

MARITIME REPORTER

AND
ENGINEERING NEWS



**Dillingham Tug And Barge Corp.
Adds Mamo II To Hawaiian Fleet**
(SEE PAGE 10)

**SNAME
Spring
Meeting**
(SEE PAGE 14)

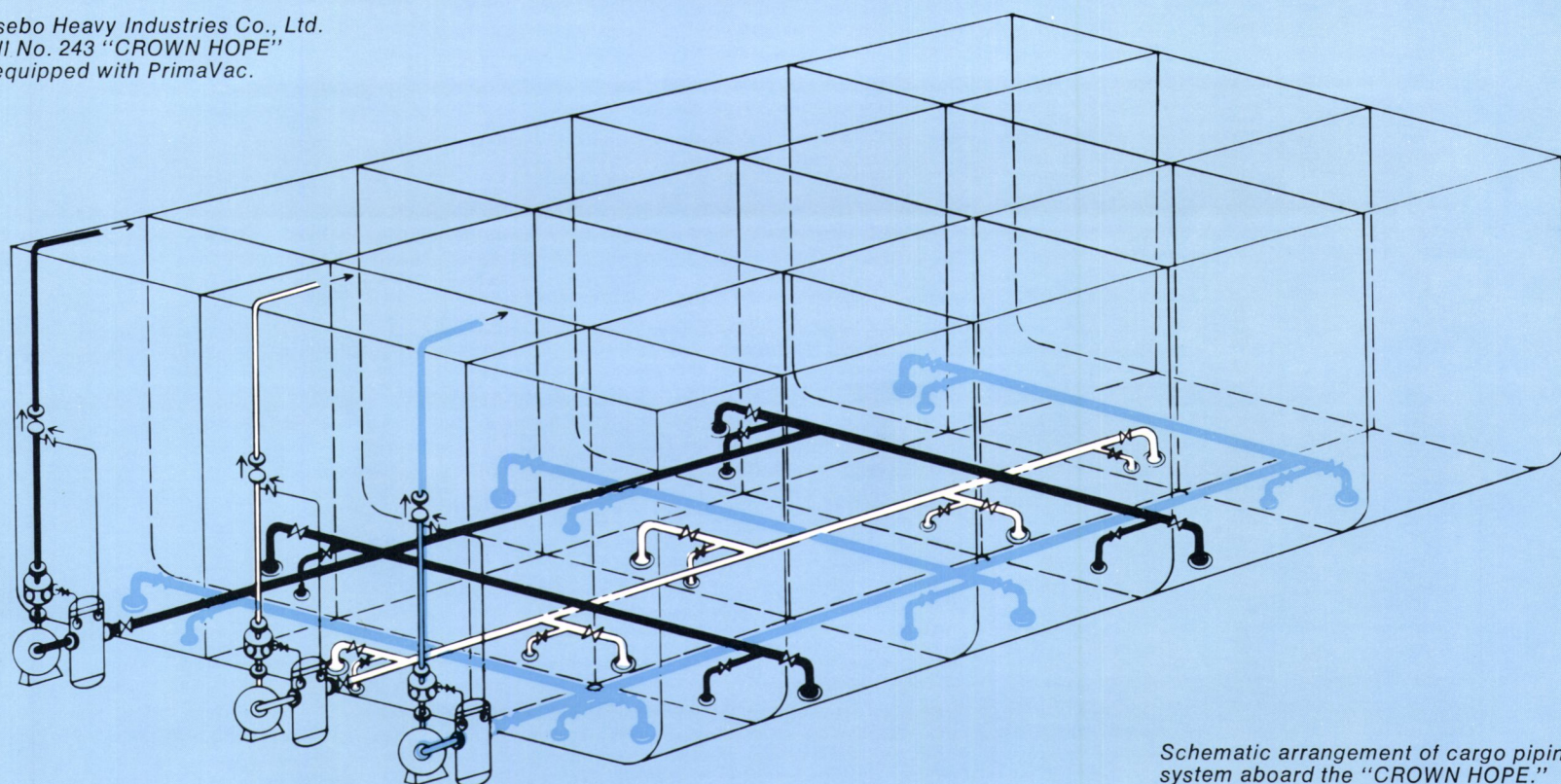
JULY 15, 1977



Sasebo Heavy Industries Co., Ltd.
Hull No. 243 "CROWN HOPE"
is equipped with PrimaVac.



**protects
PRODUCT CARRIERS
against contamination
of their cargoes**



Schematic arrangement of cargo piping system aboard the "CROWN HOPE."

■ In a single operation, the PrimaVac System, utilizing only the ship's main cargo pump, will handle the entire discharge of a product. Then, only one pump and its attendant piping need be cleaned between the exchange of products...not a cargo pump plus a stripping pump and all the piping for each.

On the ships carrying only three or four products, one pump can be used for each product. With PrimaVac, the need for clean-up can therefore be eliminated...but cannot be where stripping pumps are used.

Product carriers, equipped with four main cargo pumps and two stripping pumps, require more operator attention and take longer to unload compared to PrimaVac which can strip with four pumps simultaneously. In most cases, PrimaVac can be added to your existing pumps with a minimum of piping changes.

With other systems, using vacuum pumps, unless each cargo pump has its own independent priming system, (a

costly installation), the cross contamination potential is increased since the system must be inter-connected to all cargo pumps.

To sum it up, the PrimaVac System has all the advantages and none of the disadvantages. PrimaVac does not vent to the atmosphere but conserves valuable gases in the product discharge. It saves valuable time by speeding up pumping and stripping, eliminates costly auxiliary pumps and piping, performs automatically without an operator in attendance, reduces maintenance, has a minimum of moving parts, protects the pump from overheating, saves space and weight and is easy to install.

PrimaVac Systems have been installed world-wide for the past ten years on ships of 10,800 to 412,000 dwt with pump capacities from 625 to 26,000 gpm. They can be furnished for any pump size and capacity; standard units are available with discharge diameters up to 30".



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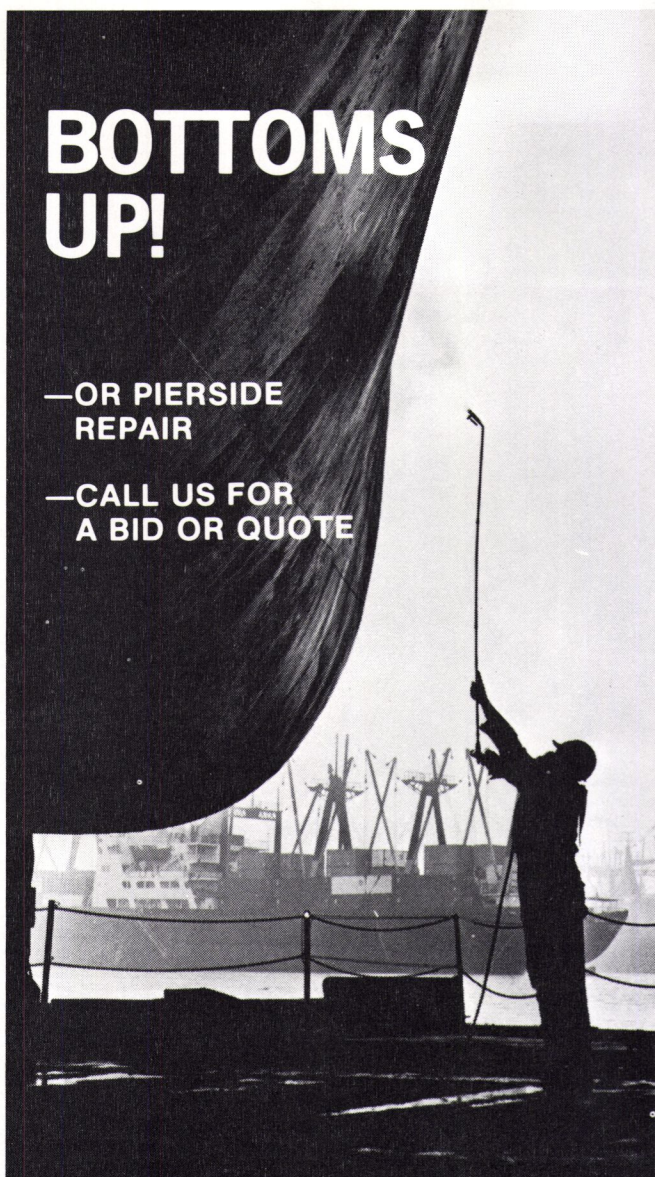
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\$17.5-Million Contract Awarded To DeLong For Two Jackup Piers

DeLong Corporation, 29 Broadway, New York, N.Y. 10006, has obtained a contract for the installation in the port of Puerto Cabello, Venezuela, of two DeLong jackup piers to be supplied by DeLong-Hersent S.A. Each pier will have a finger configuration and will accommodate two 20,000-ton general cargo ships. The total amount of the supply and installation contracts will be \$17.5 million. The contract calls for the facility to be operational within seven months from date of signature of the contract.

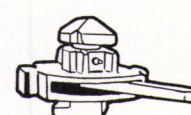
Proposal Calls For Ship's Spare Parts To Be Based Ashore

The Maritime Subsidy Board (MSB) has authorized publication in the Federal Register of a notice that it is proposing a new policy permitting spare parts to be based ashore. The proposal also specifies a predetermined limit on the amount of construction-differential subsidy (CDS) for the cost of machinery and electric plant spare parts which are in addition to those required by the American Bureau of Shipping (ABS). This policy will apply to all ships now under contract and will form a basis for permitting CDS for a Change Under Contract, provided that a request for subsidy is submitted to MarAd before delivery of the vessel.

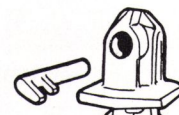
Presently, CDS is permitted only for spare parts carried aboard ship, except for spare propellers and tail shafts. The proposed policy provides a table of 23 classes (based on cost) of machinery and the applicable permissible percentage of the base cost of the equipment which the spares may represent. The allowance for the spares in excess of ABS requirements (which are customarily included in the base cost of the equipment) will be included in the contract price for all new contracts. Allowances will be fixed, and changes in existing contracts will be computed based on the original estimate. The choice of necessary spare parts will be left to the owner.

Parties having an interest in the matter may file written comments with the Secretary, MSB, Room 3099-B, Maritime Administration, Department of Commerce, Washington, D.C. 20230.

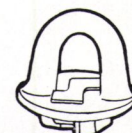
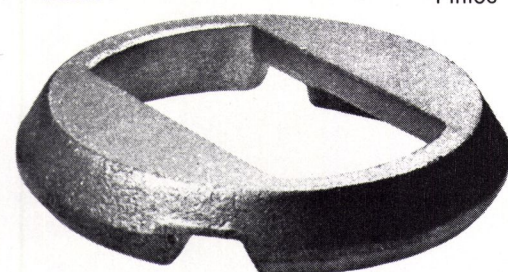
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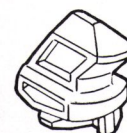
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MARITIME REPORTER AND ENGINEERING NEWS

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Two Arabian Projects Totaling \$80 Million To Great Lakes Dredge

Great Lakes Dredge and Dock Company, 228 North La Salle Street, Chicago, Ill. 60601, has been awarded two new projects in the Middle East totaling \$80,000,000, J.A. Downs, president, has announced.

A contract has been signed for

\$15,000,000 with the Arabian American Oil Company to dig an access channel at Ju-Aymah, Saudi Arabia, in conjunction with the multibillion-dollar national gas collection system being constructed by Aramco, he said.

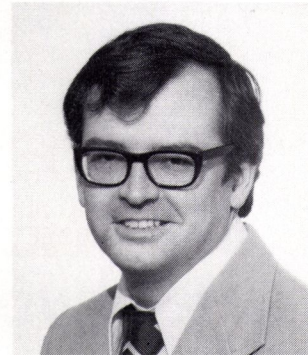
Ju-Aymah is located in the Arabian Gulf adjacent to Dammam, where Great Lakes has been working for over one year as part of an international joint venture.

In addition, the Chicago-based company has been working on construction of the new port of Jebel Ali, Dubai, United Arab Emirates, since early 1977. The newly announced agreement increases the company's revenues in the Jebel Ali area approximately \$65 million, Mr. Downs pointed out.

Great Lakes, the largest dredging and marine construction concern in the Western Hemisphere,

maintains offices in Union, N.J.; Staten Island, New York, N.Y.; Towson, Md.; Tampa, Fla.; New Orleans and Morgan City, La.; Oakland, Calif.; Cleveland, Ohio, as well as in Chicago. Overseas offices are established in Argentina, Venezuela, Saudi Arabia, and the United Arab Emirates.

