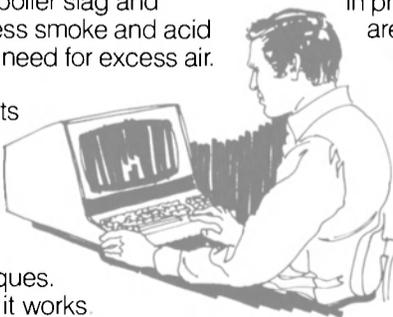
New computer software program measures plant efficiency before and after catalyst use.

- Do fuel oil additives work?
- Will they lower operating costs and save fuel?
- Are they cost effective?

Ferrous Corporation has developed a computer software program that can tell you exactly how much a specific fuel additive changes the efficiency of your marine boiler or diesel.

We wanted the facts! The program was developed to test Ferrous Combustion Catalyst. For years we had observed the effects of Ferrous Catalyst: reduced boiler slag and engine deposits; less smoke and acid corrosion and less need for excess air. We assumed that these improvements would also save fuel. But we wanted to prove it with accurate and acceptable data processing techniques.

Here's how it works.



Input data comes directly from you. All the input for the program comes directly from your engine room log. No special equipment or training is necessary.

The Ferrous software program evaluates the data and applies a number of correcting factors to determine changes in plant efficiency and trends in performance.

Before and after tests show significant results. Once the data has been analyzed, Ferrous prepares a report interpreting the results. Changes in propulsion plant efficiency are shown in easy to understand graphs.

To date, reports show efficiency improvements ranging from 4% to 8%. This means each gallon of Ferrous Catalyst saves three to six barrels of fuel. **We can show you the proof!** Sure we'd like to

sell you our product. But first, we want you to be convinced that Ferrous Catalyst works. If you're interested in putting your vessels to the test, or simply learning more about Ferrous Catalyst, fill out the coupon below and send it to Ferrous Corporation, P.O. Box 1764, Bellevue, WA 98009. Phone 206/454-6320.

FERROUS HAS THE PROOF!

SHOW ME THE PROOF!

- Send details about testing program
- Send information about Ferrous Catalyst.
- Please have your representative call.

Name _____

Company _____

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Phone _____

MR

ferrous corporation

Bulk Carrier 'Pride Of Texas' Delivered By Levingston Shipbuilding

The bulk carrier Pride of Texas (shown above), first of a new class of U.S.-flag merchant ships, was delivered recently by Levingston Shipbuilding Company of Orange, Texas, to her owners, Asco-Falcon Shipping Company of Houston.

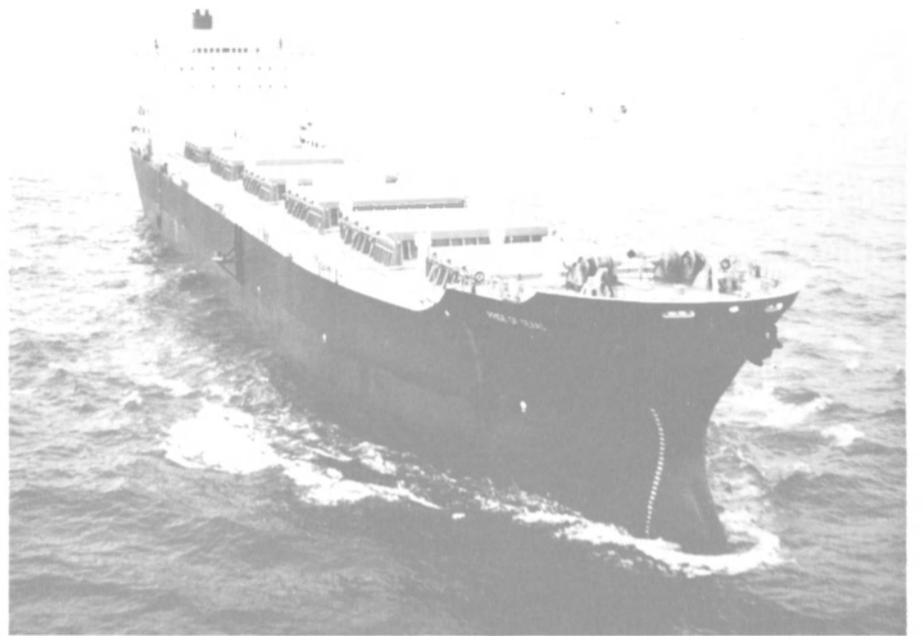
The new ship, about 612 feet long with a beam of 93 feet and depth of 50 feet, is designed to carry 36,000 tons of grain or other dry bulk cargoes in trade between U.S. and foreign ports. Her first cargo was a load of heavy grain shipped from a Gulf Coast port to the People's Republic of China. She is manned by an American crew of 26.

The propulsion plant in the Pride of Texas comprises two RV12-4 Transamerica Delaval Enterprise diesel engines, each with a maximum continuous rating of 8,125 bhp at 450 rpm. The ship

achieved 17 knots on sea trials, but in service the engines will be operated at 15,600 bhp, producing a full-load speed of 15.7 knots. The vessel is classed by the American Bureau of Shipping and certified by the U.S. Coast Guard for unlimited ocean service.

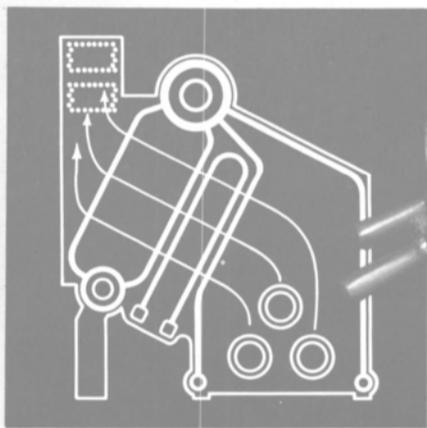
The Pride of Texas is said to be the first dry bulk carrier to be built in the United States specifically for U.S. foreign trade, and also the first to be built with the assistance of construction differential subsidy (CDS) provided by the Maritime Administration. Her design is a modified version of the highly successful future 32 dry bulk carrier developed by Ishikawajima-Harima Heavy Industries Company, Ltd. (IHI), a leading Japanese shipbuilder.

Under a separate agreement between Levingston Shipbuilding and the Maritime Administration,



IHI engineers spent two years working with Levingston engineers during the construction of the Pride of Texas, studying ways

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- We specialize in marine boiler and pressure tubing.
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Our work conforms to specifications of American Bureau of Shipping, U.S. Navy & Coast Guard, Lloyd's, Veritas, and ASME when required.

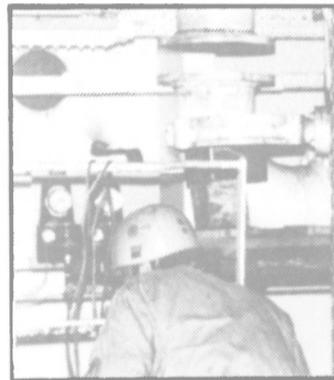
For speedy action call Watts line listed below.
800-631-5410
201-354-1200 — In New Jersey

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Marine Safety, lifeboats.

of transferring Japanese shipbuilding technology to the Texas shipbuilder.

The owner of the three new ships, Asco-Falcon Shipping Company, is a partnership between Ashland Alpha Shipping, Inc. and the Falcon Group of Houston. The vessels will be bareboat-chartered to Equity Carriers, Inc., and operated by Titan Navigation, Inc., both of Houston.

The second ship in the series, the Texas Star, was launched on June 13 this year. (For details on the Pride of Texas launching, see the June 15, 1980 issue of MR/EN.)

**New Bulletin Describes
Colt-Pielstick PC-2
Series Marine Diesels**

A new engine bulletin describing the Colt-Pielstick PC-2 series diesel engines for marine applications is available from Colt Industries' Fairbanks Morse Engine Division. The 14-page booklet is in full color and describes the PC-2 series diesels being built at the division's Beloit, Wis., plant. The bulletin also includes data on the higher-rated PC2.5 units at 650 bhp/cylinder. The Pielstick PC-2 is the world's most widely used, medium-speed, high-horsepower diesel engine. Typical applications are shown in the bulletin.

PC-2 engines have been built for a wide range of marine applications. Engine room illustrations show typical installation arrangements. A longitudinal cutaway clearly illustrates the engine's "V" type configuration, with detailed operating and dimensional data.

For a free copy of the new PC-2 bulletin,

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**McAllister Reports Ship
Financing Policy Now
Under Government Study**

The Federal Government is in the process of establishing new guidelines in administering the merchant ship financing guarantees (Title XI) program, a Commerce Department official said recently. Bruce A. McAllister, deputy assistant secretary of commerce for maritime affairs, addressed a luncheon session of the Symposium on Financing United States Ship Construction sponsored by the Association of the Bar of the City of New York.

Mr. McAllister noted that pres-

ident Reagan's budget revisions of March 10 reduced by 25 percent the fiscal year 1981 and 1982 ceilings for ship financing guarantees under Title XI of the Merchant Marine Act of 1936. As a result, he said, the maximum level of guarantee authority available during the next 16½ months will be \$1.2 billion. (By comparison, commitments under the Maritime Administration program in the 12 months ended last Sep-

tember 30 totaled \$1.1 billion.) Nearly \$4 billion in financing guarantees requests are now pending, and many more applications are expected to be filed before new funding authority becomes available, Mr. McAllister said.

As a general rule, until recently there had been no need to establish special priorities in processing Title XI applications, he said, but with current demand al-

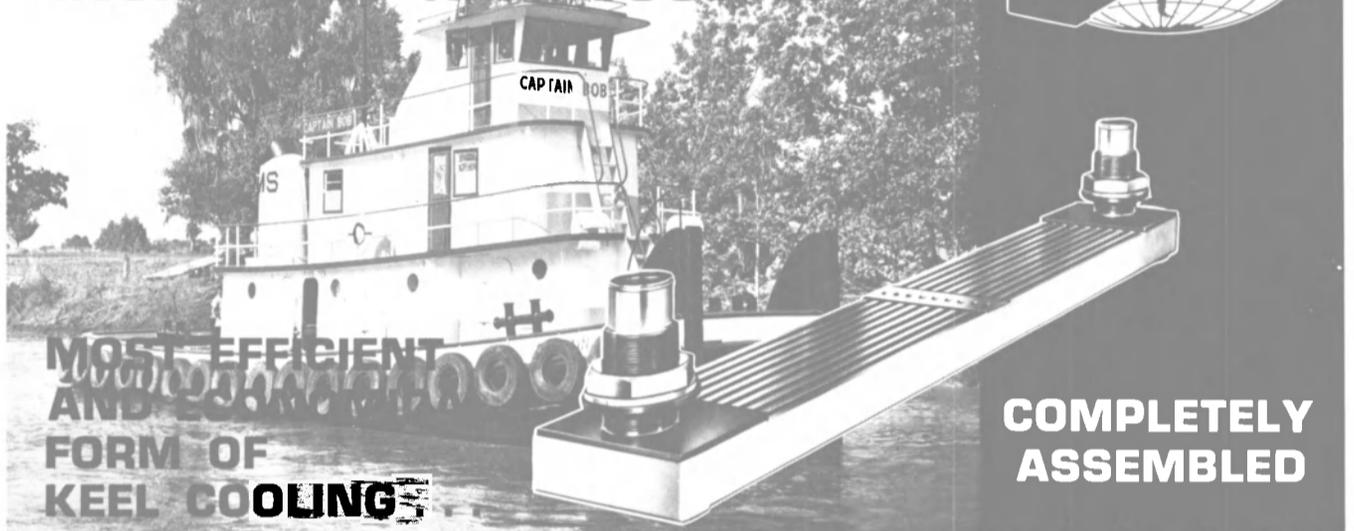
ready three times the existing funding authority, the agency now must adopt new criteria for the administration of the program.

Under the self-sustaining program, more than 5,000 vessels valued at \$10 billion have been financed during the past 45 years. During fiscal year 1980, Title XI yielded proceeds of \$42 million after paying all operating expenses, Mr. McAllister reported.

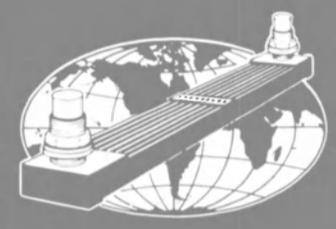
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34th Annual Statistical Analysis Released By Marine Index Bureau

The Marine Index Bureau, New York, the commercial depository for data concerning personnel illnesses and injuries for the American merchant marine and affiliated industries, released its 34th annual statistical analysis recently. The analysis covers ill-

nesses and injuries reported to the Bureau for deepsea seafarers during the calendar year 1980.

In announcing the analysis, **Bruno J. Augenti**, chairman of the board of the Marine Index Bureau, said: "According to the monthly U.S. Department of Commerce Merchant Marine Data Sheets, average employment for the year 1980 in the deepsea industry reached a new low of 19,720 jobs. In September 1945

(WW II), the number was 168,000 and in December 1951 (Korean War), it was 93,163." He further stated that "Deepsea personnel in the 40 years and over age group accounted for 3,444 of the total 5,992 illnesses reported and for 3,914 of the total 7,446 injuries.

"In all but four of the illness categories, seafarers over 40 suffered a markedly high number of diseases. Injuries for the over-40

age group were higher in all categories except one (back fracture). This does not mean that older seafarers suffer more illnesses and injuries than do their younger shipmates, but it does confirm that seafarers over 40 continued to constitute a major part of the seagoing population."

Mr. **Augenti** also pointed out that . . . "over the 10-year period 1971 through 1980, the incidence rate of illness and injury combined fluctuated within narrow limits and appears to be stabilizing. The combined rate for 1980 was 68.1, lower by 3.7 points than the 1979 rate."

For a copy of the full analysis—Circular Letter No. 98—write to Capt. **Robert E. Hart**, President, Marine Index Bureau, 17 Battery Place, New York, N.Y. 10004.

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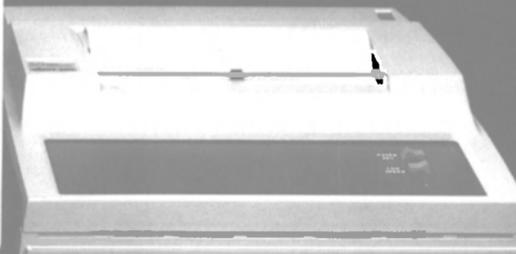
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Underway Replenishment Machinery Topic At Long Beach/LA ASNE

The Long Beach/Greater Los Angeles Section of the American Society of Naval Engineers held a recent regular meeting at the officers club of the Los Alamitos Armed Forces Reserve Center. Capt. **J.A. Gildea**, USN, Section chairman, welcomed those present and recounted several of the more meaningful meetings held during the past year, and brought the members up to date with a status report on the vital statistics of the Section.