Raytheon Marine Opens New York Office



Michael Mitchell

Raytheon Marine Company has opened a New York regional sales office to handle its lines of marine electronics for the commercial and recreational markets.

The new office, located at 17 Battery Place, Suite 2435, New York, N.Y. 10004, will have a large display and demonstration area as well as office space. Operating displays of Raytheon's new 16-inch true-motion / anticollision radar, its Rayfax 1200 facsimile receiver, and the RAY-50A synthesized radiotelephone will be available for customer demonstration.

In addition, a broad range of other products including Fathometer® depth sounders and navigation aids for both the commercial and recreational markets will be on display.

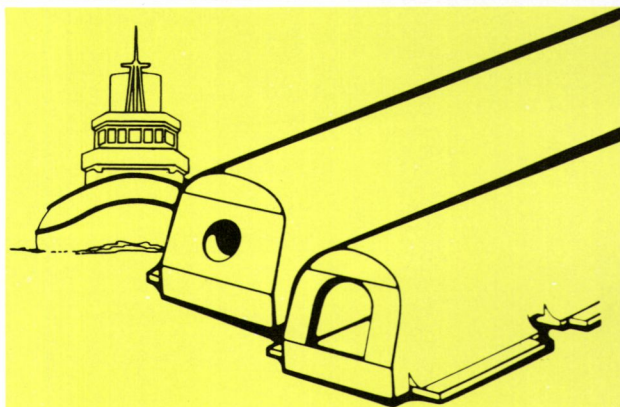
Michael Mitchell, commercial products sales representative, and John LaRocca, recreational products sales representative, will head the office staff. The complete address is Raytheon Marine Company, 17 Battery Place, Suite 2435, New York, N.Y. 10004. The company's New York area service facility will continue to be at 756 Fifth Avenue, Brooklyn, N.Y.

Six Swedish Yards Now State Owned— Kockums Remains Private

The Swedish Government has announced formation of a state-owned shipbuilding company incorporating six of Sweden's largest shipyards.

The new company, Svenska Varv AB, is capitalized at the equivalent of about \$134 million. With more than 20,000 workers, the new state-owned shipyard will be one of the largest shipbuilding groups in the world.

Only one major Swedish shipyard, Kockums, will remain in private hands.

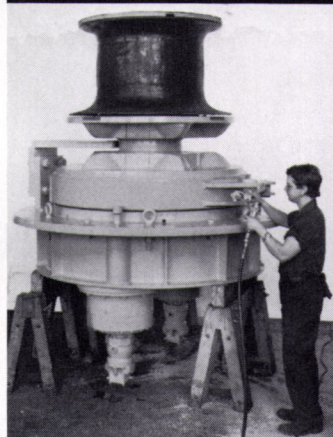


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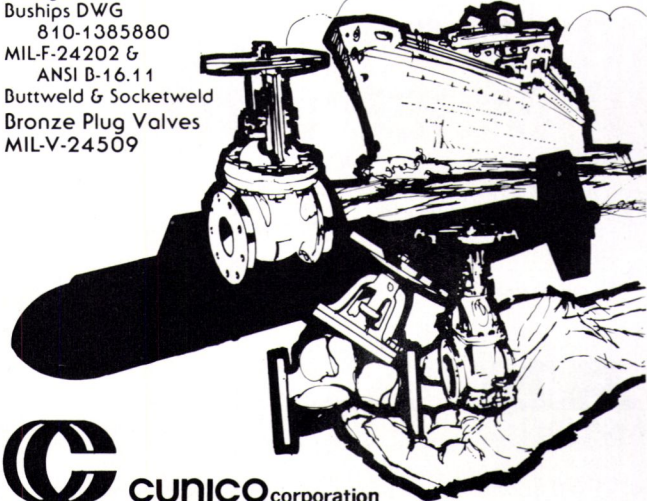
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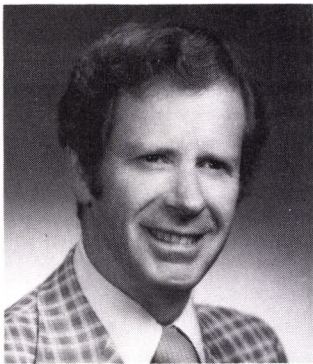


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Union Mechling Names Parker Fleet Manager



H.E. Parker

H.E. Parker has joined Union Mechling Corporation, the subsidiary barge line of Dravo Corporation, as fleet manager. He will be headquartered in Pittsburgh, Pa., and will have responsibility for towboat and barge assignment and scheduling.

Mr. Parker has 17 years' experience in industrial engineering, production control and transportation. He was formerly general transportation manager, bulk operations, for Hunt-Wesson Foods, Inc.

Mr. Parker is a graduate of California Polytechnic University, Pomona, Calif.

G.E. Marine Gas Turbines To Power German Frigate Ships

The Federal Republic of Germany has announced selection of the General Electric LM2500 marine gas turbine as the power plant for its new F-122 class of frigate ships. The LM2500 is produced by GE's Marine and Industrial Projects Department in Evendale, Ohio.

The initial order is for 12 marine gas turbine modules, two for each of six new 3,400-ton frigates. As a result of this order, a complete LM2500 engine support and maintenance center will be established in West Germany.

O.R. Bonner, general manager of the Marine and Industrial Projects Department, noted that with the receipt of this order "the General Electric LM2500 marine gas turbine has now been selected by the navies of two nations to power new naval craft, thus making the LM2500 the world leader in gas turbine propulsion." He added that "today, the LM2500 is operational in six U.S. Navy Spruance-class destroyers as well as the U.S. Navy/NATOPHM hydrofoil ship."

The LM2500's efficient design, coupled with the low fuel consumption, provides ships with improved operational capabilities and flexibility, allowing extended range and the ability to carry a greater volume and weight of weaponry. The LM2500 is designed for long life, permitting extended overhaul intervals and lower maintenance costs. Maintainability features of the LM-2500, based on the GE CF6 aircraft engine, permit faster

maintenance, increasing a ship's operational availability.

The LM2500 was designed, and has been fully qualified through a series of exhaustive tests by the U.S. Navy, for naval marine service. To date, the LM2500s have logged over 100,000 hours of marine service.

The Iranian Navy has also selected the LM2500 to power its version of the Spruance-class ships. This year, the first of a

fleet of U.S. Navy FFG guided missile frigates, powered by two LM2500 gas turbines, will go into active service. Australia has ordered this class of ship for its Navy.

The first Italian fast frigate, the Lupo, was launched last year, and has successfully completed its propulsion sea trials. This ship has been selected by the Italian, Peruvian and Venezuelan navies. Other LM2500 installa-

tions include the new Danish Navy KV-72 class of Corvettes, the new Indonesian Navy patrol ships, and a new class of Saudi Arabian gunboats. The 10 countries that have selected LM2500s to power new shipbuilding programs represent more than 150 ships. With this buy, the German Navy, one of the leading NATO powers, joins the growing number of world navies powered by the LM2500.

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Compact, economical to operate, they are available now, for lease or purchase, for immediate installation on your ship or offshore facility.

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Join Us for the Second Year. Ships and offshore facilities are getting their messages through via MARISAT with remarkable speed and clarity. Shouldn't your company be doing the same?

For more information about COMSAT General's MARISAT services, and how we can tailor them to meet your company's specific needs, call:

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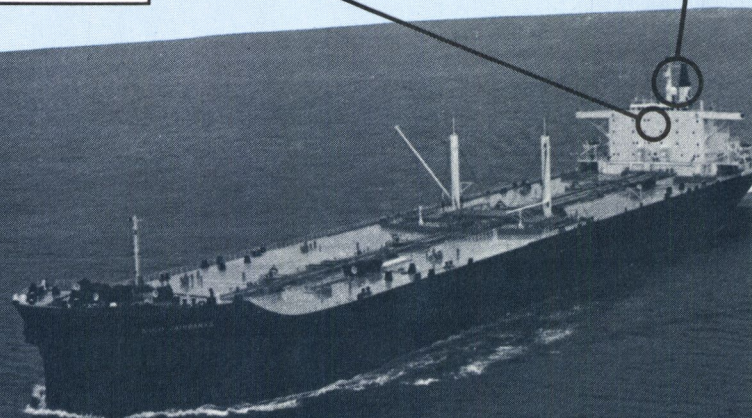


Modern, compact, solid-state communications console with teletypewriter and telephone.



COMSAT General antenna, before installation of radome, on tanker Arco Fairbanks.

PHOTO COURTESY OF ATLANTIC RICHFIELD COMPANY



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Western Union Int'l To Market New MARISAT System

A specially designed maritime satellite communications system is being marketed by Western Union International, Inc. (WUI), One WUI Plaza, New York, N.Y. 10004.

The system, called MARISAT, was described by **Roy K. Andres**, WUI's vice president for planning,

at a recent press conference held at the Whitehall Club in New York City.

Developed by WUI in partnership with other communications organizations and with the backing of the U.S. Navy, MARISAT has been utilized on an introductory service basis to shipping for the past year.

Core of the system are three geostationary orbits 22,300 miles over the equator covering the Atlantic, Pacific and Indian Oceans.

The satellites provide continuous ultra-high-frequency communications to the U.S. Navy in all three oceans.

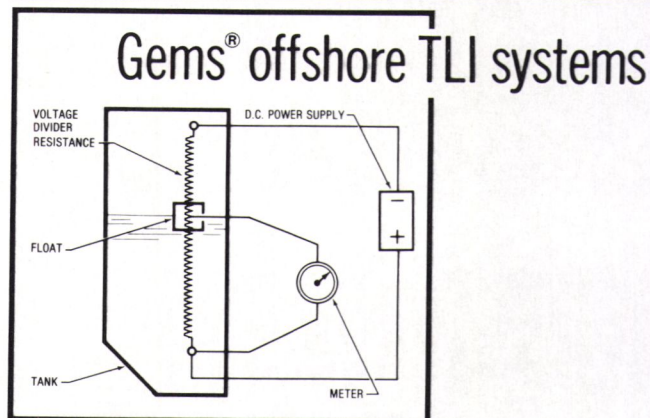
Links to the Navy installations with the mainland U.S. are two large shore stations with 42-foot-diameter antennas, one each in Connecticut and California. A third will be in service in the Indian Ocean area later this year.

Under the system, ships communicate instantaneously, using

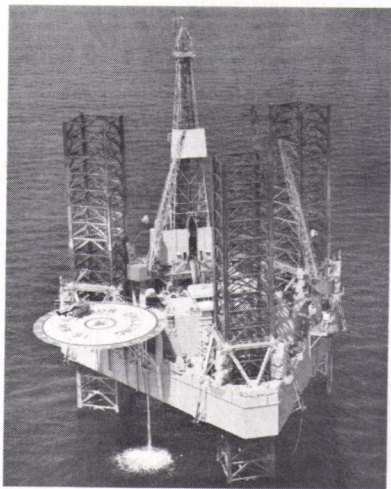
a four-foot stabilized antenna beamed to the satellite which amplifies the signal and repeats it to shore stations.

Telex calls from ships are automatically interconnected by a U.S. international record carrier to any Telex machine throughout the world.

According to Mr. Andres, the system is available for \$55,000 per complete unit, excluding installation costs. It can also be obtained on a lease basis, he added.



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"Mr. Si" rig, owned and operated by Fluor Drilling Service, Coral Division, New Orleans, La.

Rig built by: Marathon LeTourneau, Marine Division, Vicksburg, Mis. Photograph: Big River Enterprises, Slidell, La.

Balanced deck loading is vitally important on this "Jack-Up" type drilling rig — a factor strongly influenced by tank content and related weight distribution. Equally important is a continuously adequate inventory of diesel fuel, lube oil, potable water and drilling water to service day-by-day operating requirements.

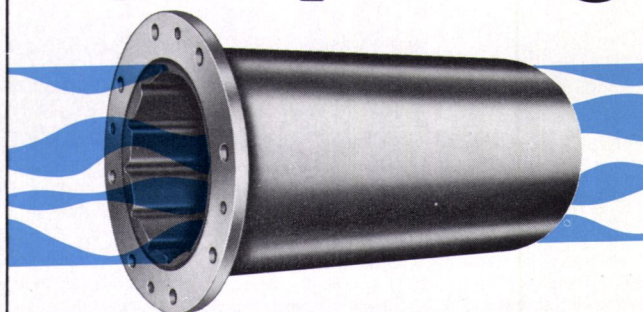
Fourteen service storage tanks are built into the deck of the "Mr. Si" — an exploratory oil rig currently operating in the Gulf of Mexico — and each tank is continuously monitored by a Gems Tank Level Indicating System, selected and specified by the owners. Factors influencing Gems selection included reliability, repeatability (system accuracy consistently within 1/2" of liquid level), ease of installation and a demonstrably low need for maintenance.

The Gems operating principle is ingeniously simple and trouble-free: a tubular transmitter, acting as a voltage divider, is traversed by a magnetic float, which rises and falls with liquid level and transmits continuous level information to a remote read-out meter (receiver). Transmitters can be furnished in a wide variety of materials and configurations compatible with most media and the most difficult tank depths and profiles. Receivers are either dial or digital types, and secondary (slave) units are available if required.

The "Mr. Si" installation employs 14 flange (carbon steel) mounted transmitters with stainless steel stems and Buna N floats. Multiple receivers are housed in a special table-top console designed and built by Gems to customer specifications.

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Skagit Corporation Appoints F.K. Weimann



Fritz K. Weimann

Fritz K. Weimann has been appointed manager of long-range planning and product development, according to Skagit Corporation's director of marketing, George B. Klos.

Mr. Weimann will be responsible for long-range planning with emphasis on new products, and the adaption and extension of Skagit's present offshore, marine, construction, and logging product lines.

Prior to joining Skagit, Mr. Weimann had served as director of engineering at the Lorain Division of The Koehring Company. He had held many management positions during his 25 years with Lorain.

Mr. Weimann was born in Germany and graduated from the Hamburg Engineering College, Hamburg, Germany, with a major in mechanical engineering.

Skagit Corporation, Sedro-Woolley, Wash., a subsidiary of The Bendix Corporation, is a manufacturer of heavy machinery for the offshore, marine, construction, and logging industries.

Maritime Approves CDS For Purchase Of Spare Tailshaft

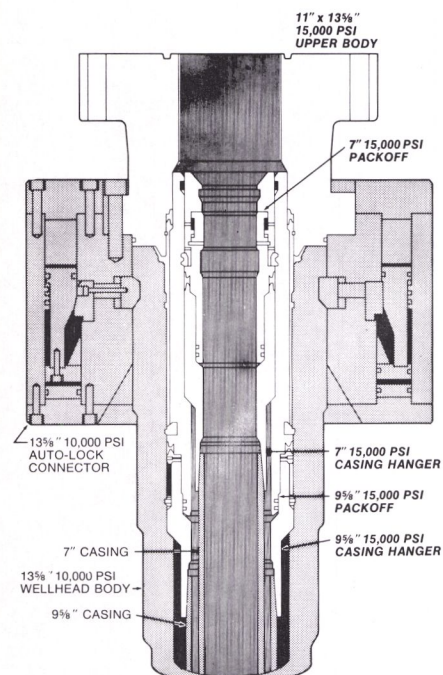
The Maritime Subsidy Board has approved construction-differential subsidy (CDS) for the purchase of a spare tailshaft to support four 89,700-deadweight-ton tankers built for the Third Group, Inc.

The tailshaft will cost \$52,500, of which the Government will pay \$19,147. The tankers were built with CDS assistance by National Steel and Shipbuilding Corporation, San Diego, Calif., at a cost of approximately \$28 million each. The last vessel was delivered December 30, 1976.

National Supply Builds 15,000-Psi Subsea BOP And Wellhead System

National Supply Company has shipped to British Petroleum Ltd. a unique 15,000-psi subsea wellhead system to be used in the North Sea.

The BOP stack and individual components were successfully tested in December at National's Houston Wellhead Plant and shipped on schedule for subsea installation.



How crossover to 15,000 psi was performed is demonstrated in this drawing. Components shown in white were developed to allow 15,000 psi completion within existing 10,000-psi-rated equipment, shown shaded in drawing.

The new National system features a unique "crossover" that allows a 15,000 psi completion within existing 10,000-psi-rated equipment. This approach offers the customer the higher rated equipment at considerable savings.

BP engineers came to National Supply for assistance after running into unexpectedly high pressures in the North Sea. No subsea wellhead system then available was rated for more than 10,000 psi. Without properly rated equipment, the potential of the discovery could not be properly assessed.

National's engineers designed the new 15,000-psi BOP stack and wellhead equipment to be used with existing 10,000-psi-rated equipment.

The advantages to this approach are:

- The well could be drilled in and established with readily available equipment.
- Use of standard National wellhead components saves on well costs.
- The system requires fewer new components.
- The system could be used with BP's existing National equipment.

The BOP stack is a relatively

"straightforward" development of the concepts used in the company's present designs. It used two 15,000-psi double-ram preventers for the main BOP assembly and a 10,000-psi annular preventer for the lower riser package.

This 11-inch, 15,000-psi wellhead design concept is the first application on a National Sea King 13-5/8-inch, 10,000-psi wellhead. This design can be utilized in all other sizes of National's

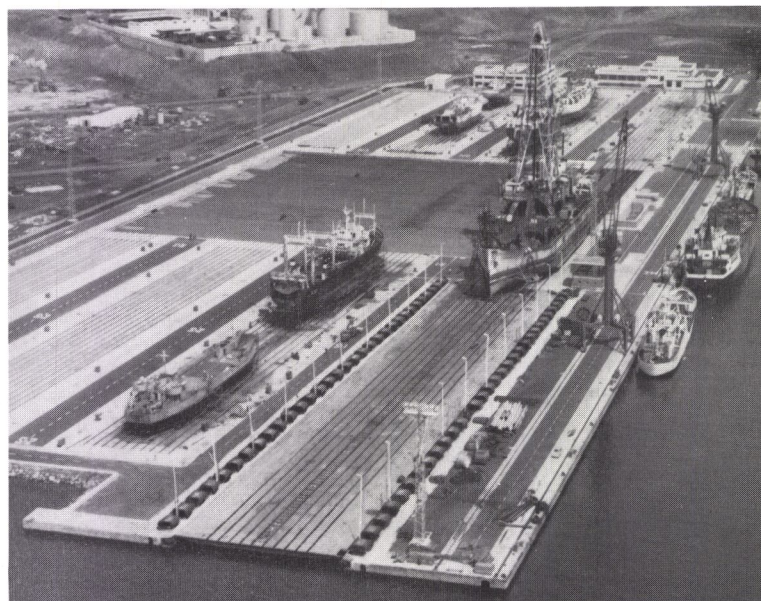
10,000-psi Sea King wellhead equipment.

The key advantage to this system is the flexibility it provides the customer. It allows him to upgrade his National equipment to higher ratings when required.

National Supply developed the industry's first underwater product unit, placed in Lake Erie in 1957, and designed the first subsea production unit to go into operation in the North Sea.

A division of Armco Steel Corporation, National Supply Company manufactures the most complete line of oil-field drilling machinery and related equipment in the industry.

For additional information on the 15,000-psi subsea wellhead system, write to **William Marmac**, National Supply Co., Division of Armco Steel Corporation, 1455 West Loop South, Houston, Texas 77027.



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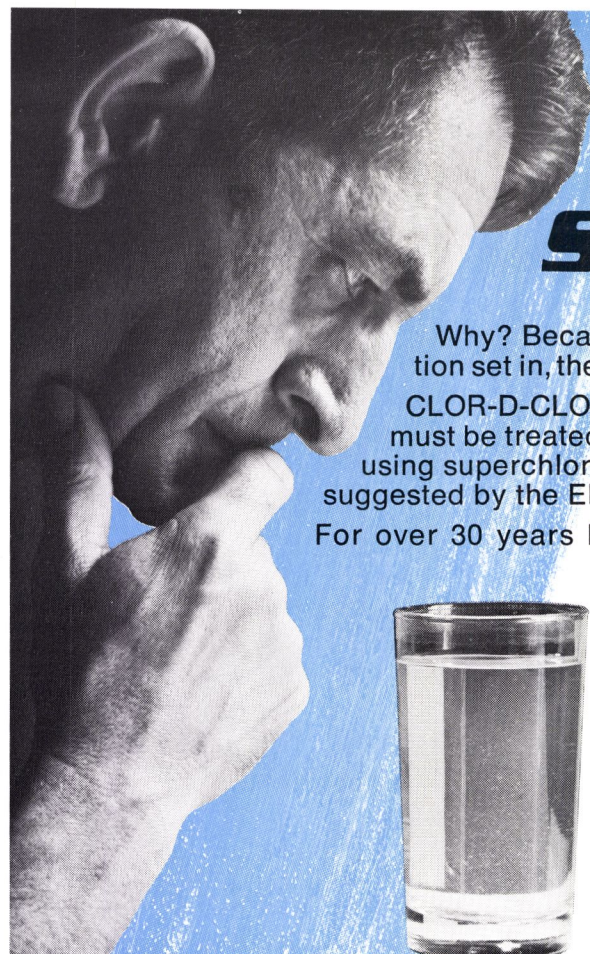
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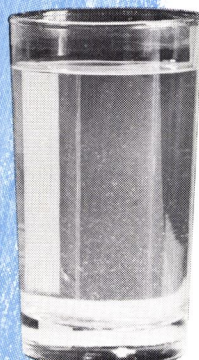
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Mamo II Joins Dillingham Fleet In Hawaii



Shown arriving in Honolulu from Main Iron Works, Houma, La., the Mamo II joins a fleet of 12 other tugboats and 7 support vessels in Dillingham's Hawaiian fleet.

Christening and blessing ceremonies for the new, 2,250-horsepower, harbor-assist tugboat Mamo II were recently conducted at Pier 19, Honolulu, Hawaii, by officials of Dillingham Maritime-Pacific Division, Dillingham Corporation's Hawaii maritime company.

The event began with the Reverend **James Merseberg**, pastor of Pearl City Community Church, conducting a traditional Hawaiian blessing. **Mrs. Marilyn Opatz**, wife of **Thomas D. Opatz**, president of Dillingham Maritime, christened the Mamo II.

The tug, which arrived in Honolulu from Main Iron Works shipyard in Houma, La., is the third new tug to go into service with Dillingham Tug & Barge Corporation in recent months. The tug Mana was added to the corporation's fleet in May 1976, and the tug Moana Holo began service in April 1977. A fourth tugboat is presently under construction and is expected to be placed into service in September 1977.

Mamo II was commanded on her maiden voyage from Louisiana to Hawaii by **George K. Panui Jr.** Capt. **George Panui Sr.** met the Mamo II off Waikiki, and was given the privilege of bringing the tug into Honolulu Harbor for the first time by the younger Panui. Captain Panui Sr. was employed by Dillingham Maritime-Pacific Division for 40 years before his retirement in 1974.



Capt. **George Panui Sr.** (left) met the new tug off Waikiki. His son and namesake turned the wheel over to his father for the run into Honolulu Harbor.

The original tugboat Mamo was captained for many years by **Jack Young**, son of the founder of Young Brothers, Ltd., the tug company that was the predecessor of Dillingham Tug & Barge Co. and of the present day Young Brothers, Ltd., the interisland surface freight carrier. Captain **Young** is now a pilot with the State Harbors Division. The Mamo II joins a Dillingham tug and barge fleet of 12 other tugboats and seven support vessels.

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Maritime Weather Systems Exhibit And Conference—Sept. 14-16 In New York

Maritime Weather Systems—Today and Tomorrow, a three-day conference and exhibit sponsored by The Maritime Association of the Port of New York (MAPONY) will be held on September 14, 15 and 16 at the Seamen's Church Institute of New York in New York City.

During the three days, panels comprised of four members and a moderator each from industry and government agencies will conduct seminars on: Shiprouting, Currents, Weather Equipment, Harbor and Coastal Weather, Ice, Facsimile, Heavy Weather, and Future Plans.

Exhibits also will be displayed

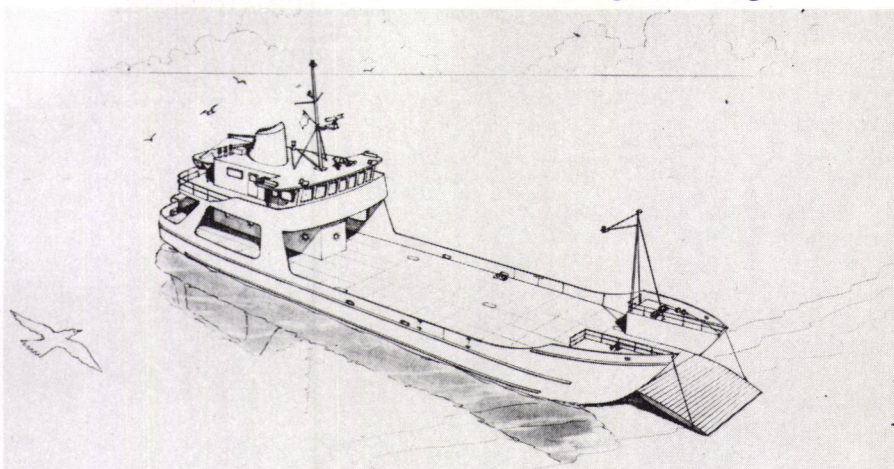
by internationally famous manufacturers of the equipment and systems used by shipping companies for safety at sea and efficiency of operations.