Captain **Gildea** then turned the meeting over to program chairman **Carl E. Erickson**, who introduced the topic for the evening and the two presenters: "New Overhaul Techniques for Unique Naval Deck Machinery," by **Lon L. Denison**, UNREP overhaul coordinator, Naval Weapon System Engineering Station, Port Hueneme, Calif.; and **Arthur F. Green**, supervisory production controller, Long Beach Naval Shipyard, Long Beach, Calif.

The speakers described the uniqueness of Underway Replenishment (UNREP) machinery and pointed out that unlike conventional deck machinery that is a product line of various manufacturers, UNREP machinery is specifically designed for the particular application. Thus each procurement for new or converted ships over the past 20 years has resulted in different designs.

The developing of overhaul techniques for the 34 unique UNREP winch designs has presented a technical challenge requiring unusually close cooperation between the fleet, the winch component manufacturer, the Navy's in-service engineers, and the Naval Winch Rework Facility. The coordination of this activity requires intimate knowledge of not only the machinery and its environment, but also the functions and mission assigned to each.

Mario Moor Will Head Sulzer's New Subsidiary Company In Hong Kong

Sulzer Brothers Limited, Winterthur, Switzerland, is establishing a new subsidiary company in Hong Kong, in recognition of its growing importance as a world shipping center. This will further strengthen Sulzer's position in the Far East, considering the successful activities of companies in Tokyo, Kobe, Taipei, and Singapore. The Hong Kong company will handle all marine activities of the Sulzer Group.



Mario Moor

Mario Moor has been appointed managing director of Sulzer Hong Kong. He has worked for Sulzer's Diesel Engine and Marine Installation Department for more than 20 years, thereby gaining a wide theoretical as well as practical experience in diesel and marine engineering. He will be directly responsible to the diesel product management at Sulzer's head office in Switzerland.

Poling Moving Corporate Headquarters To Staten Island From Manhattan

The Poling Transportation Corporation has signed a three-year, half-million-dollar lease and has moved its corporate headquarters from lower Manhattan to One Edgewater Plaza, Staten Island. The announcement was made by A.T. Pouch, president of Pouch Terminal Enterprises, owners of the 300,000-square-foot harbor-front complex.

Poling, an American-flag, Atlantic Coast shipping organization employing more than 300 people, has maintained its administrative offices in Manhattan for 72 years. It will now occupy 6,000 square feet on the Plaza's third floor overlooking lower Manhattan, New York Bay, and the Verrazano-Narrows Bridge.

Revised Rules On Mobile Offshore Rigs Issued By Det norske Veritas

Det norske Veritas has issued revised Rules for Classification of Mobile Offshore Units. The new edition supersedes the 1975-edition (with supplement of 1977).

The major changes from the previous edition are:

More severe requirements to strength of steel structures. Residual strength is required to al-

low for any damage in main structures which might avoid attention in time. The residual strength is also to be sufficient to withstand any external damage on main strength members caused by, e.g., a possible collision with a ship. The ability of the structures to withstand fatigue and development of cracks is given special attention.

The requirements to stability and floatability have been made

more severe for the unit in intact as well as damaged conditions. Inclining tests are to be carried out also for sister units. Operational requirements have been added for bilge and ballast systems and emergency mooring of the unit in damaged condition. For accommodation units, additional floatability requirements have been stipulated with regard to damages of greater extent than assumed for drilling units.

The extent of the required periodical surveys for retention of class has been increased, especially for the two-yearly surveys. In-service inspection programs are introduced to aid the surveyors in their efforts to do their jobs in the best possible way. The two-yearly surveys are normally to be carried out in sheltered waters. The four-yearly surveys are in all cases to be carried out in sheltered waters.

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U.S. Maritime Industry's Safety Excellence Cited At Award Ceremony

A total of 31 United States maritime industry operations were cited recently for outstanding achievements in safety, including one that has functioned for more than seven years without an accident resulting in lost

time among crew personnel of the vessel.

Co-sponsored by the American Institute of Merchant Shipping (AIMS) and the Marine Section of the National Safety Council (NSC), the award ceremony at the Downtown Athletic Club in New York included top government officials and maritime company representatives in a broad

range of industry activity throughout the country.

Known officially as the Annual Ship Safety Awards Luncheon, the event was hosted jointly by the two key organizations, which spearhead accident reduction efforts nationwide in the maritime industry. The awards program covered operations of oceangoing general cargo ships, tankers, and

passenger vessels, shipbuilding and vessel repairing, stevedores, barge and towing services, and other activities of companies represented by both organizations. Each group handled awards for its own member companies.

Presentations by the AIMS group are known as the Jones F. Devlin Awards, and are based on accident-free operations by United States-flag ocean vessels of at least two years duration. Award presentations were made by retired Coast Guard Rear Adm. William R. Benkert, president of AIMS, and Capt. Jones F. Devlin, a former official with United States Lines Company and an acknowledged leader in maritime safety, after whom the AIMS awards are named.

The Marine Section presented separate citations to member companies of the National Safety Council who achieved accident-free records over the past calendar year based on specified standards of activity. The Marine Section presentations were made by Edward F. McIntyre, manager of safety and loss prevention at Farrell Lines and deputy general chairman of the Marine Section. He was assisted by Capt. David J. Linde of the U.S. Coast Guard.

Six U.S. companies were eligible to receive Devlin awards from AIMS this year, and 23 individual American-flag vessels were cited for continuous operations with no member of the crew missing a turn at watch due to injury. Devlin awards are based on three categories of accident-free operations—two years, four years, and five years or more.

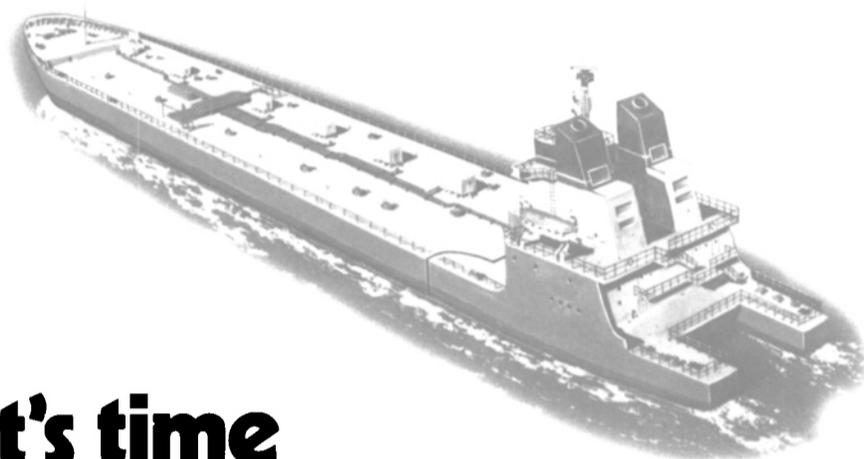
In the category of five years or more, AIMS awarded plaques to two operations. The vessel names and company affiliations are Amoco Connecticut of the Amoco Shipping Company; and the oceangoing barge Interstate 55 of the Interstate & Ocean Transport Company, which was cited for accident-free operation of 2,795 consecutive days, or more than seven years.

In the AIMS category of four years, awards were made to four vessels of Interstate & Ocean Transport Company. Included were Interstate 50, Ocean 115, Argoil 160, and Transporter.

A total of 17 vessels were cited for safety records covering at least two consecutive years but less than four years. They included the Middletown of Columbia Transportation; the Mobil Aero of Mobil Oil Corporation; the Exxon Bangor, Exxon Galveston, and Exxon Philadelphia of Exxon Company, U.S.A.; and the dry cargo vessels Thompson Lykes, Mallory Lykes, and Elizabeth Lykes of Lykes Bros. Steamship Company, Inc.

Also included in the two-year category were nine vessels of Interstate & Ocean Transport Company. They were Elk River, Chem

When diesel engine breakdown is unthinkable...



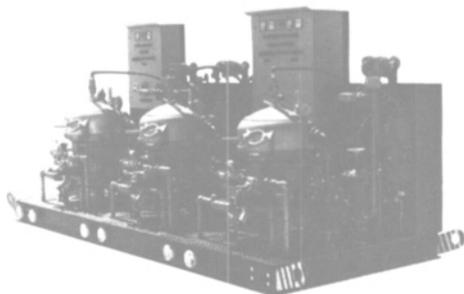
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The Marine Section of the National Safety Council cited eight operations for special awards. They included the Marine Division of Atlantic Cement Company; the Gulf Coast Fleet of Exxon Inland Waterways; the Gulf Towing Division of Nilo Barge and the River Towing Division of Nilo Barge; the Marine Repair Division of Ashland Petroleum and the Tanker Division of Ashland Petroleum; the United Brands Stevedoring at Charleston, S.C., and the Charleston Naval Shipyard.

AIMS represents American-flag vessel companies throughout the U.S. and is the largest management organization in the country's merchant marine industry. The Marine Section, on the other hand, is one of 28 industrial components comprising the National Safety Council. As such, it is the largest group in the coast-to-coast marine industry devoted to safety and reducing accidents among workers in the U.S. shipping industry.

In addition to compilation of records related to the annual Awards program, AIMS and the Marine Section are active in a wide range of other areas that further the concept of industry safety. These include the study of issues, development of proposals to reduce accidents, and participation in conferences in the United States and abroad that deal with such matters.

Rigos Firms Will Engage In Brokerage For Ocean Transportation Of Coal

Rigos Chartering and Rigos Maritime have announced that in addition to their present activities, they will also engage in brokerage for the ocean transportation of coal.

Capt. E.N. Rigos, president, said that special attention will be directed to such areas as port facilities (existing and proposed), transshipment areas and voyage analysis which will assist all parties concerned with coal transportation. The combined expertise of their dry and oil brokerage will be an asset to shipowners of combination tonnage, exporters, importers, traders and suppliers of coal, worldwide, he said. In addition, Mr. Rigos said they have assigned a special telephone number (212) 599-2512 for this activity.

IHI's New Shaft Generator System Meets Its Design Expectations

Installed on a new 80,700-dwt tanker, the first unit of the SSG (Super-economical Shaft Generator) system developed by IHI

(Ishikawajima-Harima Heavy Industries Co., Ltd.), Japan, has demonstrated excellent performance through the ship's official trial runs, meeting all of its design expectations.

The SSG system is an exhaust gas turbogenerator mechanically connected with the main shaft of the propulsion engine through a reduction gearing. The first unit was employed for the tanker Neptune Pegasus delivered re-

cently to Neptune Orient Lines, Singapore.

Through the performance tests, it was confirmed that the surplus turbine output is fed back to the propulsion system and that in case of turbine output shortage the power from the main engine can assist the generator to drive. Thus, it has been proven that the steam obtained from waste heat is effectively transformed into power and that the power is

transmitted through the reduction gearing.

The propulsion machinery of the Neptune Pegasus is a 15,000-bhp IHI S.E.M.T. Pielstick 10-PC4V diesel engine. With the engine operating at a 75-percent-rated output (11,250 bhp), approximately 220 bhp surplus was fed back to the propulsion system after having completely provided the electricity required for the ship.



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Twin City Yard Lays Keel For Seagoing Split-Hull Dredge

Twin City Shipyard, Inc., St. Paul, Minn., recently laid the keel for a seagoing dredge that will join the fleet of Gulf Coast Trailing Company, Kenner, La., late this year. The new dredge—to be launched under the name Mermentau—is a sister dredge of the Atchafalaya, launched last year for Gulf Coast Trailing, and which is presently in service in East Coast waters.

Ronald A. Rossway, vice president of Twin City Shipyard, said the new vessel, 196 feet 10 inches long and 40 feet 8 inches wide, will feature both a hinged split-hull for the rapid dumping of dredged spoils, and hopper doors for pumping dredged spoils ashore. Propulsion is by deck-mounted twin 850-hp engines with propellers rotatable 360 degrees to provide high maneuverability.

The shallow-draft dredge, with a maximum working draft of 14 feet 7 inches, will



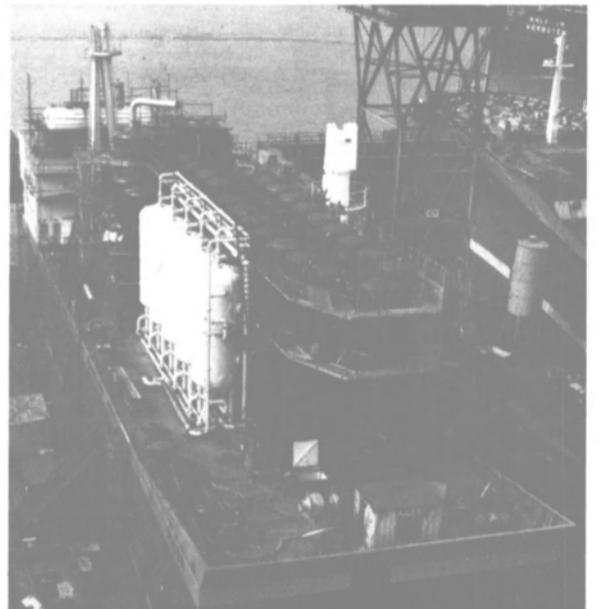
Present for the keel-laying ceremony for the 197-foot-long Mermentau at Twin City Shipyard, Inc. were (L to R) John C. Balogh, senior surveyor, American Bureau of Shipping, Duluth, Minn.; Chris Th. Spaanenburg, technical manager for Gulf Coast Trailing Co., Kenner, La.; John Buursema, president of Twin City Shipyard, St. Paul, and Ronald A. Rossway, vice president of Twin City Shipyard.

be used for diverse dredging operations in shallow rivers or for large coastal projects. The hinged deckhouse has messing and berthing facilities for 16 men.

The Mermentau will be fitted with two dragarms, or trailing suction pipes, mounted on each side of the ship's forward section, and capable of dredging to depths of 65 feet. Its hopper, occupying most of the midship area, will have a capacity of about 1,300 cubic yards of dredged material.

Upon arrival at the disposal area, the hinged hull will open hydraulically into two halves and dredged material will fall through the gap thus created. If conditions require, as in beach reclamation projects, the dredge pump may be used to remove material from the hopper and pump it ashore. This operation is particularly useful when environmental considerations preclude the use of bottom dumping, Mr. Rossway said.