At the luncheons on each day, prominent authorities involved with current and developing maritime weather systems, as yet unannounced, will be guests of honor and featured speakers.

A record of all of the proceedings of the seminars and the addresses by the honored guests will be printed and distributed.

For further information about the Conference and Exhibit or for applications to attend the seminar sessions and luncheons, write to The Maritime Association of the Port of New York, 80 Broad Street, New York, N.Y. 10004.

Lantana Boatyard To Build 134-Foot Alaskan Landing Craft Of Krogen Design



The Krogen design has a beam of 32 feet, draft of 7 feet, powered with twin 3408 Caterpillar engines, classed by American Bureau of Shipping, and certified by USCG.

Lantana Boatyard has been awarded a contract for the construction of a 134-foot landing craft, according to **Robert Zitner**, vice president of operations.

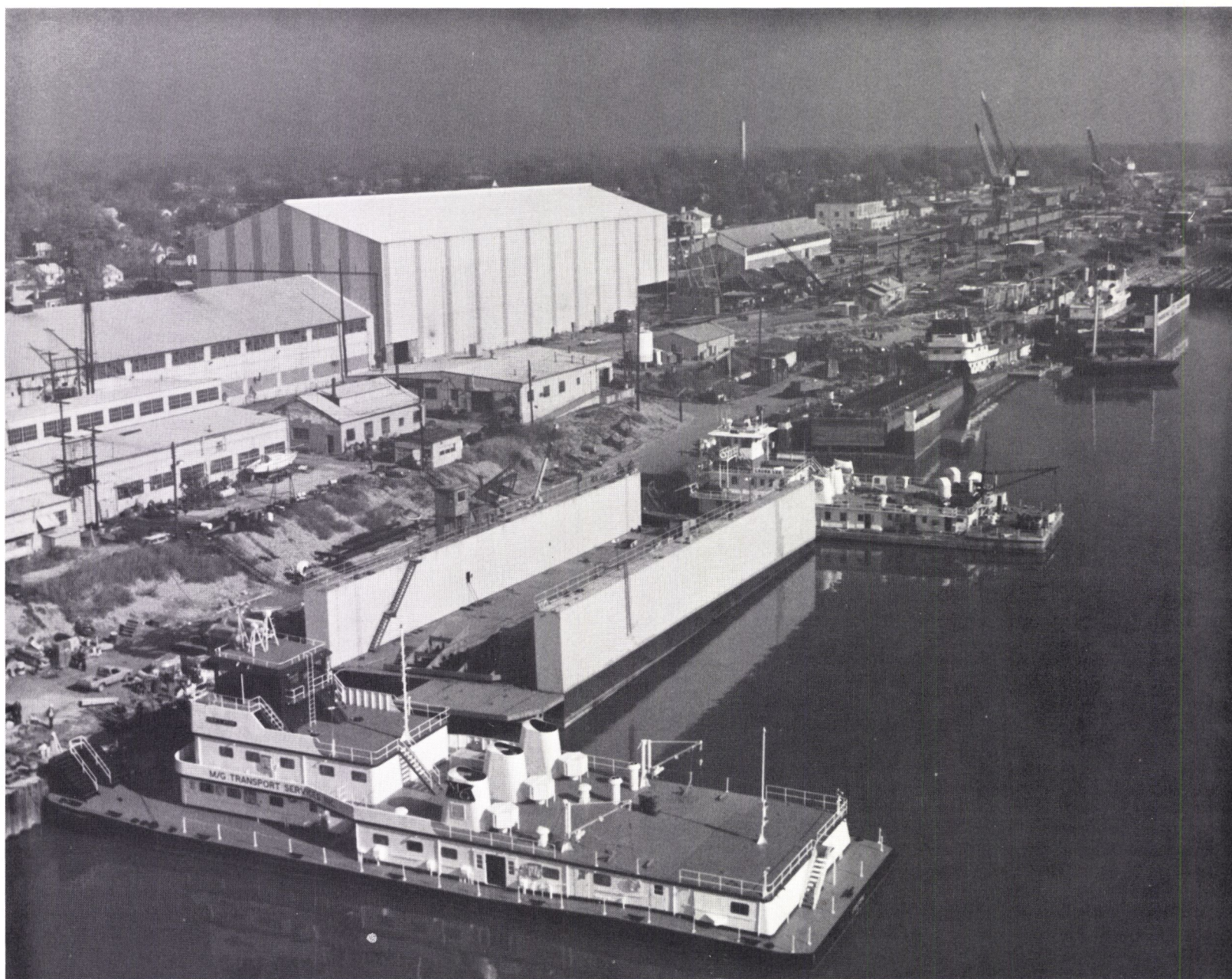
The vessel was designed by **James S. Krogen & Co., Inc.** of Miami, Fla., for **Kenneth Arndt**, president of the Krystal Corporation in Homer, Alaska. Construction will be to ABS standards, and the vessel will be fully certified and classed Maltese Cross A-1D, Maltese Cross AMS, with capabilities for both liquid and dry bulk cargo. The 134-footer was developed for transporting heavy machinery and equipment in the remote areas of Alaska. Made of welded steel construction,

she can also be used as a mini tanker, as she has a cargo oil capacity of 106,000 gallons of Grade D product when not carrying her 275 tons of deck cargo.

A number of similar vessels are in varying planning stages at Lantana Boatyard, where specialization for the design and construction of vessels of this type is in progress. These vessels are offered by the company in sizes ranging from 120 to 160 feet in length.

For further information, contact **Frank Ferri** (305) 585-9311, or write Lantana Boatyard, 808 North Dixie Highway, Lantana, Fla. 33462.





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For details, write: Jeffboat, Division of Texas Gas Transmission Corp., Jeffersonville, Indiana 47130. (812) 288-0421.

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Seven Seas Towing Names Capt. Cleveland Operations Manager

Seven Seas Towing, Inc., 201 Louisiana Street, P.O. Box 464, Westwego, La. 70094, has announced the appointment of Capt. L.S. Cleveland as operations manager. His responsibilities include all operations of the growing fleet

such as personnel, maintenance, rigging and logistics. He will also be available for consulting services.

Captain Cleveland has many years of towing experience, both aboard tugs and in managerial positions ashore.

The company also announced that Linda Peters has joined the organization as sales representative. She brings six years of oil

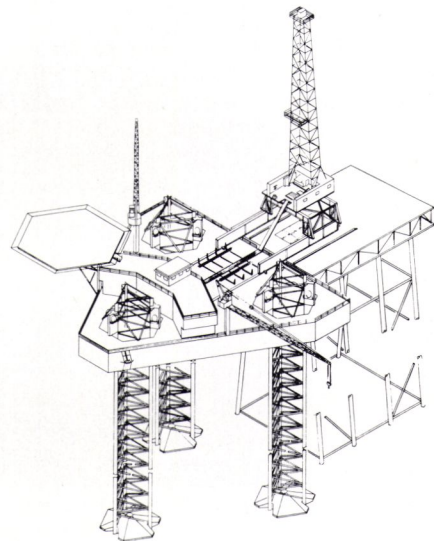
field sales experience into the group, and she will be responsible for marketing and sales.

Seven Seas Towing is a subsidiary of Bayou Marine Corp., with offices in Westwego and Houma, La. Other subsidiaries include Ebbco of La., Inc. in Westwego, and Bayou Groceries, Inc. and Dolphin Marine Corp. in Houma. Corporate headquarters are in Houma.

Clay Chiles Awards Marathon LeTourneau 150-44-C Rig Contract

Chiles Offshore Limited, Houston, Texas, has just signed a contract to purchase Marathon LeTourneau's first 150-44-C shallow-draft self-contained, self-elevating cantilevered drilling platform. The announcement was made jointly by Clay Chiles, General Partner of Chiles Offshore Limited, and Gene M. Woodfin, chairman of the board and chief executive officer of Marathon Manufacturing Company.

Marathon's 150-44-C Class Platform was developed for relatively shallow drilling in environments comparable to the Gulf of Mexico, West Coast of Africa, Caribbean and Indonesian type of environments. The 150-44-C cantilevered rig can drill multiple wells in one location in water depth as shallow as 15 feet and up to 150 feet. It is expected that this particular unit will begin work in the Gulf of Mexico.



Marathon LeTourneau Offshore Company's 150-44-C shallow draft, self-contained, self-elevating cantilevered drilling platform is designed to operate in waters up to 150 feet deep.

Construction of the new jackup will take place in Marathon's Brownsville, Texas yard. Chiles Offshore Limited has named the unit Texas Star. Drilling Equipment will be supplied by Armco National, and delivery is expected by the end of the year.

The 150-44-C rig is 148 feet long by 160 feet wide; the hull depth is 16 feet. The unit will have 250-foot-long spud legs, which can be recessed into the bottom of the hull, thus allowing towing over shoals as shallow as 13-15 feet. Crew accommodations are provided for 40 or more.

The Texas Star will be outfitted for up to 15,000 feet exploratory and development drilling, and heavy-duty work-over of existing satellite wells or wells of a development platform. Special features include a versatile cantilever design which allows drilling multiple wells without relocating the rig, as well as positioning precisely

(continued)

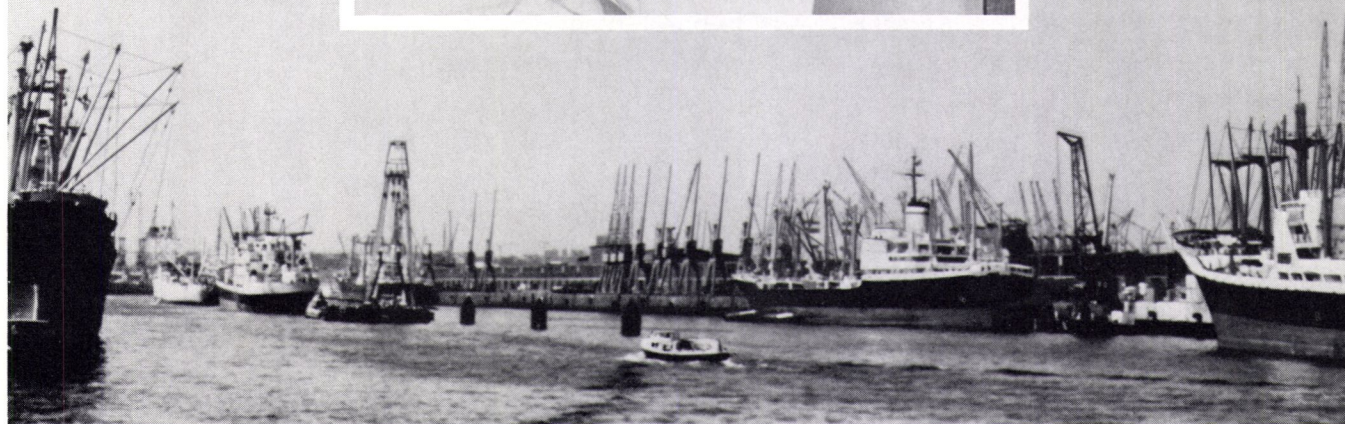
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over conductors of an existing production platform, or skidding the derrick/substructure set onto a production platform and allowing the rig to be used as a tender. The cantilever feature means the rotary can be located from 10 to 35 feet out from the end of the jackup hull and 7½ feet on either side of the center line, for a 15-by 25-foot drilling pattern. The rig has a substructure 24 by 38 feet wide by 14 feet high. Substructure, drill floor and mast can be skidded on the deck of a production platform when required and span 30-, 40-, or 45-foot-wide skid beams with a 10-foot clear height above the platform deck.

Mr. Chiles, president of Chiles Drilling Company, General Partner of Chiles Offshore Limited, has had many years of experience in land and offshore drilling. After owning and operating five land rigs in south Texas as Chiles Drilling Company, he was instrumental in the organization of an offshore drilling company, Western Oceanic, a subsidiary of The Western Company of North America. During his tenure at Western, he built and operated seven offshore drilling rigs, three semisubmersibles and four jackup rigs. He has now organized Chiles Drilling Company and Chiles Offshore Limited to own and operate rigs in the Gulf of Mexico, both jackup and platform rigs, of which the Texas Star will be the first.

Marathon LeTourneau Offshore Company is a subsidiary of Marathon Manufacturing Company of Houston, Texas. The parent firm is a multi-product company serving industries in marine construction and transportation, heavy equipment and steel products, as well as a group of diversified companies producing chemicals, batteries, consumer goods, and providing paving and utility construction services.

Raytheon Marine

Names Robert McCarthy

Robert S. McCarthy Jr. has been named Midwestern regional manager for commercial products at Raytheon Marine Company, Manchester, N.H. He will be responsible for all regional sales activities involving Raytheon's lines of heavy marine radars, depth sounders, navigational aids and other commercial marine gear.

Mr. McCarthy was formerly international sales manager for marine products at Raytheon's corporate offices in Lexington, Mass. His primary responsibilities were South America and the Far East. Prior assignments were as a sales representative for commercial marine products and regional sales manager for the New York area.

A graduate of Boston College and Massachusetts Maritime Academy, Mr. McCarthy is a member of The Society of Naval Architects and Marine Engineers and the American Radio Relay League.

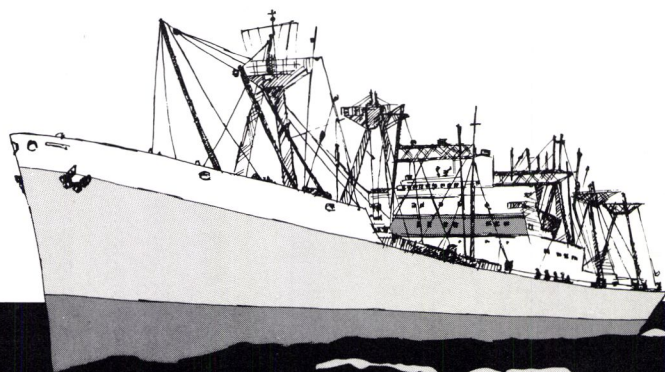
Shipboard Heat Recovery Report Now Available

The Maritime Administration has released "Shipboard Heat Recovery Program for U.S. Merchant Ships," an 80-page technical report prepared for MarAd by Mechanical Technology Incorporated of Latham, N.Y. The purpose of the study was to investi-

gate the possibility of recovering waste energy aboard U.S.-flag ships. Fuel is a major factor in operating expenses, with the U.S. merchant fleet consuming an estimated 90-million barrels of fuel annually at a cost of nearly \$1 billion, according to the report.

The study found that modern ocean steamships have very little recoverable heat that is not al-

ready utilized in the basic propulsion cycle. However, it was determined that there is excellent potential for heat recovery on small, diesel-powered ships (2,800 shp), typically operated on inland waterways. The report is available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161. The price is \$5, and the order number is PB 267222/AS.



How to comply with today's rules on sewage treatment without going overboard.

Selecting the right shipboard sewage treatment system can be risky. You can install an inexpensive USCG Type I system. Spend more for a system that fulfills Type II requirements. Or you can invest a lot more in a no-discharge Type III unit. There are holding tanks to consider. There are also ways to adapt existing piping arrangements.

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SIGMA takes the risk out of choosing a sewage treatment system. We make a full line of pre-engineered, flow-through systems for cargo and passenger vessels, tankers, LNG's, fishing and work boats, even off-shore drilling rigs.

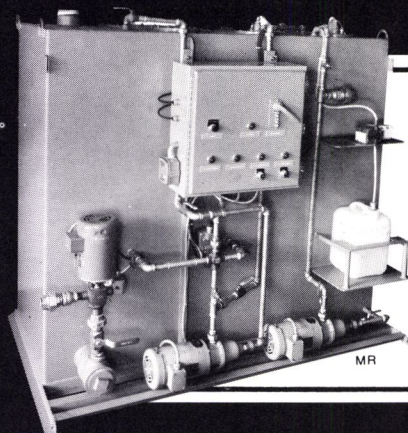
More importantly, SIGMA engineers can put the facts in focus... plan the system that best suits your needs. For example, we may suggest one of our compact USCG Type I units that is delivered on skids,

ready to operate, or multiple modules for flexibility and ease of installation. Of course, we can satisfy more advanced requirements, too. We'll even custom build a system if you and our engineers determine it's the most cost-effective system for you.

All SIGMA sewage treatment systems are easy to install, dependable and virtually maintenance-free. And all the controls are right up front. Our systems are moderately priced and USCG-certified. Compared to biological units which must be operated continuously, SIGMA equipment only has to be activated when a vessel is within territorial limits.

So why go overboard on a sewage treatment system? We're ready to go to work to help you plan the most efficient system for your operations.

Complete and mail the form below, and a SIGMA representative will contact you with a preliminary recommendation, at no charge. In the meantime, we'll send you our new SIGMA brochure.



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Type of vessel(s) _____ No. of days in port _____ Total no. of persons _____

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Seated at the head table during Thursday's Golden Gate Luncheon were, left to right: Robert G. Mende, SNAME secretary, Rear Adm. Nathan Sonenshein, Mrs. William Swan, Robert T. Young, SNAME president; Arthur J. Haskell, Mrs. Robert T. Young, Dr. Manley St. Denis, Mrs. Robert Mende, and William Swan.

San Francisco Hosts SNAME Spring Meeting And STAR Symposium

The Northern California Section of The Society of Naval Architects and Marine Engineers hosted the 1977 Spring Meeting/STAR (Ship Technology and Research) Symposium at the Fairmont Hotel in San Francisco, May 25-27. This event proved to be one of the most successful Spring Meetings in recent years, with the registration in excess of 700. Each day was filled with technical sessions centered around the theme "Energy Research in the Oceans." There was also a full calendar of social activities to round out the schedule.

The interdisciplinary nature of the technology and research in the broad area of the theme led to the invitation to other societies to participate in the preparation

of the Symposium. These societies included the American Society of Civil Engineers (ASCE), Institute of Electrical and Electronic Engineers (IEEE), and the Marine Technology Society (MTS). Many authors and discussers represented these societies, which greatly contributed to the exchange of knowledge at this precedent-setting meeting.

Thirty-four papers were presented in six subject areas within the Symposium theme. The technical papers covered current research and development in the areas of marine transportation, with the emphasis on Naval Architecture and Marine Engineering, Offshore Platforms (fixed and mobile), Ocean Thermal Energy Conversion (OTEC) and LNG.

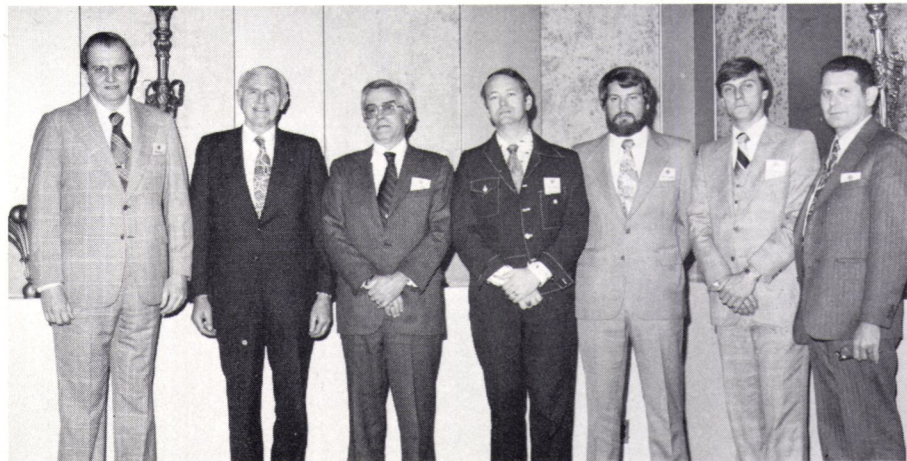
Each day's subject was concluded with well-attended roundtable discussions from the audience, followed by each author's impromptu response.

The social activities proved to be a complementary blend with the technical sessions. The Golden Gate Luncheon, one of the key events, was highlighted with an address by Society president Robert T. Young, concerning the "bad publicity" the tanker industry has received in recent months in light of the past winter's rash of tanker casualties. He presented some interesting statistics which showed that damaged tankers accounted for only three percent of all oil in the oceans. During the luncheon, an Honorary Membership Certificate was presented to Dr.

Manley St. Denis for his lifetime contributions to the profession. Certificates of Appreciation were presented to Arthur J. Haskell, chairman of the Spring Meeting Steering Committee, and to William B. Swan, chairman of the Northern California Section.

Other popular activities included a well-attended trip to the famous Napa/Sonoma wine country and a tour of San Francisco Bay on the M/V Harbor Emperor, which provided a close-up inspection of such well-known landmarks as the Golden Gate Bridge and Alcatraz Island.

The Farewell Banquet and Ball in the Grand Ballroom proved to be a fitting conclusion to a successful three days of activities which culminated several years of planning and preparation.



Authors of papers presented during Session T-10 on Marine Transportation (Naval Architecture) are shown, left to right: J.E. Goulden, B.C. Gerwick Jr., T.S. Cook, P.H. Francis, P.A. Ellingsen, W.C. Squillario, and H.S. Preiser.



W. Nichols, moderator (left), is shown above with authors of papers presented during the first morning Technical Session T-1 on Marine Transportation (Machinery): H.D. Marron, G.J. Baham, W.L. Warner, M.M. Kossa, and B. Siegel.

Taking Part In SNAME Spring Meeting



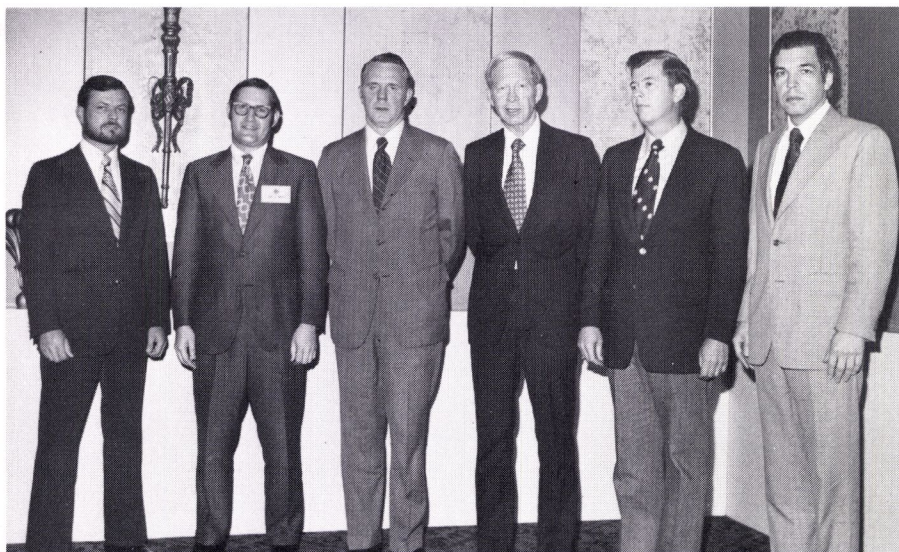
President Young (right) presents a Certificate of Appreciation to Art Haskell.



Dr. Manley St. Denis of Hawaii receives Honorary Membership into the Society.



In the receiving line at the President's Reception held on Wednesday are, left to right: Mr. and Mrs. Robert T. Young, and Mr. and Mrs. Robert G. Mende.



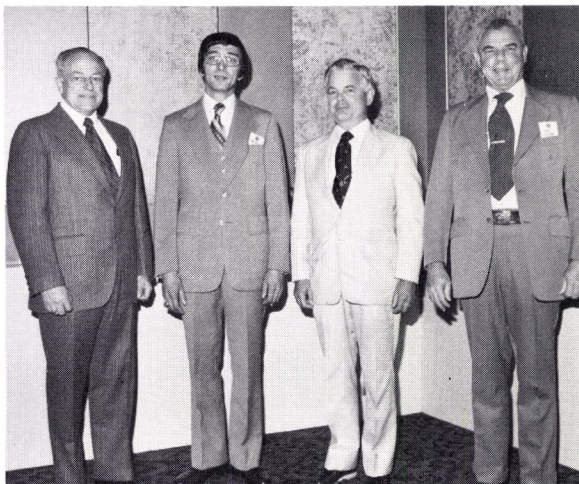
Technical Session T-9 on LNG, left to right: T.R. Dickey, H.S. Marcus and J.L. Howard, authors; B. Hunsaker, moderator; J.W. Kime, and W.D. Thomas, authors.



Technical Session T-6 on Offshore Mobile Platforms, from left: R.J. Boznak, author; E.L. Turner, moderator; D.C. Owen, B.G. Burke, and J.R. Paulling, authors.



Technical Session T-2 on Offshore Fixed Platforms, left to right: E.M.Q. Roren, author; I. Dyer, moderator; F.H. Sellars, author, and R.D. Darragh, author.