First Large-Scale Floating Seawater Desalination Plant Launched At Nordseewerke

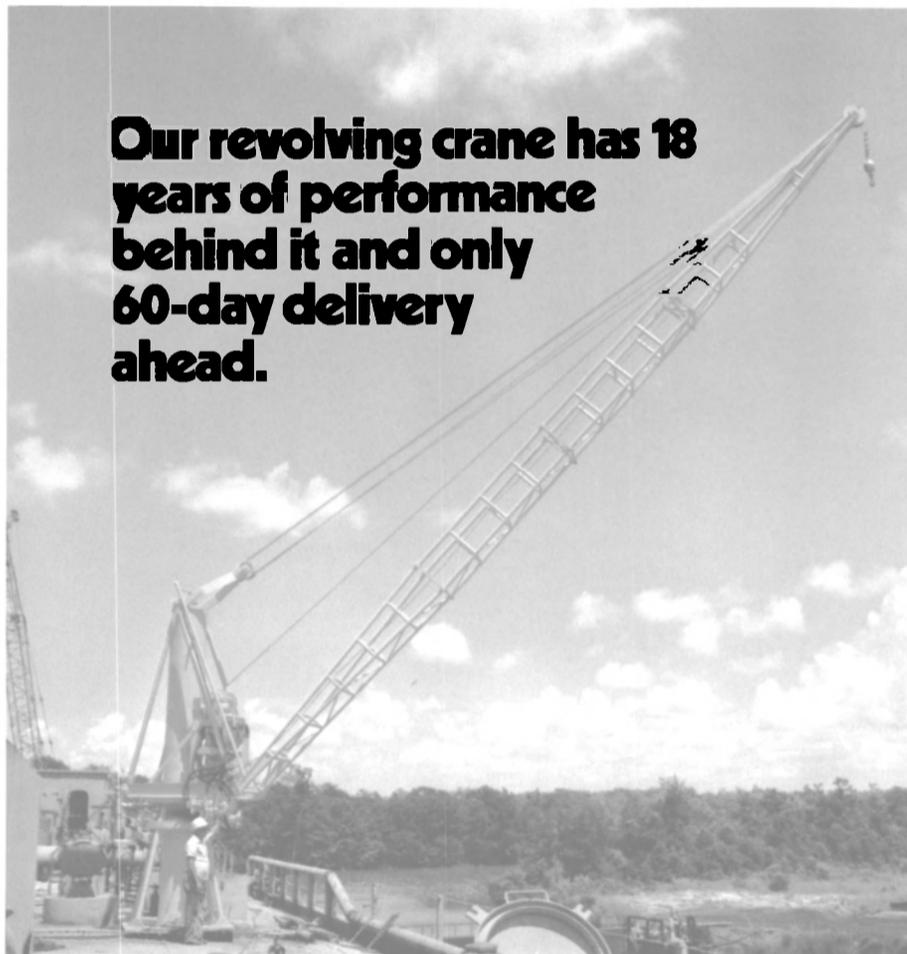


The first large-scale, floating seawater desalination plant built in Germany (shown above) was launched recently at Thyssen Nordseewerke GmbH, Emden. Mrs. Traute Matthofer, wife of the German Federal Minister of Finance, named the floating plant Meda in the presence of her husband and numerous honorary guests.

The Meda is a new joint development by INCON Anlagentechnik GmbH, Homburg/Saar, and Thyssen Nordseewerke GmbH, which was supported by the German Federal Minister for Research and Technology.

The seawater desalination plant is designed for a daily output of about 5,000 tons of fresh water. This production is arrived at by a new combination of processes, i.e., vapor compression (VC), vertical tub flow evaporation (VTFE), and multistage flash evaporation (MSF), which is said to achieve a hitherto unequalled economy of operation. The plant is mounted on a nonpropelled barge of 67 meters in length, 16 meters in breadth, and 4.5 meters in depth, on which the deckhouse for the auxiliaries, controls, workshops, labs, and living quarters is arranged as well. The barge was built according to the rules and regulations of Germanischer Lloyd, who also supervised the construction.

After start-up and testing of the plant, it is intended to operate Meda as a demonstration unit in the Near East by INCON Anlagentechnik and Thyssen Nordseewerke. The two companies involved have taken crucial steps toward greater production program extension and diversification by implementing this new seawater desalination plant.



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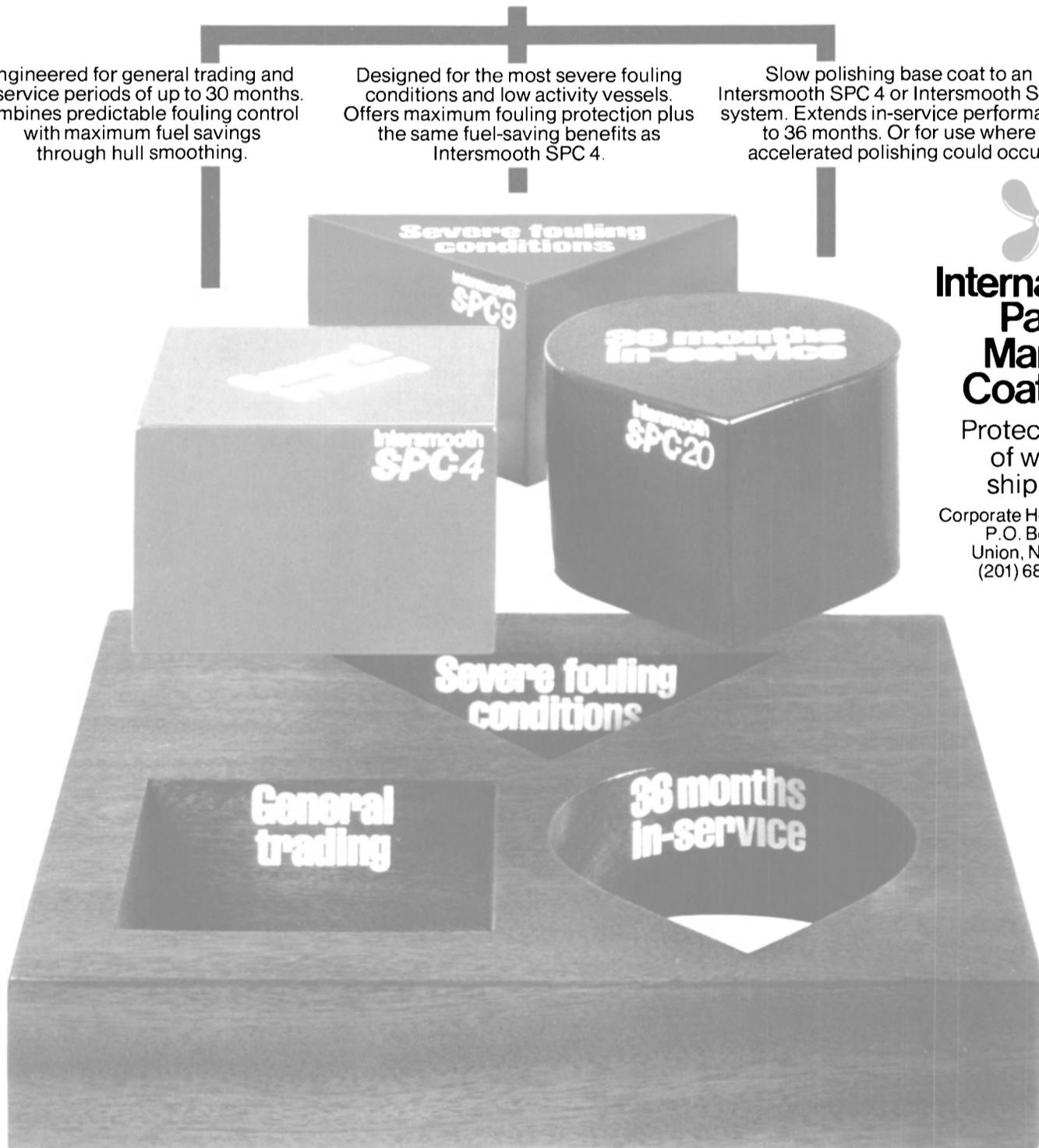
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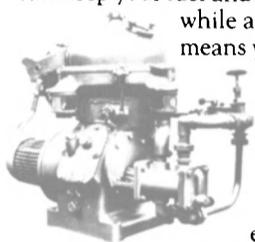
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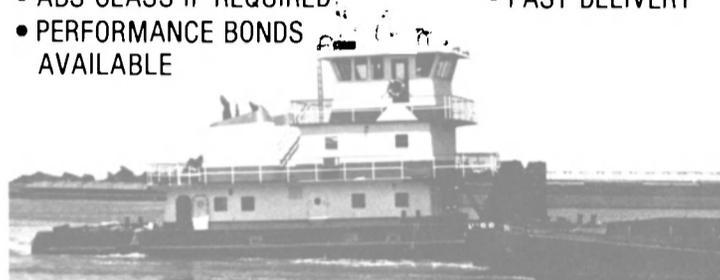
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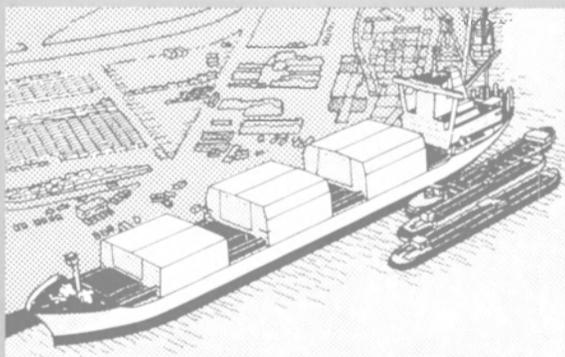
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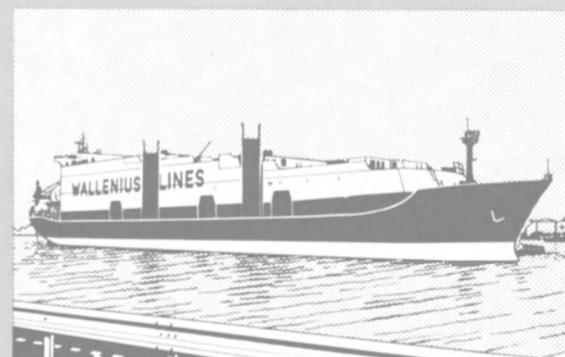
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**Cat-Powered Research Vessel
Delivered By Atlantic Marine**



Rodney E. Lay, president of Rudolph F. Matzer & Associates, Inc. of Jacksonville, Fla. has announced that the research vessel Cape Florida (shown above) has been delivered recently to the National Science Foundation. The vessel was built by Atlantic Marine, Inc. of Fort George Island, Fla., and will be operated by the University of Miami's Rosenstiel School of Marine & Atmospheric Science. A sister vessel, the Cape Hatteras, is scheduled for delivery in the fall this year, and will be operated by Duke University.

The 135-foot vessels were designed by the Matzer firm to operate as Coastal Zone research craft. Each is propelled by twin Caterpillar D379 diesel engines with a total output of 1,130 bhp at 1,225 rpm, driving two Pay & Brink controllable-pitch propellers and providing a service speed of 12 knots. Main engines, propellers, and two Cat 3406-powered diesel generators were supplied by Ring Power Corporation of Jacksonville.

The Carrier Transicold air conditioning units were supplied by D.W. Anderson Marine Equipment of Jacksonville, deck cranes are by Appleton Machine Company of Appleton, Wisc. Hydraulics for steering, scientific winches, A frames, cranes, and other applications are from Motion Industries, Inc. of Jacksonville.

**Last Of Ten Supply Vessels
For NMS Launched By Promet**



National Marine Services, a joint venture company formed by Jackson Marine Corporation and Abu Dhabi National Oil Company, will soon take delivery from Promet Private Limited, Singapore of its final order, as the last of its supply vessels, NMS 210 (shown above), was launched recently. All 10 supply vessels in the series, each measuring 176 feet by 14 feet by 38 feet, are used for offshore oil exploration work in the Arabian waters. They are typical Gulf of Mexico type, and can carry bulk cargoes like cement and drilling mud below their decks.

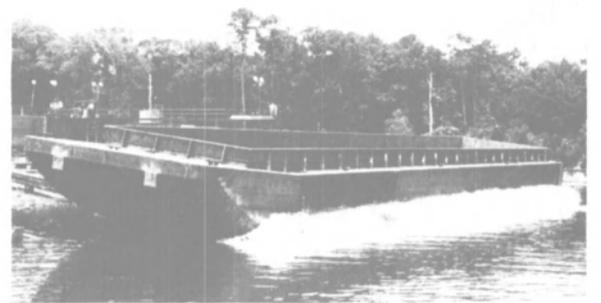
They can also carry fuel and water to drilling rigs, and are fitted with fire and pollution control equipment. In short, their

functions are mainly to service the oil drilling rigs.

Worth \$3.5 million each, the vessels have accommodation facilities adequate for 22 people at a service speed of 12 knots. All vessels are classed by the American Bureau of Shipping. The launching ceremony was graced by Mrs. Martha Burrows, wife of the president of Brown & Root, Inc.

**Samsung To Build Two Ships
For Norwegian Owner—
Valued At \$37.5 Million Each**

Samsung Shipbuilding Co. of South Korea recently announced that K-S Dyvi Swan AS of Norway has ordered two 36,000-ton ships costing the equivalent of \$37.5 million each. The ships will be capable of carrying oil products, structures for oil-drilling work and other products. Delivery is scheduled for February 1984.



A 500TH FOR EQUITABLE — Equitable Shipyards, Inc., New Orleans-based shipbuilder, recently launched at its Madisonville, La., Shipyard the 500th rake type river hopper barge in a period of 23 months since the launching of its first barge built at this facility. Additionally, this facility is now consistently turning out 10 barges per week.

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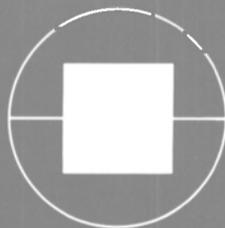
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LARGEST ON MISSISSIPPI—New Orleans's newest revolver crane derrick barge, the largest ever put into service on the Mississippi River, is shown lifting a test load of 340,000 pounds. The new derrick, Kent, owned by T. Smith & Son, Inc., boasts a 120-foot boom mounted on a traveling gantry 40 feet above the deck of its 250-foot-long barge. In addition to its heavy-lift capability of 310,000 pounds over a 43-foot radius, the big derrick has its own special clamshell bucket with a 32-cubic-yard capacity. The bucket, said to be the world's largest, can pick up 42,000 pounds of coal in a single bite. The derrick is named for Kent McWilliams, principal T. Smith & Son stockholder, who officiated at informal christening ceremonies recently.