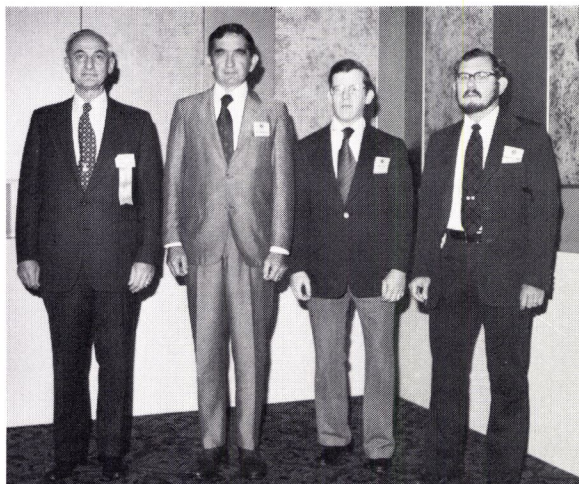
Technical Session T-3 on Marine Transportation (Machinery), left to right: C. Murphy, moderator, F. Critteli, R.T. Miller, and R.W. Dickinson, authors.



Authors taking part in Technical Session T-4 on Offshore Fixed Platforms, left to right: J.K. Vandiver, D.B. Gerdes, M.F. Metcalf, and T. Moan.



Participating in Session T-5 on Ocean Thermal Energy Conversion (OTEC) are, left to right: authors L. Seidman, H.E. Sheets, E.H. Harlow, and L.C. Trimble.



Rear Adm. Nathan N. Sonenshein (left), moderator for Technical Session T-7 on OTEC, is shown above with authors F.C. Munchmeyer, J.F. O'Dea, and R.A. Barr.



Technical Session T-8 on Offshore Mobile Platforms, from left: J.D. Stachiw, C.R. Schaeffner, authors; L.S. Bates, moderator, and M.F. Metcalf, author.

Harland And Wolff Belfast Yard Building 333,000-Ton Tankers

Harland and Wolff, the Belfast, Northern Ireland shipbuilding company, has recently delivered the S/S Lima, the last of four giant 318,000-ton oil tankers ordered by Airlease International for operation by the Royal Dutch Shell Group.

The first vessel in the series, the Lampas, was delivered in 1975, and the second and third, Lepeta and Leonia, last year. The four vessels are the largest ships to have been built in the United Kingdom so far, but the distinction will soon be held by two other tankers currently being built by Harland. These are 333,000 tons each.

The single-screw, turbine-driven Lima is designed primarily for

transporting crude oil from the Middle East to Europe, but could be operated efficiently on other major trade routes, such as to Japan and North America, when offshore receiving terminals are established.

She has an overall length of 1,152 feet and is over 180 feet wide. Her steam turbine develops 36,000 shaft horsepower at 85 rev/min, and her trial speed is

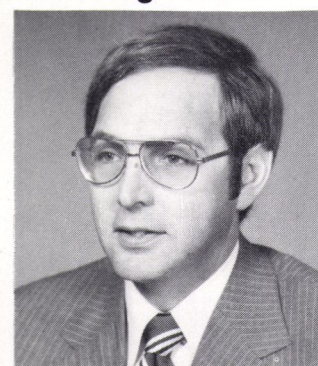
over 15 knots. She is designed to carry a complement of 41 people.

The vessel is built under survey of Lloyd's Register of Shipping to class +100A1.

The Belfast yard of Harland and Wolff has the largest capacity of any U.K. shipyard. It has a one-million-ton building dock which is equipped with one of the world's largest overhead cranes. The dock can accommodate ships up to 1,641 feet long.

Recently the yard won a £70-million order (about \$120 million) for two advanced liquid petroleum gas (LPG) carriers to ship LPG from Britain's giant Brent oil field to the United States under a contract worth well over £500 million (about \$860 million).

Kyle Named President Federal Barge Lines



Robert A. Kyle

Pott Industries Inc., St. Louis, Mo., has announced that **Robert A. Kyle** has been named president and chief executive officer of its wholly owned subsidiary, Federal Barge Lines, Inc. Mr. Kyle succeeds **Peter Fanchi Jr.**, who will become chairman of Federal Barge, a newly created position. Pott Industries said these changes were being made in anticipation of Mr. Fanchi's reaching mandatory retirement age in May 1978.

Mr. Kyle joined Federal Barge in 1968 and has been president of United Barge Co., Minneapolis, Minn., another wholly owned subsidiary of Pott Industries, since June 1976. During his previous service with Federal Barge, Mr. Kyle's last position was vice president-marketing.

Mr. Fanchi has a total of 26 years of service with Federal Barge and has been its president since 1968. He also was president of Nilo Barge Lines Inc., from 1963 to November 1968, and has been involved continuously in inland waterways transportation since 1938.

Marinette Awarded Landing Craft Contract

Marinette Marine Corporation, Marinette, Wis., is receiving a \$6,491,013 formally advertised firm fixed price contract for mechanized landing crafts (LCM-6 HPI Mod-2) including spare parts and data. The Naval Sea Systems Command is the contracting activity. (N00024-77-C-2025)

Introducing The Magnificent Magnavox Marisat Terminal

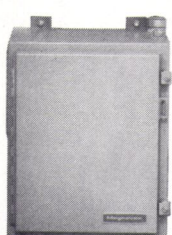
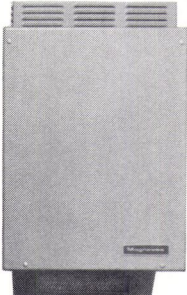
This new shipboard communications terminal puts you in instant, private and remarkably clear two-way telephone or telex contact with your ship anywhere, at any time, in the Atlantic or Pacific Oceans.

Simple

For telex, just start typing. All functions are controlled through instructions to the microprocessor via the teleprinter. For voice calls, a single push button establishes contact with the operator for calls anywhere in the world.

Space Saver

The space saving Magnavox MX 111 terminal needs space in the radio room for only the telephone and the desktop teleprinter. The compact power supply and electronics unit are bulkhead-mounted and can be tucked away almost anywhere.

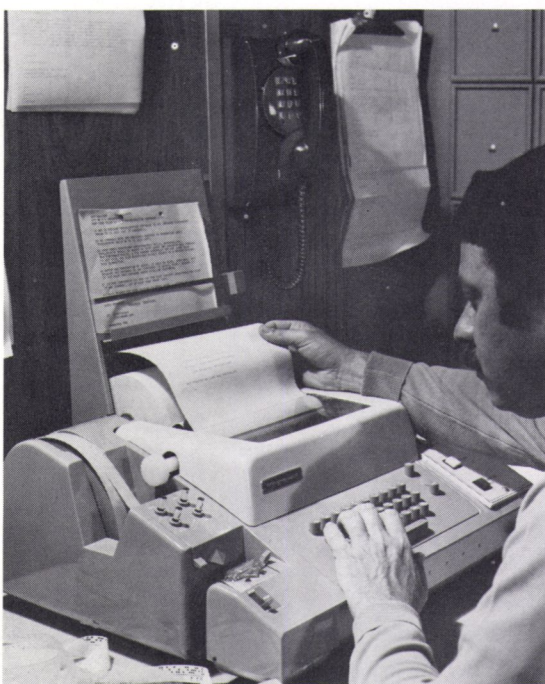


Modular Flexibility

System changes, options, expansions and provisions for future satellites are easily accomplished because the system is designed with future changes in mind.

Hard Copy Record

Telex messages, and all system operations, annotated with GMT, are



supplied by the teleprinter.

Easy To Install

The MX 111 is extremely rugged incorporating large design margins based upon years of Magnavox marine experience. Extensive factory burn in is performed to assure reliable operation on board your ship.

Reliable

The single cable between antenna and electronics may be of any length. Modular

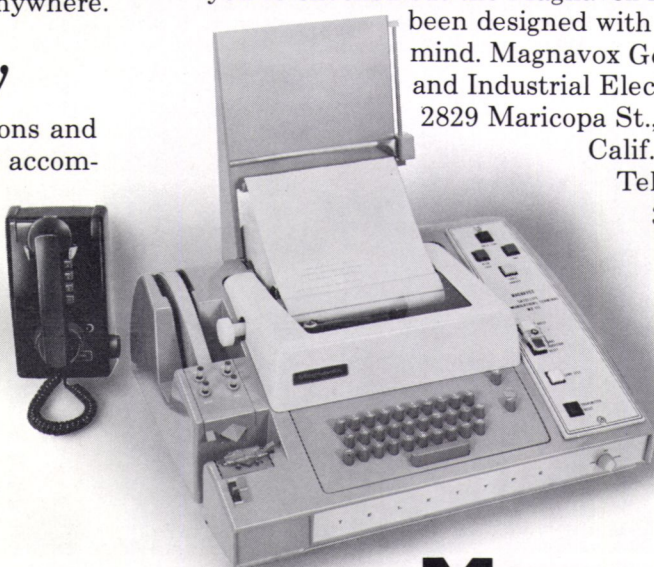


components allow variety of installations to fit cramped ship spaces.

Check Out The MX 111

Magnavox has years of experience in the design and manufacture of high reliability electronics for shipboard use. Before you specify any Marisat communication terminal, be sure you've checked out the Magnavox MX 111. It's

been designed with your ship in mind. Magnavox Government and Industrial Electronics Co., 2829 Maricopa St., Torrance, Calif. U.S.A. 90503. Telephone (213) 328-0770. Telex 674373.



Magnavox
Magnavox Government and Industrial Electronics Company.

Thunderbolt Marine Industries Launches Twin 96-Foot Tugs For Panama Canal Services



The M.L. Walker, shown above during trials, and her sistership H. Burgess require space only the length of their hulls (96 feet) to make a complete turn.

The tug-fireboats M.L. Walker and H. Burgess were christened recently at Thunderbolt Marine Industries, Thunderbolt, Ga. They are the first of a new generation of shiphandling and firefighting tugs specifically designed for work in the Panama Canal. The main feature of these tugboats is the capability of the propellers, located just forward of amidship, to be rotated 360 degrees, enabling the propeller thrust to be directed in any direction. The vessels can run astern with the same facility as in the forward direction.

The two vessels, which are sisterships, were designed by Norman N. DeJong & Associates, Inc. of Jacksonville, Fla., and classed by the American Bureau of Shipping.

The hull dimensions are as follows: length, 96 feet; width, 33 feet; draft, 16 feet 7 inches; displacement, 447 long tons; speed, 11 knots forward, 10 knots astern, and horsepower, 2,400.

Power is supplied by Fairbanks Morse Marine Diesel Engines. Rudder propulsion is supplied by Schottel of America, Inc. Other major suppliers include: Victoria Machine Works, Morgan Engine Company, Federal Pacific Electric Company, Uniroyal, Georgia Supply Company, National Marine Service, and Marine Development Company.

The M.L. Walker was named for Brig. Gen. Meriwether L. Walker, who served as the fourth Governor of the Panama Canal from October 16, 1924, to November 15, 1928.

The H. Burgess was named for Brig. Gen. Harry Burgess, who served as the fifth Governor of the Panama Canal from October 1928 to October 1932.

Mrs. Patricia Rose Parfitt was sponsor for the M.L. Walker. Mrs. Parfitt is the wife of Governor Harold R. Parfitt of the Panama Canal Zone.

Mrs. Ruth Mary Jane Presley Hultquist was sponsor for the H. Burgess. Mrs. Hultquist is the wife of Fred Hultquist of the Panama Canal Company.



Mrs. Fred Hultquist (left), sponsor of the H. Burgess, is pictured with Mrs. H.R. Parfitt, sponsor of the M.L. Walker.

Thunderbolt Marine Industries, a division of Latex Construction Company, was founded in 1972 by W.E. Honey, president and chairman of the board.

The company has rapidly expanded and enlarged its facilities to accommodate the needs of the owners of both commercial and pleasure vessels. The shipyard has both construction and outfitting facilities under cover. The outfitting area is serviced by a 400-ton Syncrolift with transfer facilities to storage, paint area and sand-blasting. The company has approximately 100 employees. Latex Construction Company is well along with plans for expanding the facilities of Thunderbolt Marine Industries, not only to increase volume, but also to handle larger vessels.

SCNO Barge Lines, Inc. Appoints Robert Wilson

Joseph R. Cordaro, executive vice president of Sioux City and New Orleans Barge Lines, Inc., St. Louis, Mo., has announced the appointment of Robert D. Wilson as Southern District sales manager.

Mr. Wilson's office is located at 1428 International Trade Mart Building, New Orleans, La. 70130.

Moore McCormack And Aeron Marine Apply To Transport Oil For SPR

The Maritime Subsidy Board has received applications from two operators to amend their operating-differential subsidy (ODS) agreements so they can transport liquid bulk cargo under the cargo preference laws of the United States. Moore-McCormack Bulk Transport (Moore-McCormack), Inc., One Landmark Square, Stamford, Conn., and Aeron Marine Shipping Company (Aeron), 410 Lakeville Road, Lake Success, N.Y., have requested the amendments to allow them to carry crude oil for the Strategic Petroleum Reserve (SPR).

The Moore-McCormack application concerns the Mormacstar, Mormacsun and Mormacsky, all 38,300-dwt vessels. The application by Aeron concerns the Golden Monarch, 91,388 dwt, and the Golden Dolphin and Golden Endeavor, both 91,849 dwt. All of

the vessels are currently engaged in the worldwide liquid and dry bulk trade under ODS agreements. Apart from possible use in the SPR program, the applicants intend to continue to operate the ships in their current trades.

Neither of the applications indicated that commitments have been made to carry the SPR oil, but both noted that bids had already been solicited, and offers may follow shortly. Vessels receiving ODS cannot carry preference cargoes without written permission.

Uiterwyk Corp. Names Shalett VP

Jan C. Uiterwyk, president of the Uiterwyk Corp., 90 West Street, New York, N.Y. 10008, has named Sheldon Shalett a vice president.

Mr. Shalett heads the company's reefer division, which has monthly sailings from U.S. Great Lakes and Gulf ports to the United Kingdom and the Continent.

There is a big difference in Marine Sewage Systems ENVIROVAC is the quality leader.

Colt has been a leader and pioneer in marine sewage systems for over 12 years. ENVIROVAC systems are being used on over 28 U.S. built vessels of all types and sizes with the highest degree of reliability. It is U.S. Coast Guard approved and installed on the 4 newest Coast Guard vessels and retrofitted on others.

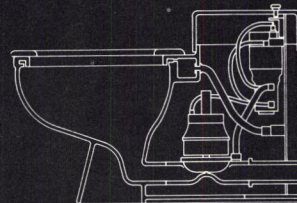
In quality comparisons you can readily see the superiority of ENVIROVAC in its unique flush valve design... vitreous china

toilets... special bowl design that provides clean and thorough flushes with only three pints of water... and its highly efficient, trouble-free vacuum system. All controls and the discharge valve are also easily accessible without dismantling toilet.

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Management Operation, Beloit, Wisconsin 53511. 608/364-4411.

U.S.C.G. Certificate No. 159.15/1016/1/III



Colt Industries
Water and Waste
Management Operation

Electro-Nav Now Sole U.S. Distributor Of BEN Speed Logs

Electro-Nav president **Robert Negrón** has announced that his company, one of the nation's top marine electronic distributors, has been appointed sole U.S. representative for the entire BEN Electro-Magnetic Speed Log line. The BEN Speed Log is a com-

bination ship speedometer/odometer that saves on fuel costs, increases operational efficiency, and interfaces with existing equipment like sat/nav, radar and collision avoidance gear to achieve greater navigational accuracy. It improves coordination between vessel and home office, and expedites schedule maintenance.

The BEN can measure speeds as low as 5 feet per hour, which

makes it an effective maneuvering aid, even for supertankers. It is also very sensitive to speed variations and will even register, at once, the speed drop caused by a snagged net on a moving fishing vessel, permitting immediate action.

One important feature of all BEN Speed Logs is the retractable transducer which mounts flush on the hull. There are no

external probes to bend or break, maintenance work is performed from inside the vessel and installation and calibration can be completed in just one watch period.

The BEN Speed Log line includes a wide variety of logs, transducers and auxiliary speed and distance indicators, permitting substantially custom outfitting for vessels of any size, in any service.

For additional information, write Electro-Nav, 1201 Corbin Street, Elizabeth Marine Terminal, Elizabeth, N.J. 07201.

Engineering Works Div. Dravo Corp. Names McCullough Superintendent



Ralph D. McCullough

Dravo Corporation's Engineering Works Division has announced the appointment of **Ralph D. McCullough** as superintendent of the marine ways.

Mr. McCullough joined Dravo in 1939 and has held various supervisory positions, most recently as assistant superintendent of the Dravo boat yard at Neville Island, Pa.

Dravo's Engineering Works Division operates one of the nation's largest inland waterway shipyards at Neville Island, near Pittsburgh.

Samson Names Rauhut Vice President & Counsel

Stanley E. Rauhut has been named to the post of vice president and counsel of Samson Ocean Systems, Inc., Boston, Mass., according to an announcement by **Jerry J. Jones**, president.

In his new post, Mr. Rauhut will be primarily involved with the Samson Undersea Services Division, which operates diving support vessels and provides hyperbaric welding, nondestructive testing and unmanned vehicle services throughout the world.

Mr. Rauhut joined Samson Ocean Systems, Inc. in 1976 as their counsel, and previously served with Brown & Root, Inc. on their legal staff. He is a graduate of the University of Texas, School of Law, is licensed to appear before the Texas and Massachusetts Bars, and the Federal Courts of the 1st and 5th Circuit Courts of Appeal, and is a member of the American and Houston Bar Associations and the Maritime Law Association of the United States.

Maritime Reporter/Engineering News



Voith Water Tractor

In the fifties, Wolfgang Baer developed the concept of a ship-handling tug in which the drive and control are arranged forward and the towing gear aft.

The decision of far-sighted towing companies made the introduction of this new type of vessel feasible. Since then many years of experience have led to a world wide breakthrough of this idea.

Called the Voith Water Tractor, this ship-handling tug has established an unequalled reputation in modern ports.

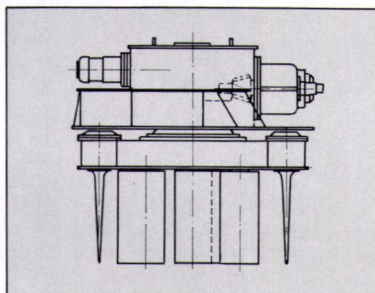
It is therefore understandable that now and again attempts are made to copy this concept. However, the Voith-Schneider Propeller is to the original Voith Water Tractor what the rotor is to the helicopter.

In addition to the hundreds in service there are today alone 66 Voith Water Tractors with powers up to 4,000 HP per vessel under construction.

We'll be pleased to inform you in greater detail.

Fig. 1) A total of 18 Voith Water Tractors will operate in Europoort and in Rotterdam when the last two 3,000-HP tractors of the new series go into service.

Fig. 2) Voith-Schneider Propeller 28 G III/185



2

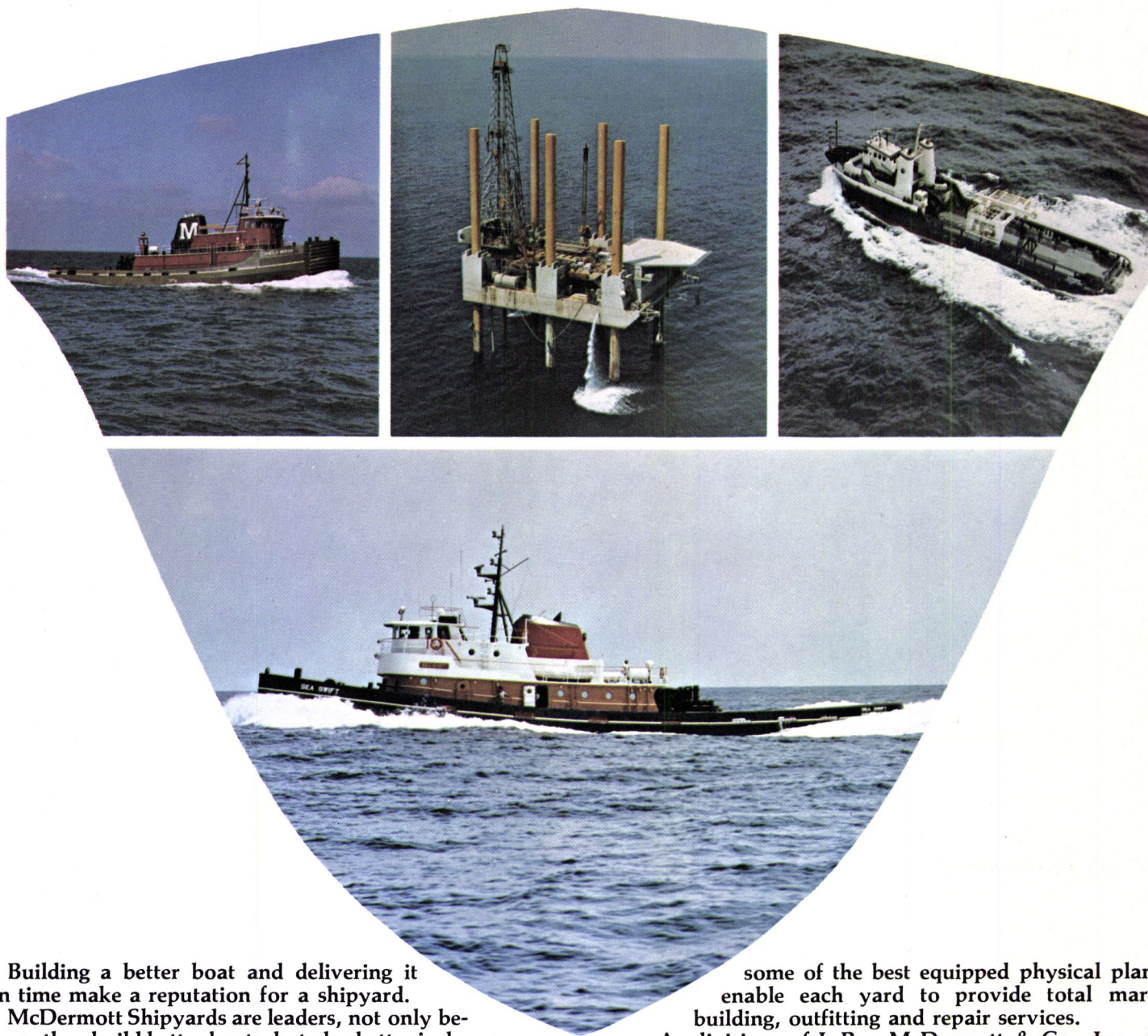
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McDermott Shipyards are leaders, not only because they build better boats, but also better jack-ups, package rigs, dredges, oceanographic research and ocean going work vessels. And they deliver them on time.

Complete, modern facilities are located on 81 acres at Morgan City and 150 acres at New Iberia, Louisiana. Individual engineering and drafting departments, under roof fabrication, modular construction techniques, and

some of the best equipped physical plants, enable each yard to provide total marine building, outfitting and repair services.

As divisions of J. Ray McDermott & Co., Inc., the shipyards are capable of drawing on vast capital, equipment and personnel resources to meet any situation or requirement.

A better boat, on time, has helped make McDermott Shipyards leaders in their field. They can make you a leader on the ocean. Write for an illustrated brochure.



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How Shell's Tornus keep thousands of work boats



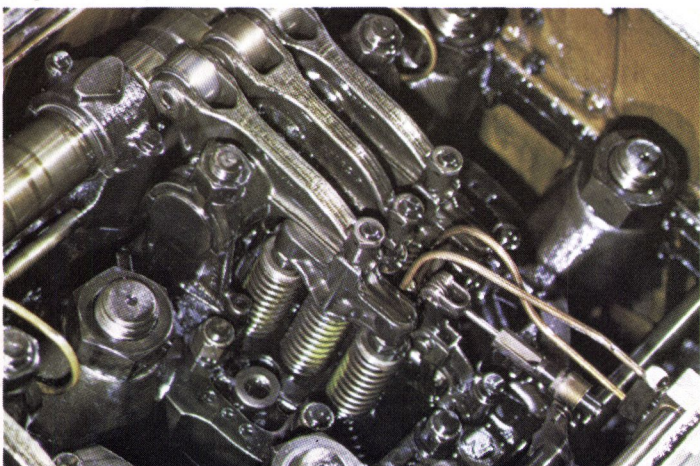
Oil has helped churning ahead for over ten years.



Engines in hard-working inland waterways towboats, (above), and ocean-going tugs (left) have their work cut out for them. So does the engine oil. High-dispersancy Tornus Oil protects main engines against wear, helps promote operating efficiency.



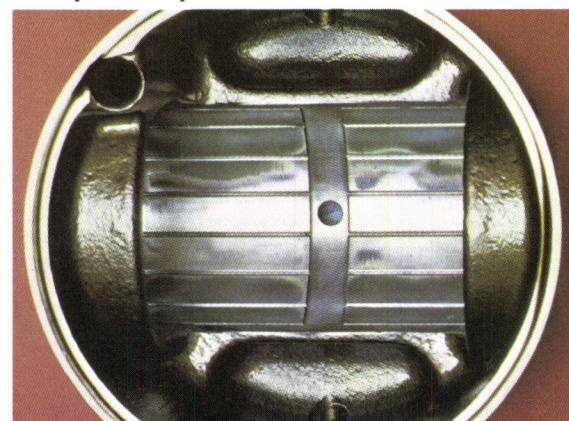
After 18,864 hours this cylinder liner from an EMD-12 645 E5 still shows original crosshatch marks. A tribute to the excellent wear protection of Shell Tornus Oil.