NASSCO-Built Destroyer Tender Delivered To Navy



Present during signing of delivery papers for the USS Acadia are (L to R): Comdr. T.A. Branch Jr., Navy New Construction Office manager; Capt. W. Todd Hale, USN, supervisor of shipbuilding, conversion and repair, San Diego; Samuel D. Timmons, senior vice president, business affairs, NASSCO; and Capt. B.P. Hardy, prospective commanding officer of USS Acadia.

USS Acadia (AD-42), the second of four Gompers Class destroyer tenders being built by National Steel and Shipbuilding Company (NASSCO), was received by the U.S. Navy recently in ceremonies at the San Diego shipyard. Capt. W. Todd Hale, USN, supervisor of shipbuilding, conversion and repair, San Diego, and Comdr. T.A. Branch Jr., Navy New Construction Office manager, accepted the vessel for the Navy from Sam D. Timmons, NASSCO senior vice president.

NASSCO completed work on the vessel resulting from government changes not included in the original contract. Acadia will be home-ported in San Diego.

Gompers Class destroyer tenders are capable of providing repair and supply services to new destroyer type ships that have advanced missile, antisubmarine, and electronics systems. The 642-foot tenders also have facilities to service nuclear power

plants. They will provide repairs and modifications that do not require drydocking a destroyer and will carry spare parts, weapons, and munitions, and medical and dental personnel.

The first destroyer tender to be completed by NASSCO, USS Yellowstone, was received by the Navy in May 1980. The third and fourth destroyer tenders are scheduled for delivery in November 1981 and May 1983, respectively.

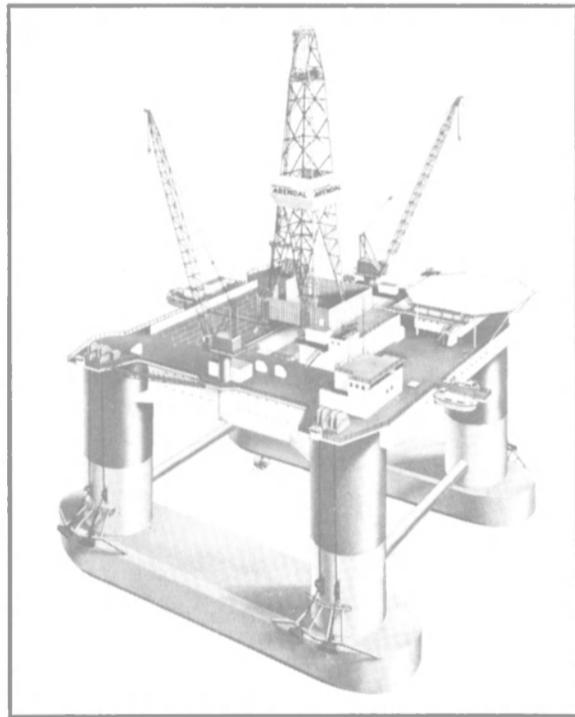
Delta Shipyard Delivers Inland Drilling Barge



Delta Shipyard of Houma, La., recently delivered the Inland Drill Barge DSD #4 (shown above) to Dean Shank Drilling Company, Inc. of New Orleans. The barge is 210 feet long, 50 feet wide, and 14 feet deep and becomes the fourth such drill barge the company is operating in the Gulf inland oil and gas industry. The new unit is designed to drill to 25,000 feet in water depths to 12 feet.

Drill Barge DSD #4 is the second inland drilling barge constructed by Delta Shipyard's new construction facility, which has been designed for the construction of drill barges, cargo barges, and offshore deck barges.

Dome Petroleum Orders Drill From Cammell Laird Yard



Dome Petroleum, Calgary, Alberta, Canada, has placed an order for a semisubmersible drilling rig, design GVA 4000 (shown above) with Cammell Laird, Birkenhead, U.K. Cammell Laird Shipbuilders Ltd. is a subsidiary of British Shipbuilders. The rig is of Gotaverken Arendal design GVA 4000; it will be constructed under license from Gotaverken Arendal, Sweden, and in close cooperation between the two yards.

The rig is intended for drilling in the very rough areas north of the Shetland Islands in the North Sea. Dome Petroleum has a charter contract with the British oil company Sovereign Co., which has recently been selected operator of Block No. 219 north of the 62nd parallel. Sovereign is partly owned by Dome Petroleum.

In March 1981, a contract was signed between Gotaverken Arendal and Wilh. Wilhelmsen, Norway, to deliver a rig of this design in December 1982. Wilh. Wilhelmsen has a long-term charter contract with Saga Petroleum, Norway, for operation north of the 62nd parallel.

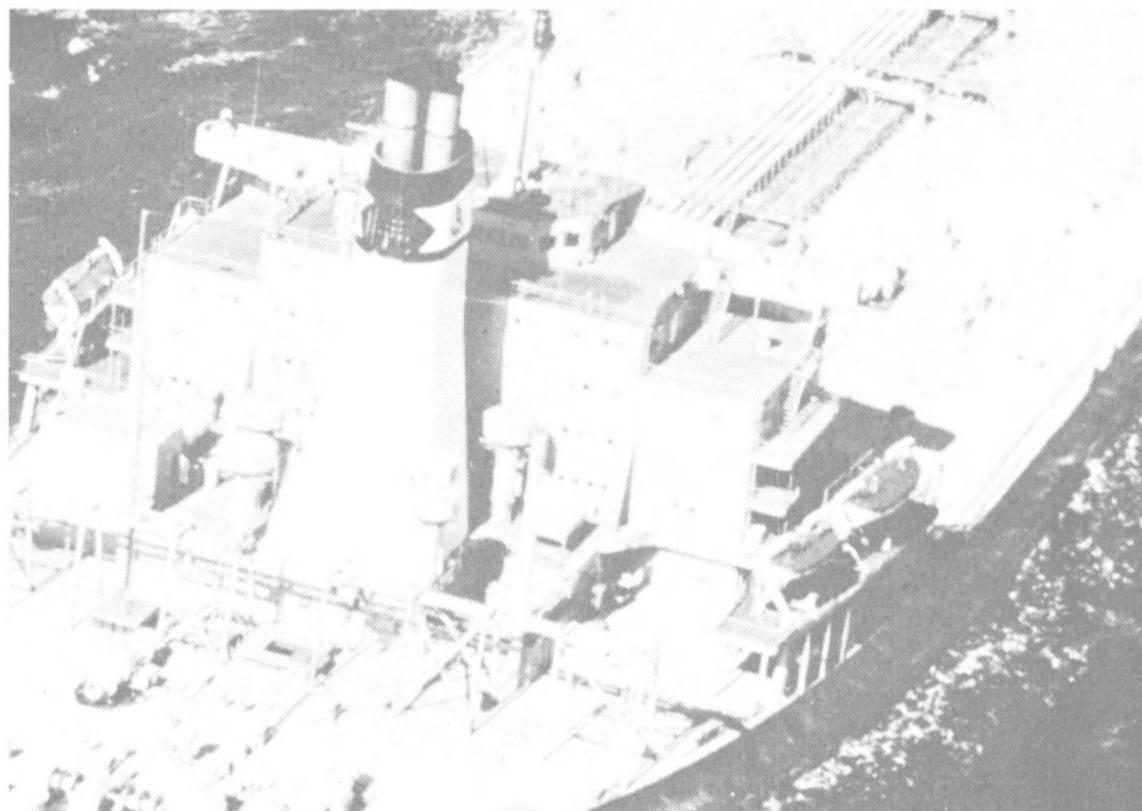
This rig, developed and designed by Gotaverken Arendal, represents a completely new design. It is a four-columned semi-submersible drilling rig whose main features are the large deck load capacity and positive seakeeping characteristics.

GVA 4000 has a variable deck load ca-

capacity above 4,000 tons in normal as well as in survival conditions. This exceeds the capacity of all rigs in the market. It is also the only rig that, without losing its deck load capacity, meets all the existing, new, and foreseeable demands on stability and safety put up by Norwegian authorities.

The GVA 4000 rig has a drilling depth of 25,000 feet, water depth of 2,000 feet, length overall of 280 feet 10 inches, beam overall of 252 feet, height to main deck of 134 feet 6 inches and height to lower deck of 108 feet 3 inches.

The features of GVA 4000 have raised a large interest among oil companies and drilling contractors. The license agreement between Gotaverken Arendal and Cammell Laird opens new opportunities to get access to the British offshore sector. In the course of 1981 Gotaverken Arendal therefore expects to sign new contracts for this type of rig.



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Mrs. William T. Toutant smashes champagne on bow of towboat named after her husband, who is engineering vice president at Jeffboat, Incorporated.



Sponsor at recent christening of towboat W.T. Toutant was Mrs. Eileen Toutant. Vessel was named to honor her husband William T. Toutant, right.

ACBL Towboat 'W.T. Toutant' Launched At Jeffboat Shipyard

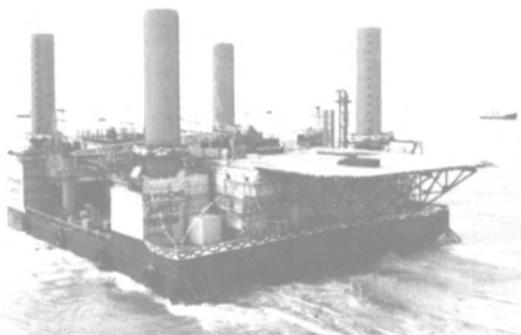
With a crack of the champagne bottle, Mrs. William T. (Eileen) Toutant recently christened the new towboat named to honor her husband at the Jeffboat, Incorporated shipyard in Jeffersonville, Ind. The new towboat, W.T. Toutant, is a 6,000-bhp vessel constructed by Jeffboat for its sister company, American Commercial Barge Line Company (ACBL). Both companies are part of the Inland Waterways Division of Texas Gas Transmission Corporation.

The vessel was decked out in bright pennants and a fresh coat of orange primer for the occasion. Immediately after the christening ceremony, the order was given to cut the ropes, and the Toutant slid down the Jeffboat launchways into the Ohio River. When she is completed and outfitted, the Toutant will go into service moving Western coal from ACBL's Hall Street Terminal in St. Louis to the Cajun Electric Cooperative's coal dock in New Roads, La.

The Toutant is named for William T. Toutant, vice president of engineering at Jeffboat. He is an alumnus of the U.S. Naval Academy, and has graduate degrees in engineering and business from Syracuse University and the University of Louisville. He is a registered professional engineer, a retired commander in the Naval Reserve, and is active in several technical and professional organizations.

Mr. Toutant began his career with Jeffboat as a naval architect in 1959, and held several related positions before being named a vice president in 1977. During his time with Jeffboat he has been instrumental in the design and development of the 5,000-, 5,600-, 8,400- and now the 6,000-horsepower class towboats. He has also provided guidance and engineering management in specialized equipment, including the Mississippi Queen and ferries Jeffboat constructed for Alaska and Texas.

Promet Launches Its Biggest Jackup For Offshore Company



The recent christening of Offshore Jupiter (shown above) was of great significance to Promet, as this is the largest rig christened to date at its yard in Jurong, Singapore. The ceremony was performed by Mrs. Audrey Richardson, wife of George T. Richardson, president and chief operating officer, The Offshore Company of Houston.

This four-legged, mobile jackup rig, 165 feet by 140 feet by 18 feet, is the first built by Promet for The Offshore Company. To date, this is the second project awarded to Promet by the company. The first project was for a conversion job at Abu Dhabi for the jackup rig Bahram. Promet completed the modifications in 28 days.

The Offshore Jupiter is a versatile rig suited for areas such as the Arabian Gulf and the Gulf of Mexico. Equipped with recessed tank footings, it has a maximum water depth capability of 150 feet and a shallow water entry depth of 12 to 14 feet, plus a full cantilever capability for work-over/completion drilling operations.

The platform includes a cambered deck steel hull about 18 feet deep and is supported by four tubular caisson type legs. It can house 82 men on three levels above deck, and is classed by the American Bureau of Shipping and certified by the U.S. Coast Guard.

Still on the orderbook at Promet are two jackup barges for Sun Contractors, and rigs for Sedco Inc., Zapata Offshore, Drilling Investment Ltd., and Arabian Drilling.

**C.E. Matthews Appointed
National Sales Manager
For Morse Controls**

C.E. (Matt) Matthews has been appointed national sales manager of Morse Controls, responsible for sales of both marine and industrial products. Announcing the appointment, Terry Carrell, president of Morse, commented: "The changing nature of today's marketplace for our marine and industrial products calls for an organization capable of quick response. By unifying the sales management function, we believe we will be better able to serve our customers' needs."



C.E. Matthews

Mr. Matthews, a 13-year Morse veteran, has previously served in a number of sales and management positions, most recently as sales manager, marine products. Prior to joining Morse, Mr. Matthews served 11 years in the U.S. Navy.

Morse Controls is a unit of Incom International Inc., a Pittsburgh-based company with interests in mechanical control systems, power transmission components, and filter products utilized in a wide range of industrial, marine, aircraft, agricultural, and construction equipment applications.

**Skagit Crane Provides
Improved Fuel Economy
—Literature Available**

A new capability and improved fuel economy are now available to users of the model 343 pedestal crane manufactured by Skagit Division of Continental Emsco, Sedro-Woolley, Wash. The capability feature is provided by an optional remote-control console that allows an operator to better position himself during operations. This is especially important when lifting operations are difficult and/or when wave motion demands more precise timing for raising the lowering loads. This capability is available for all Skagit pedestal crane models.

The improved fuel economy of the model 343 is achieved by using a smaller diesel engine than the one specified for Skagit's original units. Field testing proved the design of the crane's hydraulic system to be so efficient that the required operating results are achieved using the lesser horsepower engine.

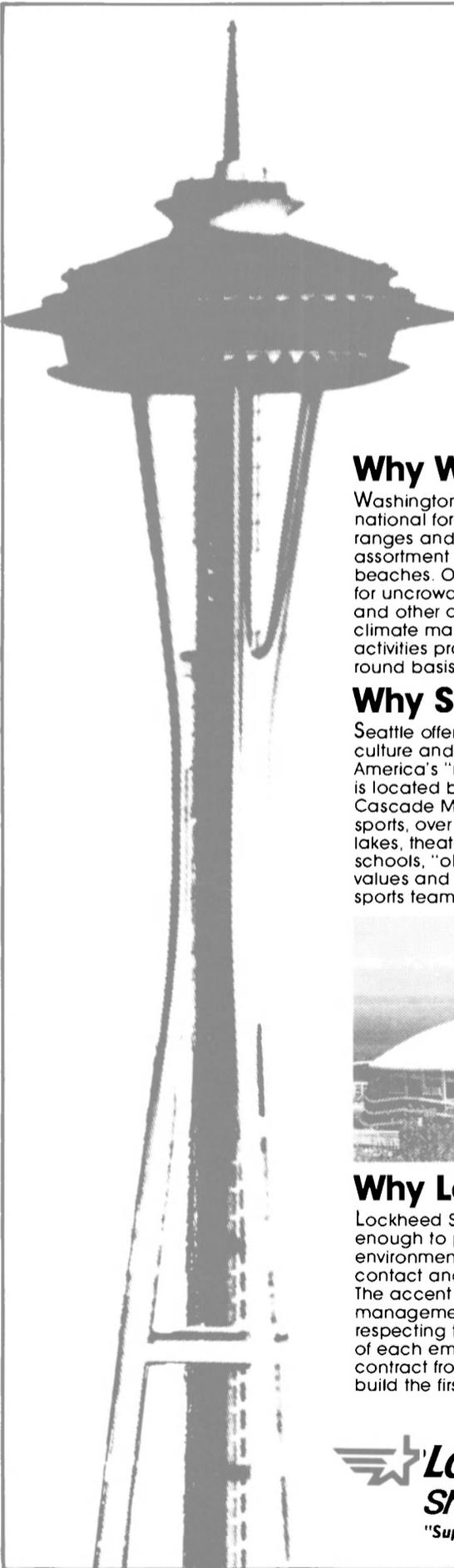
Skagit's pedestal crane was designed and engineered totally to operate in an offshore environment. The 35-ton-capacity model has the right combination of performance features to pick and spot loads with the strength, response, control, and efficiency required in offshore work.

The remote control unit consists of a portable panel that duplicates the controls and indicators in the operator's cab. An umbilical cord connects the crane to the remote control panel. The crane can be operated either remotely or from the crane operator's cab, but as a safety measure, not at the same time. The console measures approximately 1 foot by 1½ feet, weighs about 25 pounds and has shoulder straps so the operator has use of

both his hands during remote operations. Fuel consumption, according to Skagit's engineering department, should now be 20 to 25 percent less than the earlier original unit, depending on the individual operator's technique and other application variables.

For more information and free literature on the model 343 pedestal crane,

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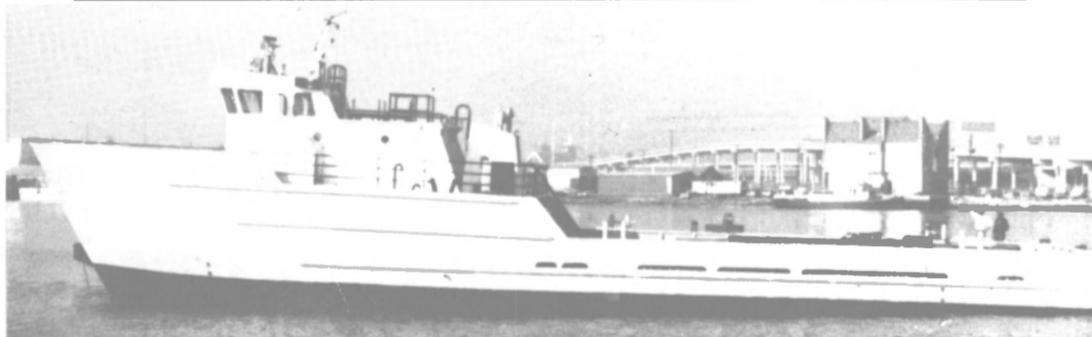
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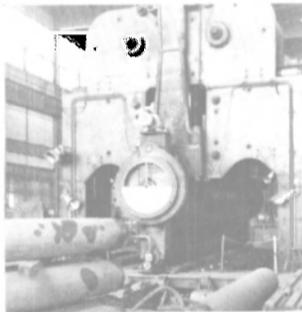
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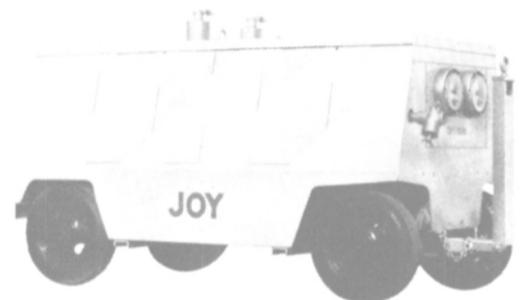
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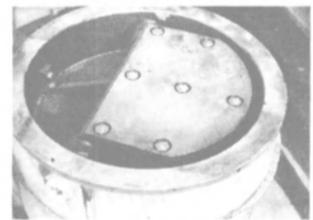
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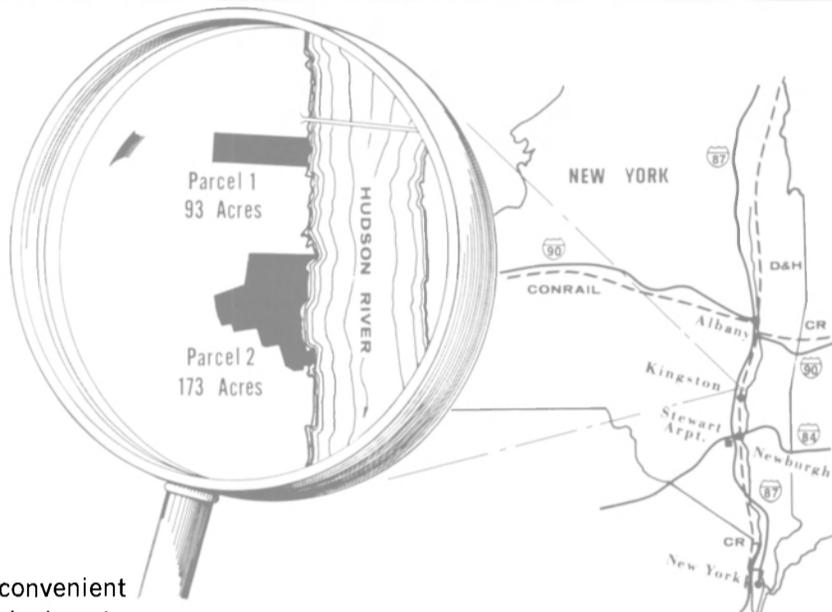
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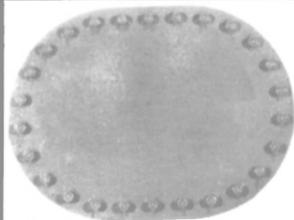
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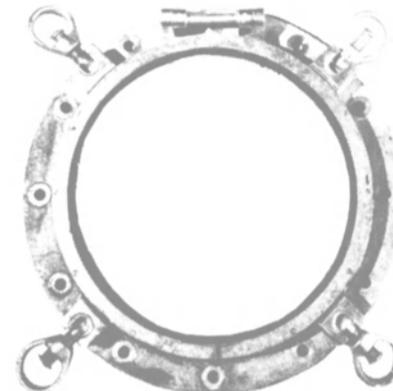
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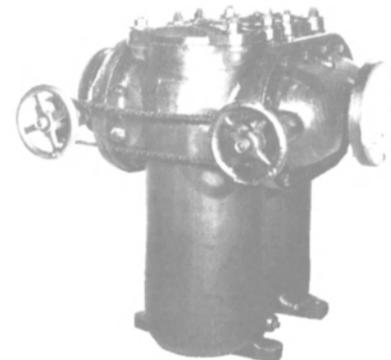
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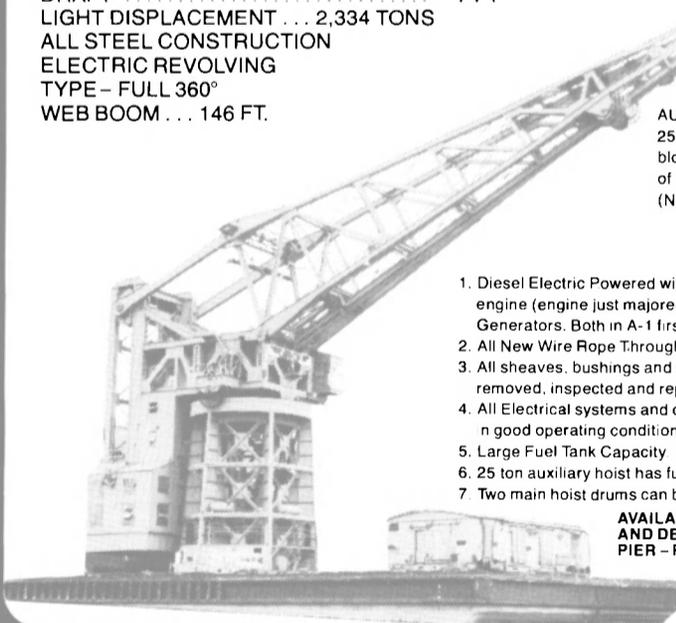
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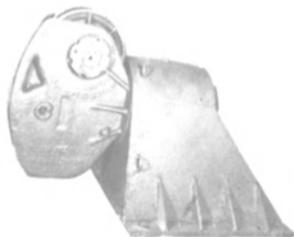
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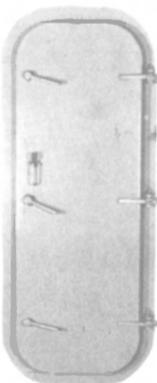
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4 Dogs on underside—topside flush, with T-Key openers.



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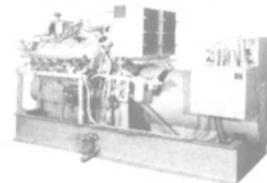
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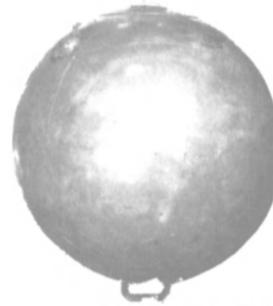


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3 Available — 5 ft X 9 ft — with wood bumpers

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313 E. Baltimore St. Baltimore, Md. 21202
Marine Warehouse (301) 752-1077
TWX: 710-234-1637

ELECTRO-PNEUMATIC PROPULSION CONTROL for speed control and reversing PORT & STARBOARD

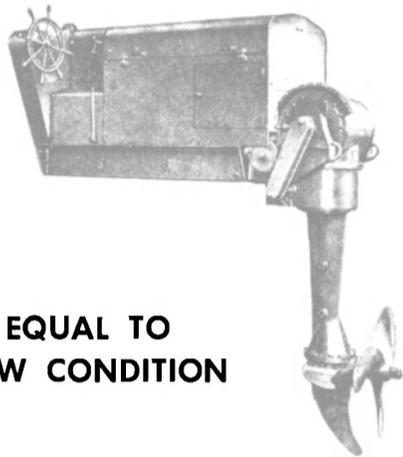


For 12-567A engine and Falk reduction gear. As used for USN LST vessels. Bridge and engine room control.

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
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M & T Model O-2D Marine Outboard Diesel Driven Propulsion Units



**EQUAL TO
NEW CONDITION**

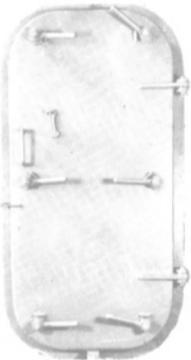
Equal-to-new-condition. Driven by GM 6-71 diesel—165 HP @ 1800 RPM—2-cycle—6 cylinders. Weight 9300 lbs—48" X 24" propeller. Unit shown with outboard shaft in running position. Distance from deck to bottom of skeg 89". 4 Units immediately available.

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
Marine Warehouse (301) 752-1077
TWX: 710-234-1637

FOR SALE NEW WATERTIGHT DOORS

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. Also available with 8" bronze portlights.

SIZE

26"x48" 26"x66"
26"x60" 30"x60"

EACH DOOR
IMMEDIATE DELIVERY

NEW 7" RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)
14" X 10" CLEAR OPENING



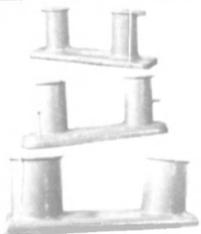
With extended legs for welding to deck. 14" Wide on base—length 28"—height 27 1/4". IMMEDIATE DELIVERY FROM STOCK.

NEW UNUSED 12" X 6 1/2" PANAMA CHOCKS FOR SMALL VESSELS



Closed chocks—12" X 6 1/2" inside opening—23" overall outside—8" high—15" high—7" radius—weight 110 lbs. IN STOCK.

GOOD - USED DOUBLE STEEL BOLLARDS in stock

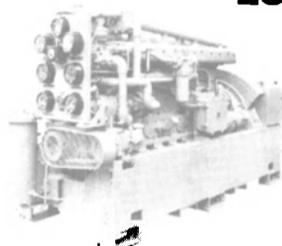


10", 12", 14", 20"

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

LST MACHINERY



100KW GBD-8 DIESEL GENs.

120/240 VDC—417 amps—stab shunt—1200 RPM—Delco generator—Self-excited. ENGINE: Superior GBD-8—8-cyl—5 1/2 X 7—150 HP—30 volt electric starting. Reconditioned to ABS. Dry wt. 10,000 lbs—DAL 124"—65 11/16" high—42" wide. Hgt necessary to pull piston 68". Fuel consumption 0.620 lbs/hr.



GARDNER-DENVER BALLAST PUMP

Bronze — 1500 GPM — 56' head or 25 bs — 8" suction — 6" discharge. MOTOR: Century 30 HP 230 VDC 110 amp@ 1750 RPM. 40° T rise — stab. shunt — ballbearing — dripproof. Controls available.

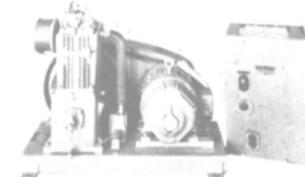
TAILSHAFTS

Diameter: 6 1/8" Length: 21' 2 5/8"



GOULD FIRE & BILGE PUMP

250 GPM & 100 lbs—4" suction—3" discharge—2200 RPM—bronze—manufactured by Gould. Direct connected to 30 HP 230 volt DC Louis-Allis motor.



CLUTCH TIRE AIR COMPRESSOR

Model 320—4 X 2 1/2 X 3"—10/15 CFM—100/150 PSI—700 RPM. MOTOR: 3 HP—230 volts DC—1750 RPM.



COMBINATION LUBE OIL & SALT WATER COOLING PUMPS

Model 3630—mfg by Goulds—1150 RPM. Rotary lube oil pump one end (35 GPM @ 15 PSI—1 1/2" X 1 1/2")—salt water circulating pump other end (35 GPM @ 15 PSI—2" X 1 1/2") G.E. Motor model 5B254A1988—type B—Frame 254—3 HP—230 VDC—11.9 amps—1150 RPM compound—Cont. 40° C temp rise. Ball bearing.

THE BOSTON METALS COMPANY

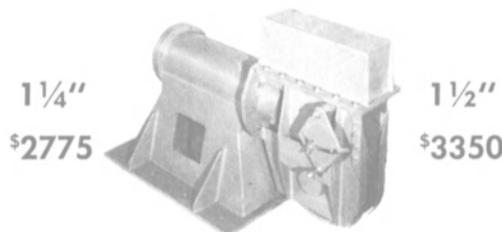
313 E. Baltimore St.

752-1077

Baltimore, Md. 21202

TWX: 710-234-1637

NEW BALANCED HEAD FAIRLEADS



1 1/4"

\$2775

1 1/2"

\$3350

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
Marine Warehouse (301) 752-1077
TWX: 710-234-1637

WILSON-SNYDER 10 GPM 100 LB Horizontal Auxiliary PORT BOILER FEED PUMP



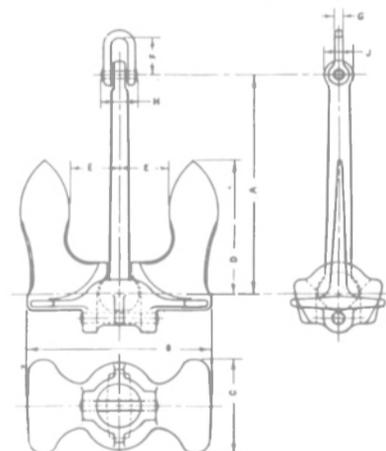
Steam driven reciprocating pump. Operating pressure 100 lbs. 10 GPM @ 100 LBS. Suitable for boilers to 150 HP. 1 1/2" Suction — 1" discharge.

THE BOSTON METALS COMPANY

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ANCHORS -- CHAIN

DETACHABLE LINKS PEAR-SHAPED DETACHABLE LINKS



LARGE BALDT-TYPE ANCHORS NEW — UNUSED LLOYD'S OR ABS CERTIF. 12000 LBS & 8000 LBS

IN STOCK—FOR MOORING—NO CERTIF.

- 3000 LB DANFORTH • 5300 LB BALDT
- 4300 LB BALDT • 14750 LB BALDT • 10750 LB BALDT

ANCHOR CHAIN

- 2 1/8" — New — Grade 3 — Certif.
- 3" — New — Grade 3 — Certif.
- 3 1/4" — New — Grade 3 — Certif.
- 3 3/8" — Grade 3 — Certif.
- 1 1/8" — Dilok

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

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AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION

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Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
James D. Nall Co., Inc., 3195 NW 20th Street, Miami, FL 33142
York Division (Borg-Warner Corp.), P.O. Box 1592, York, PA 17405

ANODES—Cathodic Protection

Engelhard Industries Division, 2655 U.S. Route 22, Union, NJ 07083
Kaiser Aluminum & Chemical Corp., 300 Lakeside Dr., (Rm 2039KB), Oakland, CA 94643
Wilson Walton International Inc., 66 Hudson Street, Hoboken, NJ 07030

BEARINGS—Rubber, Metallic, Non-Metallic

Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44052
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

BLASTING—Cleaning—Equipment

Aurand, 1270 Ellis Street, Cincinnati, OH 45223
Butterworth Systems Inc., 224 Park Ave., Florham Park, NJ 07932
Goff Corporation, One Pleasant Grove Rd., Seminole, OK 74868

BOILERS—Tube Cleaning

Clayton Manufacturing Company, 486 No. Temple City Blvd., El Monte, CA 91731
Combustion Engineering, Inc., Windsor, Connecticut 06095
A.B. Murray Company, Inc., P.O. Box 476, Elizabeth, NJ 07207

BROKERS

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B.R.I. Coverage Corporation, 156 Williams Street, New York, NY 10038
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

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Belcher Company of New York, Inc., 48-02 54th Avenue, Maspeth, NY 11378
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

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MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

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Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Megsystems, Inc., 1075 N.W. 58th Street, Boca Raton, FL 33431
Pan American Systems Corporation, P.O. Drawer 400, Belle Chasse, LA 70037
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06052

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Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07037
National Supply Company, 1455 West Loop South, Houston, TX 77027
J. D. Neuhaus, Witten-Heven, Hebezeuge, D 5810 Witten-Heven, West Germany
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

DECK MACHINERY—Cargo Handling Equipment

Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Navire Cargo Gear (SEA) Pte. Ltd., 9th Floor Orchard Towers, Orchard Road, Singapore 0923

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B & W Marine Service, One State Street Plaza, New York, N.Y. 10004
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, Massachusetts 02360
Golten Marine Company, Inc., 162 Van Brunt Street, Brooklyn, NY 11231
Twin Disc, Incorporated, Racine, Wis. 53403

ELECTRICAL EQUIPMENT

Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Federal Pacific Electric Company, P.O. Box 1800, Somerville, NJ 08876
Marine Safe Electronics of Canada Ltd., 101 Jardin Dr., Suite 24, Concord, Ontario, Canada L4K 1B6
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

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EQUIPMENT—Marine

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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
Conhagen/USMP Company, Inc., 4475 South Clinton Ave., South Plainfield, NJ 07080
Consafe Inc., P.O. Box 40339, Houston, TX 77040
Kearfoot Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
J. H. Menage & Company, Inc., P. O. Box 23602, New Orleans, La. John P. Nissen, Jr. Company, Glenside, PA 19038
Rockwell International, Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080
Schwepper Beschlag GmbH, Postfach 101110, 5620 Velbert 1, West Germany
Stal Laval Inc., 525 Executive Blvd., Elmsford, NY 10523
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Unitor Ships Service A/S, Mastemyr, 1410 Kolbotn, Norway
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186
Xorbox, Division of Greene & Kellag, Inc., 290 Creekside Dr., Tonawanda, NY 14150

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Riley-Beard, Inc., P.O. Box 1115, Shreveport, La. 71130

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Lukens Steel Company, Coatesville, PA 19320
Millard Controlled Metals, 5 Louise Drive, Ivyland, PA 18974

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Hartzell Propeller Fan Company, 901 S. Downing Street, Piqua, OH 45356
Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

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

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Continental Illinois National Bank, 231 S. LaSalle, Chicago, IL 60693
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Warburg Paribas Becker, Inc., 2 First National Plaza, Chicago, Ill. 60670

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Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231
Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

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Kiefer Corporation, 2202 W. Clybourn, Milwaukee, WI 53233

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Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Lockstad Company, Inc., R D 2 Burnett Road, Mendham, NJ 07945
MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Julius Mock & Sons, Inc., 20 Vesey St., New York, NY 10017

HULL CLEANING

Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Phosmarin Equipment, 21, Boulevard de Paris, 13002 Marseille, France
Seaward International, Inc., 6269 Leesburg Pike, Falls Church, VA 22044
Sub Enterprises, Inc., P.O. Box 16531, Irvine, CA 92713

HYDRAULICS

Fluid Technology, Inc., 10626 Phillips Highway, Jacksonville, FL 32224
Hydraulautics, 6338 Lindmar Drive, Galeta, CA 93017
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

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ATCO Marine Corporation, 603 Dean St., Brooklyn, NY 11238
Camar Corporation, P.O. Box 460, Worcester, MA 01613
Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039
Fredrikstad mek. Verksted, N. American Agents, American United Marine Corp., 575 Madison Ave., New York, N.Y. 10022
Peabody Holmes Ltd., 17-27 Garratt Lane, London SW 18 4BY

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, 1 World Trade Center, Suite 8433, New York, N.Y. 10048
Alexander & Alexander, Inc., 1185 Ave. of the Americas, New York, N.Y. 10036
B.R.I. Coverage Corporation, 156 Williams St., New York, NY 10038
Midland Insurance Co., 160 Water St., New York, N.Y. 10038

JOINER—Watertight Doors—Paneling

Masonite Commercial Division, Dover, OH 44622
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

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R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

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Schat Davit Corporation, 226 West Park Place, Newark, DE 19711

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Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

MACHINE TOOLS

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

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING

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Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080

MOORING SYSTEMS

Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS

Advanced Marine Enterprises, Inc., 1725 Jefferson Davis Highway (Suite 1300), Arlington, VA 22202
Agemar, Ave. 17 No. 108-129, P.O. Box 1465, Maracaibo, Venezuela
All Points Associates, Inc., RD #1, Box 3309, Monroeville, OH 44547
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikion Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
Jacksonville, Florida 32211
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176
CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Columbia-Sentinel Engineers Western, Inc., P.O. Box 21542, Seattle, WA 98111

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

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

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

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Francis C. Ducote, P.E., P.O. Box 644, Kenner, LA 70063

Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034

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Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112

Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401

Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006

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

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

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

Hampton Roads Engineering, Inc., 119 E. Little Creek Rd., Norfolk, VA 23505

J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048

Hoffman Maritime Consultants Inc., 9 Glen Head Road, Glen Head, NY 11545

Hydraulautics, 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 Engrg. Corp., 95 Russell St., Littleton, Mass. 01420

Lucander Designs, P.O. Box 711, San Perlita, TX 78590

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

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

Maclear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036

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

Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424

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Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225

Mechanical Resources Inc., 191 Cambridge Avenue, Jersey City, N.J. 07307

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

Metritape, Inc., 33 Bradford Street, Concord, MA 01742

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

Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169

Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104

Captain Conrad P. Nilsen, 66 Beverly Road, Bloomfield, NJ 07003

Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104

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

Offshore Power Systems, 8000 Arlington Expressway, Jacksonville, FL 32211

Oromar International Enterprises, Inc., P.O. Box 13069, Port Everglades, FL 33316

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

Pacific Industries Inc., 1440 Canal Street, Suite 1915, New Orleans, LA 70112

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

Pilotaq Consultants, Inc., P.O. Box 3, Atlantic Highlands, NJ 07716

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

Secor Systems Engineering Associates, Corp., P.O. Box 2030, 19 Cherry Hill Industrial Park, Perina Blvd., Cherry Hill, NJ 08003

Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426

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

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

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

Timso, 622 Azalea Road, Mobile, AL 36609

Corning Townsend III, 18 Church St., Georgetown, CT 06829

Wadam Wartsila Helsinki Shipyard, P.O. Box 132, SF-00151 Helsinki 15, Finland

Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10016

Thomas B. Wilson, 920 North Avalon Blvd., Wilmington, CA 90744

Wind Ship Development Corporation, 690 Main Street, Norwell, MA 02061

Wink Incorporated, 8020 Mayo Blvd., New Orleans, LA 70126

XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT

AAT Communications Corporation, 1854 Hylan Blvd., New York, NY 10305

American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526

Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103

Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024

DEBEG Marine, Inc., 10 Manor Parkway, Salem, NH 03079

Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201

EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090

Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080

Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801

Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

Hase McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631

ITT Mockay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611

Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780

Iatron Corp., 5 Alfred Circle, Bedford, MA 01730

Kongsberg North America Inc., 135 Fort Lee Road, Leonia, NJ 07605

Kongsberg Vapenfabrik, Noncontrol Division, P.O. Box 145, Horten 3191, Norway

Krupp Atlas-Elektronik, 241 Erie Street, Jersey City, NJ 07302

Magnavox Navigation Systems, 2829 Maricopa Street, Torrance, CA 90503

Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
 Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729
 Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
 Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311
 North American Philips Communication Corp., 55 Knights Bridge Road, Piscataway, NJ 08854
 RCA Service Co., Building 204-2, Camden, N.J. 08101
 Racal-Decca Marine, Inc., P.O. Box G, #1 Commerce Blvd., Palm Coast, FL 32037
 Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
 Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
 Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914
 Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
 Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
 Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
 Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
 Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721

OILS—Marine—Additives

B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095
 Ferrrous Corporation, P.O. Box 1764, Bellevue, WA 98009
 Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
 Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10319
 Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
 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

OIL/WATER SEPARATORS

Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024
 Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
 Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

PAINTS—COATINGS—CORROSION CONTROL

American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
 Ameron, 4700 Ramona Blvd., Monterey Park, CA 91754
 "CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
 Devco Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
 Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
 Henkel Corporation, 4620 West 77th Street, Minneapolis, MN 55435
 International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
 Jatun-Baltimore Copper Paint Co., 501 Key Highway, Baltimore, MD 21230
 Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 07817
 Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
 Selby, Battersby & Company, 5220 Whiby Avenue, Philadelphia, PA 19143

PETROLEUM SUPPLIES

Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
 Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PIPE—HOSE—Cargo Transfer, Clamps, Couplings, Coatings

Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
 CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
 Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
 Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
 Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
 Sanchez, Inc., 1600 South Canal Street, Chicago, IL 60616
 Tioga Pipe & Supply Company, 2450 Wheatshaf Lane, Philadelphia, PA 19137

PLASTICS—Marine Applications

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

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines

Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
 Armo Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
 Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
 Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
 Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
 Burmeister & Wain Diesel, Inc., 50 Broadway, New York, NY 10004
 Caterpillar Tractor Company, Engine Division, Peoria, IL 61629
 Centrico, Inc., 100 Fairway Court, Northvale, NJ 07647
 Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511
 Combustion Engineering, Inc., Windsor, Connecticut 06095
 General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
 Kawasaki Heavy Industries, Ltd., 2-4-1 Hamamtsu-cho, Minato-ku, Tokyo, Japan
 MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
 Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
 Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
 Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
 Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190
 P.J. Plishner Marine, 2 Lake Avenue Ext., Danbury, CT 06810
 Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
 Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
 Schattel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
 Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
 Steamco Corporation, 364 Stowe Avenue, Oranage Park, FL 32073
 Tacoma Boat Co. Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
 Transamerica Delaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
 Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
 Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
 Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652

PUMPS—Repairs—Drives

Barco Corporation, 16 Bahama Circle, Tampa, FL 36606
 Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
 Transamerica Delaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110

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

ROPE—Manila—Nylon—Hawsers—Fibers

American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
 Atlantic Cordage Corp., 60 Grant Avenue, Carteret, NJ 07008
 Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

RUDDER ANGLE INDICATORS

Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
 Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
 Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
 Modular Systems, 164 Franklin Avenue, Rockaway, NJ 07866
 Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SAFETY EQUIPMENT

ACR Electronics, Inc., 3901 North 29th Avenue, Hollywood, FL 33020
 Datrex, 3770 N.W. So. River Drive, Miami, FL 33142

SANITATION DEVICES—Pollution Control

Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
 Chapman Engineers (Omnipure Division), 6101 Southwest Freeway, Suite 100, Houston, TX 77057
 Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford, IL 61111
 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
 St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
 Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

SCAFFOLDING EQUIPMENT—Work Platforms

Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024

SHACKLES

West Footscray Engineering Works P/L, 52 Cross Street, West Footscray, Melbourne, Victoria, 30 12, Australia

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT

Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02031
 Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
 Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage

The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
 Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

SHIPBUILDING STEEL

Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking

A.D.M. (Amsterdam Drydock Mfg.), Moatschappij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland
 AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142
 Asmar Shipyards Co., Astilleros y Maestranzas de la Armada, Prat 856, Piso 14, Casilla 150-V, Valpariso, Chile, S.A.
 Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain
 Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S.N., Apdo. Postal 647, Veracruz, Ver., Mexico
 Avondale Shipyards, Inc., P.O. Box 52030, New Orleans, La. 70150
 Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235
 Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601
 Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
 Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
 Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
 Bludworth Bond Shipyard Inc., P.O. Box 5065, Houston, TX 77012
 Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
 Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
 Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
 Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048
 China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119
 Conrad Industries, P.O. Box 790, Morgan City, La. 70380
 Darby Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa
 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
 Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553
 HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219
 Halifax Industries Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, B3K 5H7
 Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189
 Havre de Grace, Havre de Grace, Md.
 Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edojori 1-Chome, Nishi-Ku, Osaka, Japan
 Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
 Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567
 Jeffboat, Inc., Jeffersonville, Ind. 47130
 Livingston Shipbuilding, P.O. Box 968, Orange, TX 77630
 Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
 McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160
 MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016
 Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043
 Mutton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
 Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
 Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
 Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
 Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202
 National Steel & Shipbuilding Corp., San Diego, Calif. 92112
 Newport Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
 Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
 O.A.R.N. (Officine Allestimento-Riprazioni Navi), P.O. Box 1395, Genoa, Italy 16100
 Pareco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
 Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
 Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
 Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
 St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111

Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
 Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
 Sudoport, 5 Kalyaevskaya, Moscow K-6, USSR
 Sun Ship Inc., Chester, PA 19013
 Swiftships Inc., P.O. Box 1903, Morgan City, LA 70380
 Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
 Tandonor (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
 Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
 Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
 Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606
 Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway
 Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
 Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139
 Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
 Wiley Manufacturing, a unit of AMCA International Corp., P.O. Box 97, Port Deposit, MD 21904

SHIPPING

Candia Shipping (USA) Inc., One World Trade Center, Suite 1611, New York, NY 10048

SHIP STABILIZERS

Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

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

Francis B. Crocco, Inc., P.O. Box 1411, San Juan, Puerto Rico 00903
 Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038

TANK CLEANING

Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932
 Environmental Chemicals, Inc., 487 Division Street, Boonton, NJ 07005
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
 Salwico, Inc., 5 Marine View Plaza, Hoboken, NJ 07030

TANK LEVELING INDICATORS

Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06052
 Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017

TERMINALS—Oil-Transfer

Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614
 Transportation Concepts & Techniques Inc., 1020 West Main Street, Charlottesville, VA 22903

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.

Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
 Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
 Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
 Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
 Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113
 Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130
 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
 Ocean Salvors Company, One World Trade Center, New York, NY 10048
 Smit International (Americas) Inc., 17 Battery Place, New York, NY 10034
 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

TRAINING SERVICES—Simulator

Ship Analytics, Park Circle, Centerport, NY 11721

VALVES AND FITTINGS

American United Marine, 575 Madison Avenue, New York, NY 10022
 Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101
 Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
 Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
 Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184
 Parker-Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
 Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229
 Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
 Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
 Winel, Inc., 34655 Mills Road, North Ridgeville, OH 44039

WATER PURIFIERS

Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
 Halogenic Products Corporation, P.O. Box 27488, Salt Lake City, UT 84127

WINCHES AND FAIRLEADERS

Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
 Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134

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
 Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
 Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

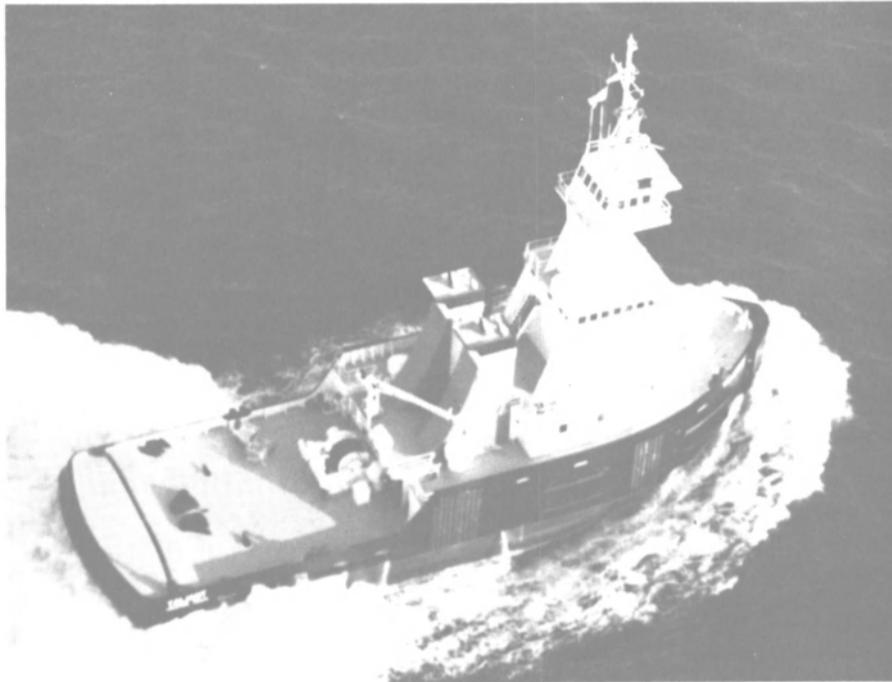
WIRE ROPE—Slings

Armo Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

ZINC

Smith & McCrorken, 153 Franklin St., New York, N.Y. 10013

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 24 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors. If you are interested in having your company listed in this Buyers Directory Section, contact John C. O'Malley at (212) 689-3266



Newest Bulkfleet Marine Tug Is Powered By MaK Diesels

The largest tugboat ever built in the United States to run on heavy fuel oil was completed and christened recently at McDermott Shipyards' Morgan City Division in Bayou Boeff, La. The 140-foot, twin-screw Valiant (shown above) was built for Houston-based Bulkfleet Marine Corporation. She was christened by Mrs. Audrey Brown, wife of James N. Brown, manager, marine operations, Gulf Oil Corporation. Contracted to Gulf Oil, the new tug will push the 28,000-dwt oil barge Bulkfleet Pennsylvania along the U.S. East Coast.

About 60 percent of the tugboat's length will be inserted and locked in the stern notch of the barge, forming an integrated unit with an overall length of 502 feet, beam of 84 feet, depth of 42 feet, and draft of 32 feet. The unmanned barge is equipped with four Goulds deepwell cargo pumps, each rated at 4,500 gpm at 125 psi; the pumps are driven by GM Detroit Diesel Allison 16V-71T engines.

The 192-gt Valiant is powered by twin Krupp MaK 6M155AK diesel engines, each with maximum continuous rating of 4,000 bhp (2,940 kw) at 425 rpm. They are designed to operate on fuel as heavy as 1,500 sec. Redwood, as well as regular diesel oil. These medium-speed engines drive two 14-foot, 4-bladed propellers through Lohmann and Stolterfoht 3:1 reduction gears. The 14-inch propeller shafts are supported in Cutless® water-lubricated, rubber-lined bearings.

The engine controls were supplied by WABCO under subcontract from MaK; a 48-point monitoring system was provided by



Mrs. Audrey Brown christens Bulkfleet Marine's tug Valiant. At left is Francisco San Miguel, manager of McDermott's Morgan City Division, builder of the new vessel.

Marine Electric. Electrical power is supplied by two 300-kw KATO generators driven by Detroit Diesel 12V-71T engines. The hydraulic steering system is by Sperry. Markey supplied the towing winch and capstan; the winch is powered by a Detroit Diesel 8V-71 engine. Other equipment includes Alpha Laval heat exchangers, Westfalia separators, and a full array of electronic gear for navigation and communications.

Designed by Design Associates of New Orleans, the Valiant has a beam of 43 feet, depth of 22 feet, and draft of 20 feet. She is classed +A-1 Unlimited Ocean Towing Service by the American Bureau of Shipping.

McDermott Shipyards, with shipbuilding and repair facilities in Morgan City (Bayou Boeff) and New Iberia, La. and Gulfport, Miss., is a subsidiary of McDermott Incorporated of New Orleans, a leading international energy services company. Bulkfleet Marine Corporation is a dynamic young company headed by J. Barry Snyder, president.

Texaco Acquires British Tanker From Globtik

Texaco Overseas Tankship Ltd., a wholly owned British subsidiary of Texaco Inc., has taken delivery of the 79,997-deadweight-ton motor tanker Texaco Westminster at the Aioi (Japan) shipyard of Ishikawajima-Harima Heavy Industries Co., Ltd., it was announced recently. The vessel is the second ship in its class to be acquired by Texaco Overseas Tankship Ltd. from Globtik Tankers London Limited.

The ship was christened Texaco Westminster by Mrs. William K. Tell Jr., whose husband is a senior vice president of Texaco Inc.

The Texaco Westminster is designed to carry either crude oil or petroleum products. Operating with a British crew of approximately 28, the vessel is equipped with systems to minimize pollution, an inert gas system, carries a full range of navigational aids, and is certified for unmanned engine-room operation.

Texaco Overseas Tankship Ltd. operates 23 tankers with a total deadweight capacity of almost 2.5 million tons. Texaco's international marine fleets have 130 oceangoing tankers owned or operated under term charter, totaling more than 15 million deadweight tons. This includes 43 mammoth tankers.

Literature Available On New Pressure-Wiper Seal For Hydraulic Cylinders

Literature is now available describing a new Pressure-Wiper Seal, known as the John Crane Type RH/BWC, recently introduced by Crane Packing Company. One-piece construction consists of a special abrasion-resistant elastomer bonded to a metal reinforcing washer, the internal anti-extrusion ring. Two unique designs provide an O.D. lip for positive seal in bore, a heavy-duty I.D. lip for positive rod sealing against fluid pressure and a heavy-duty wiper lip to prevent entry of foreign matter.

The Type RH/BWC Wiper Seal offers a sealing advance over typical "V" packing sets and U-cup arrangements. Benefits include: reduced space requirements, increased bearing space, ease of assembly and disassembly, reduced machining, component and assembly costs and also allows for the use of a shorter cylinder.

Operating conditions include up to 2,500 psi and a temperature range from -40° F to +250° F. Other elastomers are available for special operating conditions.

For more information on the John Crane Type RH/BWC Pressure Wiper Seal as explained in Bulletin No. P-3022,

Write 22 on Reader Service Card

Hayward Buys Leslie Y-Strainer Line

—Literature Available

The Hayward Manufacturing Co., Elizabeth, N.J., has purchased the Y-Strainer product line of the Leslie Company, Parsippany, N.J. This line of strainers has been made and sold by Leslie for over 50 years.

The product line covers a complete range of sizes with pressures ranging from 125 pounds up to 2,500 pounds. The strainers are made of iron, bronze, carbon steel and stainless steel.

Hayward is a leading manufacturer of basket strainers in both simplex and duplex types. It is felt that the addition of the Y-Strainer line to their present products will fit in with their general marketing activities and extend their strainer capabilities.

For free literature describing Hayward's complete line of basket and Y-Strainers,

Write 23 on Reader Service Card

RCA Gets \$6.35-Million Navy Contract For AEGIS Engineering Support

RCA Corporation, Government Systems Division, Moorestown, N.J., has been awarded a \$6,350,000 modification to a previously awarded contract for additional engineering support to the AEGIS Shipbuilding Project. The Naval Sea Systems Command is the contracting activity. (N00024-79-C-5714)

Disney Joins SeaTec As Manager Of Marketing



Donald G. Disney

SeaTec International, Ltd., Gloucester, Mass., has hired Donald G. Disney to fill the post of international marketing manager. Mr. Disney will be responsible for marketing and sales development of this growing marine construction corporation around the world.

Mr. Disney has spent 32 years in the military, including command and at-sea operational direction of deepsea diving and saturation complexes. He was on-site commander in the U.S. Navy's successful effort to establish a world-record 1,010-foot open sea saturation dive in 1972.

In his most recent position with a major international underwater contractor, Mr. Disney spent six

years as sales and marketing manager.

Mr. Disney lives in Houston and will be based at SeaTec International's Houston office.

TCB River Barge Asks Title XI for Towboat And 80 Barges At \$29.7 Million

TCB River Barge, Inc., a subsidiary of Twin City Barge, Inc., South St. Paul, Minn., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of a towboat and 80 river barges.

The barges will be of two types. Forty will be 195-foot-long rake hopper barges. The remainder will be 200-foot box hopper barges. The towboat will be 147 feet long with two 2,600-horsepower diesel engines.

All of the vessels will be operated on the U.S. inland waterways and on the Gulf Intracoastal Canal. They are scheduled to be delivered in 1982. Superior Boat Works, Inc., Greenville, Miss., will build the towboat. No builder has been named for the barges.

If approved, the Title XI guarantee would cover \$22,517,719, or 87½ percent of the barges' and 75 percent of the towboat's \$29,710,292 combined estimated cost.

New Furuno ADF Designed For Smaller Vessels— Literature Available

Furuno has packed a highly sensitive, position fixing/homing capability into a compact, easy to install and operate automatic direction finder, the new FD-171, designed with the smaller craft in mind. The FD-171 features digital frequency readouts for easy tuning, and five crystal-controlled spot channels for often-used signals. An operator just selects the desired band, "tunes in the numbers," and gets compass needle bearing data without 180-degree ambiguity. In the event of a crowded frequency or weak signal, the aural null method allows an operator to switch to manual direction finding.

The accuracy of the Furuno FD-171 is better than +5 degrees, and the unit has a power requirement of only 18 watts. The system uses a fixed cross-loop antenna measuring 65 centimeters (2.13 feet) in diameter, built to withstand any commercial use.

For additional information and free literature on the FD-171,

Write 45 on Reader Service Card

New Brochure Describes Joy Mfg. Ship/Shore Power Connectors

Rugged new ship/shore connectors that make connecting and disconnecting docked ships to shore-generated power easier and faster are detailed in a new brochure

being offered by Joy Manufacturing Company, LaGrange, N.C. The new Joy three-phase connectors are said to offer several important features. They can handle currents up to 500 amps per phase, continuous, and have a voltage rating of 450 volts. An optional built-in power shut-off switch can withstand even the most harsh operating conditions, including rain, salt spray, humid-

ity, and sunlight. They meet MIL-C-24368 in both the properly mated and unmated conditions.

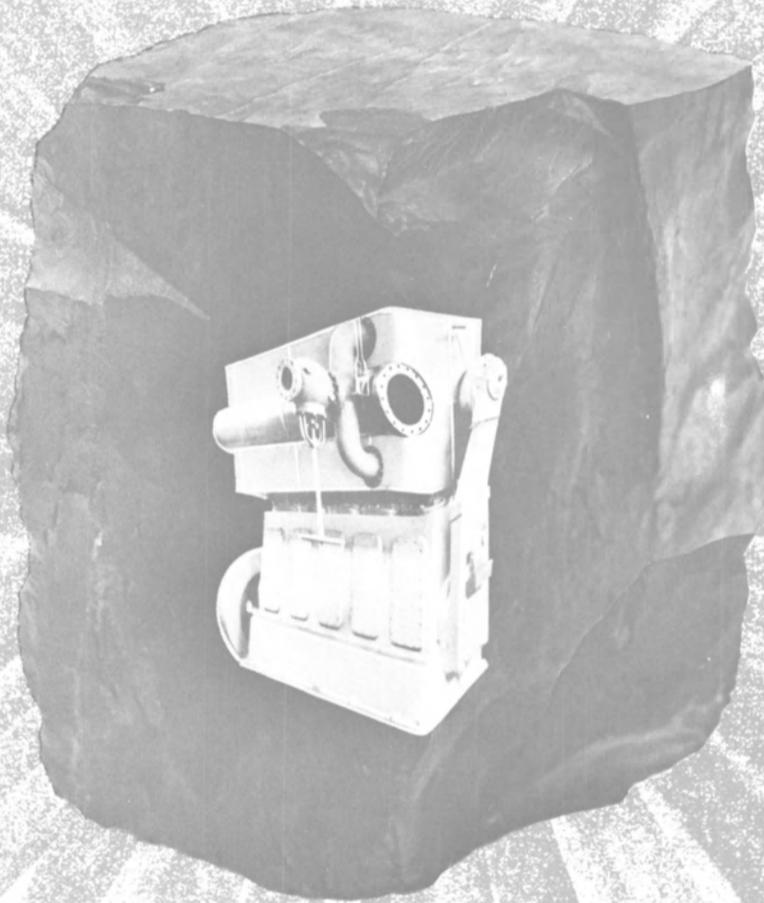
According to the brochure, Joy ship/shore receptacles were designed to prevent contact misalignment and use a strain relief with an interlocking safety switch. The receptacle withstands shock (Type A, Grade A, Class 1 of MIL-S-901C) and vibration (Type 1 of MIL-Std-167) and fea-

tures a reinforced ribbed housing for added strength. The four-page publication also features connector dimensions, assembly dimensions, and mounting requirements and diagrams for each.

For a free copy of the new brochure or for more information about Joy ship/shore power connectors,

Write 29 on Reader Service Card

IS COAL YOUR GOAL?



It's the here-and-now, affordable, energy source.

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Write 336 on Reader Service Card

EDO Reorganized—Its Nav/Com Line Will Be Produced At Texas Plant

Gerald Albert, president of EDO Corporation, College Point, N.Y., has announced a restructuring of its EDO-Aire operations. The communication and navigation product line, being produced at Fairfield, N.J., will be combined with the auto-pilot

product line at the EDO-Aire facility in Mineral Wells, Texas. This will result in the phasing out of the Fairfield facility and expansion of the facility in Mineral Wells.

This integration, scheduled for completion by year-end, will be accomplished under a planned program designed to satisfy all delivery and support commitments. Charles S. Davis will be president of the expanded oper-

ation at Mineral Wells, with Charles D. Hoefelmann as vice president and assistant to the president. Gerald H. Hoffman has been appointed vice president of marketing and James R. Younkin will continue as vice president of research. The position of EDO-Aire Group president is being discontinued and, accordingly, Edward Moore, who formerly held that position, is being re-assigned to the corporate staff

and will continue as vice president and director of the corporation.

William E. Bright Elected VP At Briley Marine

Charles R. Briley, president and chief executive officer of Briley Marine, Inc., announced the election of William E. Bright as a vice president and director of the company. Mr. Bright joined the company following his retirement after 20 years of service with Tidewater, Inc. Until his retirement, Mr. Bright was executive vice president of that company and was responsible for their worldwide marine activities.

Mr. Bright will be responsible for new construction and serve as a member of the company's operating committee.

Mr. Briley said: "Mr. Bright has been an industry leader almost from its inception. He is expected to play a major role in our company's growth plans."

Briley Marine, Inc. operates a fleet of 53 offshore oil and gas service vessels worldwide.

SCNO Barge Lines Names Svilar To Chicago Post

The promotion of Dennis M. Svilar to Chicago area district sales manager for SCNO Barge Lines, Inc., St. Louis, Mo., was announced recently by Fred S. Sherman, president. Mr. Sherman stated that "the selection of Dennis Svilar is an important step in continuing SCNO's goal of fulfilling the transportation needs of our customers." A native of the state of Indiana, Mr. Svilar graduated from Indiana University in 1973, majoring in transportation studies. Prior to joining SCNO in January 1980, he had extensive exposure to all modes of transportation, especially water transportation.

A.L. Burbank & Company Relocates Hampton Roads Office To Norfolk

To provide expanded services to Iceland Steamship Company, Ltd. and local agency representation for its other principals, A.L. Burbank & Company, Ltd., announces the relocation of its Hampton Roads office to new and larger quarters in Norfolk. The new address is Suite 710, Wheat Building, P.O. Box 3589, Norfolk, Va. 23514. The new telephone number is (804) 627-4444; the teletype number remains unchanged at 710-882-7525, as does the toll-free 800 number, 466-8317, and the new cable address is Alburcolt, Norfolk.

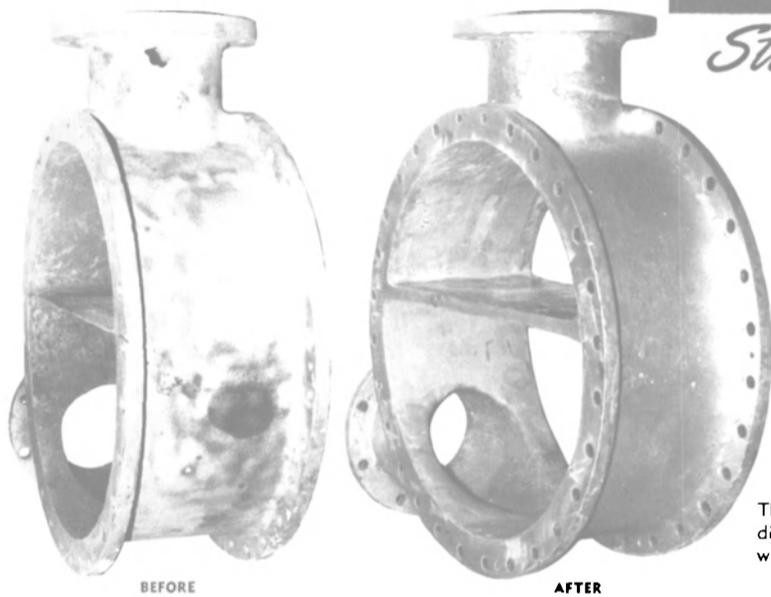
A.J. Burbank & Company, steamship agents, ship brokers, and managing operators headquartered at One World Trade Center, New York, has represented Iceland Steamship as general agents in the U.S. and Canada since 1963.

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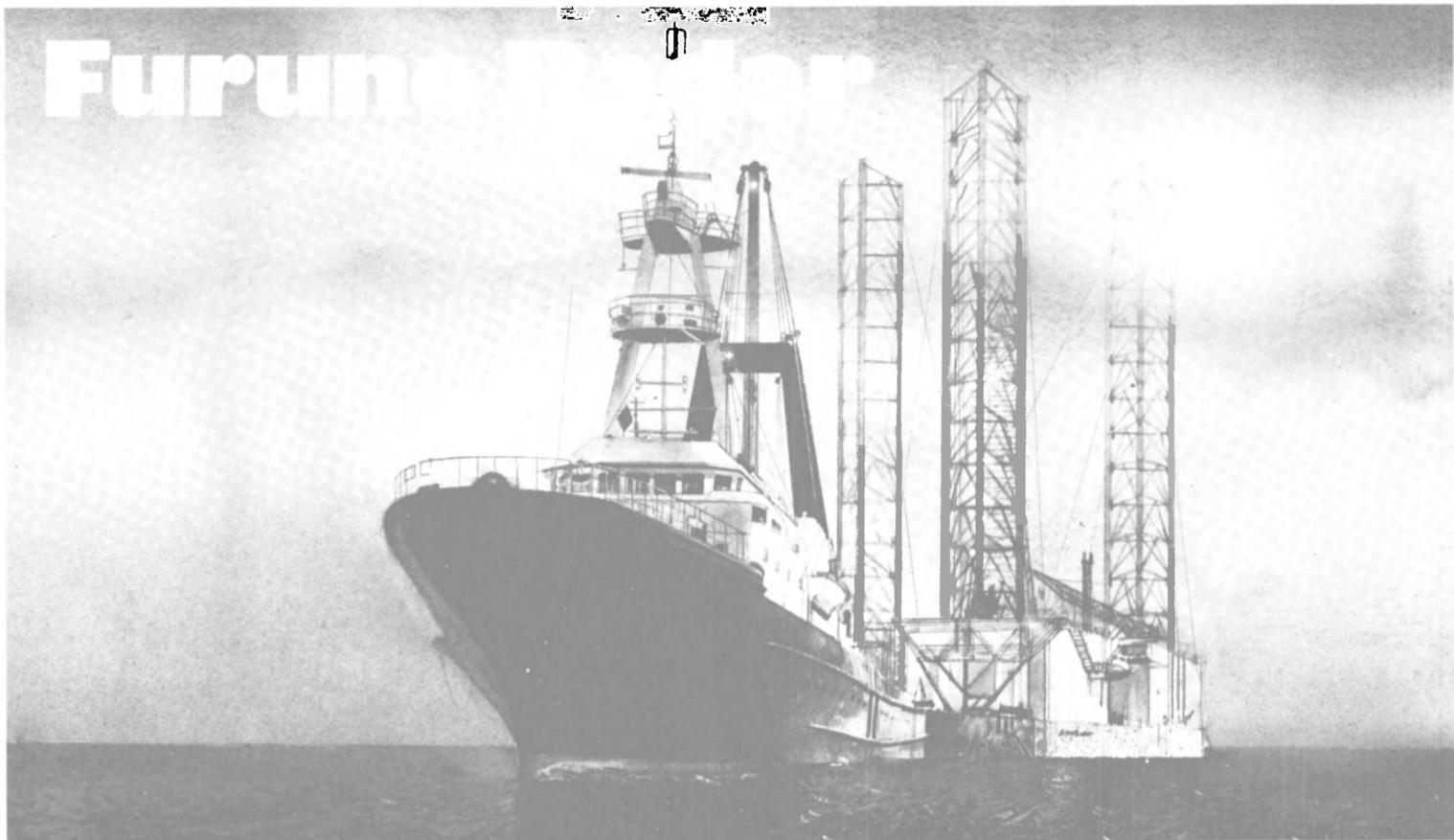
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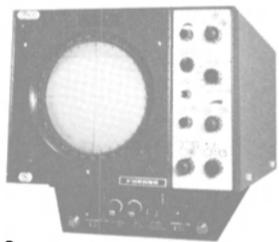
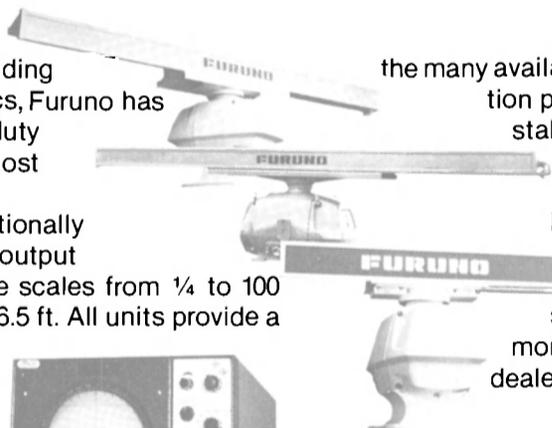
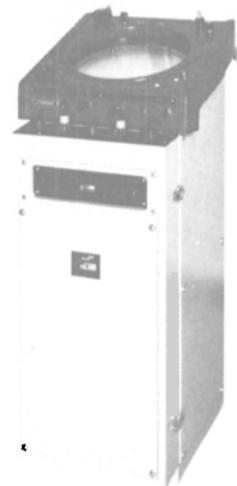
SERIES 7 radars are exceptionally compact units with available output power from 5 to 25 kW, range scales from 1/4 to 100 n.mi. and antennas from 3 to 6.5 ft. All units provide a 7" bright CRT, built-in VRM, 3 pulselengths for high discrimination, standard magnifiers and backlighted controls.

SERIES 10 radars offer the same basic performance features as

above, but have a 10" CRT. Each unit has provision for a second built-in VRM and displays are available in bulkhead, table-top, or free-standing console versions. Also, the 25 kW models include optional gyro stabilization and provision for a reflection plotter.

SERIES 12 radars combine a 12" CRT with 1/4 to 100 n.mi. range, 25 kW output and antenna length to 10' for operation anywhere. Standard features include digital VRM, circuit checkmeter, off-centering and three switchable pulse lengths for optimum performance in any situation. Among

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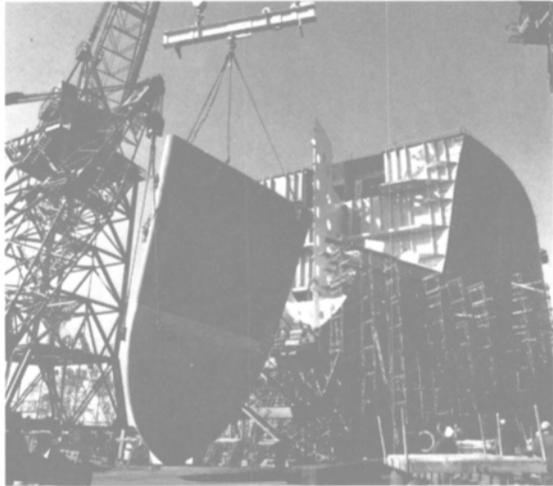
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