In this top deck of an EMD 645's port engine, note the highly polished appearance of cams and followers, the clearly visible green paint on the spring. Yet this engine has never received an oil changeout in 18,852 hours.



After over 23,000 hours, piston #1 of the starboard engine of an EMD 16-645 E7 shows light lacquer on skirt; rings in good condition, none stuck; only normal drag lines. Tornus Oil fights wear and lacquer buildup.



Much of the lead overlay is still intact on this wrist pin bushing from an EMD-12 645 E5 after 18,864 engine hours. No feathering of silver into the grooves. Tornus Oil has provided excellent lubrication.

Since 1965, Tornus Oil has been helping tugs and towboats stay on the job in oceans, harbors, the Gulf and inland waterways. There's good reason why.

Look at the critical engine parts below, photographed after extended periods of service. All were on Tornus Oil for 18,000 to 23,000 hours. All showed normal wear and were exceptionally clean and free of power-robbing deposits.

With Tornus, the oil gets dirty, the engine stays clean. And cleanliness is extremely important in keeping power up and fuel consumption down.

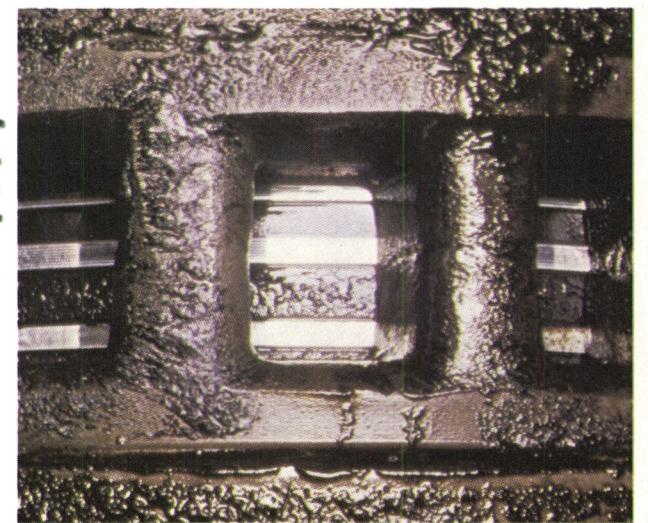
Caprinus® R Oil may help your fleet even more.

Shell's Caprinus R Oil can help extend oil drain intervals *indefinitely* in EMD power, and stretch the service life of oil filters. It offers excellent alkalinity retention to combat corrosive combustion products and help reduce frequency of overhauls. Caprinus R is Shell's answer to the need for extra high performance in modern high-output, medium-speed diesels.

Get all the facts. Write for our brochures on Tornus Oil and Caprinus R Oil. There's information in them that could help you trim operating costs. Write Shell Oil Company, Mgr. Commercial Communications, One Shell Plaza, Houston, Texas 77002.



Come to Shell for answers



Ports are wide open from EMD 645 E with 20,000 engine hours on Tornus Oil. No deposits. Rings in good condition without need for replacement.



From the same engine as the wrist pin bushing, this piston undercrown is clean, free of deposits. Tornus Oil resists sludge, lacquer and carbon deposition. This promotes cooler running pistons.

Robert L. Hague Post To Honor Admiral Rea

Comdr. Lester A. Dutcher, Robert L. Hague Merchant Marine Industries Post No. 1242, American Legion, Department of New York, announced the selection of the recipient of the Post's Distinguished Service Citation and Guest of Honor for the Post's 37th Annual Guard of Honor Ball.

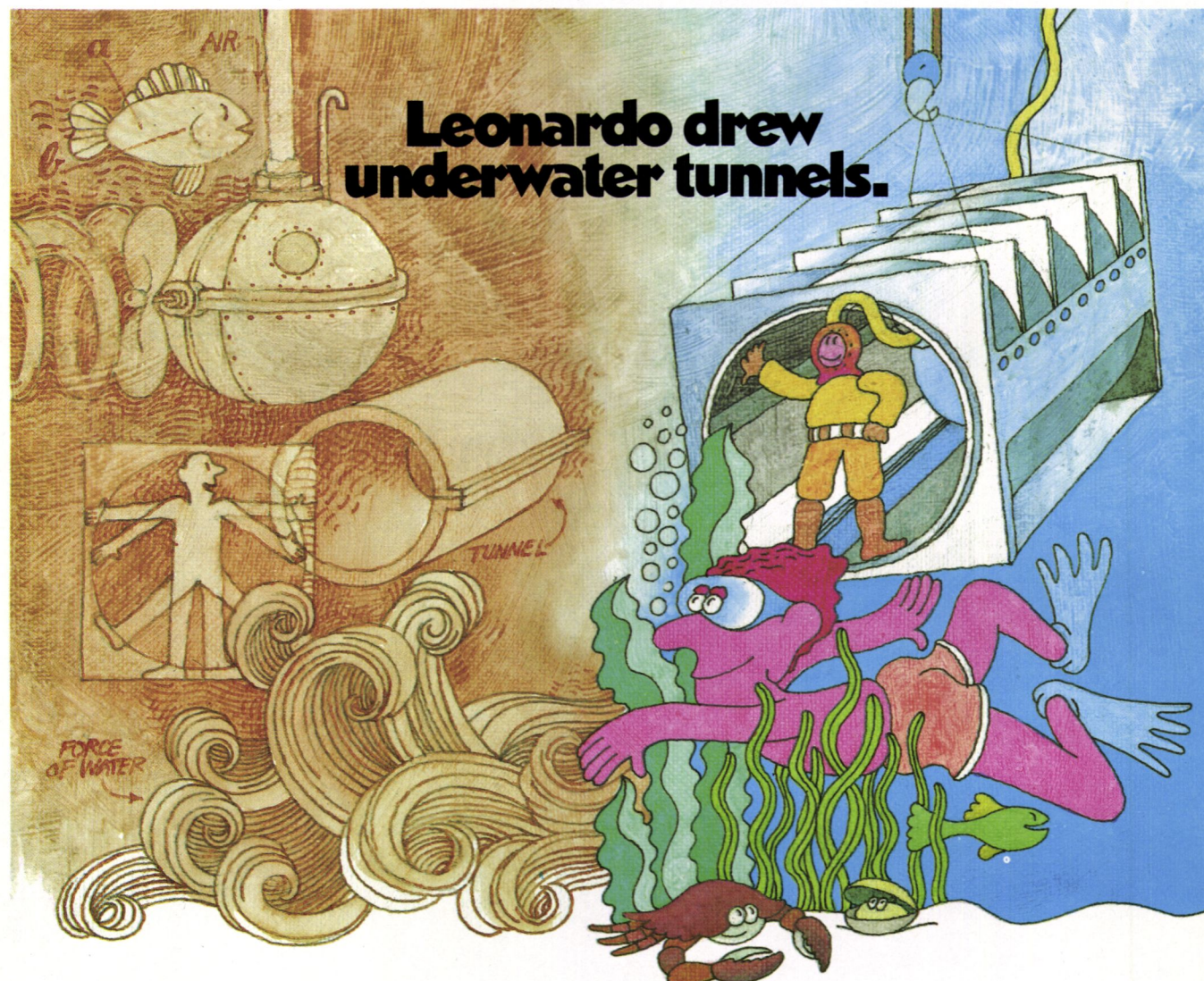
Vice Adm. William F. Rea III, USCG, Commander, Atlantic Area and Third Coast Guard District, will receive the citation in the Grand Ballroom of the Waldorf-Astoria Hotel in New York City on October 29, before representatives from the maritime industry assembled to honor Admiral Rea.

The admiral, who graduated from the U.S. Coast Guard Academy in 1941, has served in mer-

chant marine related assignments during a considerable portion of his career. Through the years, members of the industry have come to admire and respect Admiral Rea as a professional of the highest order. His support for a strong and safe American merchant marine is well known to the maritime community. When the admiral assumed his present command in 1974, he was return-

ing to the Port of New York, where he had previously served as Officer-in-Charge of Marine Inspection from 1964 to 1967.

Former recipients of the citation have been Adm. John M. Will, USN (ret.); Thomas J. Smith, president, Farrell Lines; Senator Warren G. Magnuson; Helen Delich Bentley, Chairman, Federal Maritime Commission, and many other distinguished members of the maritime industry.



Wiley makes them work.

Leonardo Da Vinci was far ahead of his time. His concepts of underwater tunnels looked great on paper, but it took modern engineering techniques to make some of those ideas hold water. If he'd had Wiley's staff of more than 400 skilled specialists to call on, he could have added to his long list of accomplishments... and the costs wouldn't have strained the royal treasury.

Wiley has the working experience, fabricating tunnel sections, handling the welding, and providing the expertise to make underwater or underground tunnels feasible and financially practical.

You don't have to go to Florence to see Wiley's handiwork. Our tunnel tubes will be an integral part of the new Washington subway...passing under the Potomac River. And in nearby Baltimore, drop by the harbor and you'll probably see some of our coal

barges, hopper barges, tank barges, and special-purpose barges up to 425 feet long. We also make ship mid-bodies, workboats, pier forms, hatch covers and custom work.

You'll find us nearby, at the mouth of the Susquehanna River. We're 150 miles from the Baltimore Canyon, 350 miles from Boston, 750 miles from Jacksonville and 4,200 miles from Florence, Italy.

For more information, contact:

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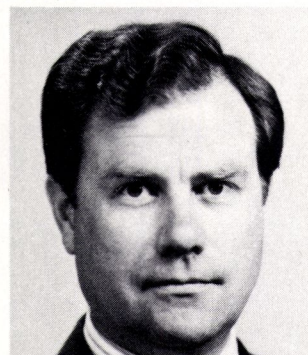
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Stal-Laval Names Two Executives



Henrik Harboe

Stal-Laval, Swedish manufacturer of steam and gas turbines for use on land and at sea, has appointed **Henrik Harboe** as director of energy policy. This new post was established to enable the Stal-Laval Group to follow more closely the fast developments in the energy field, and for the handling of contacts with important institutions associated with energy. Mr. Harboe will be stationed in London.



Kare B. Imeland

The new managing director of Stal-Laval Limited, London, succeeding Mr. Harboe, is **Kare B. Imeland**. Mr. Imeland graduated from the Technical University of Trondheim, Norway, and joined Stal-Laval in 1963. He has served Stal-Laval in Sweden, Norway and Great Britain, his most recent appointment being marine manager in London.

Navy Awards Uniflite \$2.8-Million Contract For 24 Target Drone Boats

The U.S. Naval Sea Systems Command has awarded Uniflite, Inc. of Bellingham, Wash., a contract in the amount of \$2,801,400 to build 24 Target Drone boats.

The 56-foot vessels will be delivered, starting April 1978, to the naval installation in Port Hueneme, Calif., at the rate of four per month.

**International Paint
Names Donald S. Otto**



Donald S. Otto

Wm. Norman Duncan, vice president and general sales manager, has announced the appointment of Donald S. Otto as marketing manager for the Heavy Marine Division of International Paint Company, Inc., New York, N.Y.

Mr. Otto, a graduate of Cornell University, has a broad background in the chemical and plastics industries where he has held positions in commercial development, sales and marketing with some of the nation's largest corporations. Most recently, he was employed by St. Regis Paper Company in a sales management capacity.

Mr. Otto is a member of the American Chemical Society, the Chemical Marketing & Economics Division, Society of Plastics Engineers, Chemical Marketing Research Association, Chemical Industry Association, and The North American Society for Corporate Planning.

As marketing manager, Mr. Otto will be based at the company's New York City headquarters, where he will assume complete responsibility for the total marketing function of the Heavy Marine Division.

**Anixter-Mark Announces
Five-Way Ratchet Mount**

Anixter-Mark, an industry leader in the development and manufacture of communications antennas for over 25 years, has announced a new Marine Five-Way Ratchet Mount.

The mount is fully brass with triple chrome plating for long life and maximum corrosion resistance.

The hardware is all stainless steel to insure that nothing on the mount will deteriorate over the years.

The mount is topped with the standard marine thread of 1"-14 to allow it to be used with most marine antennas. Mount also includes Neoprene pad between mount and mounting surface to prevent damage.

Completely universal in mounting and flexibility. Moves five ways so it can be mounted in any position and moved to suit the mounting. Fits both deck and bulkhead mounting. Fits all canted decks and sloped bulkheads. A

quick flip of the lever allows the antenna to be laid low and locked in place for low passage. Flip the lever back and the antenna is raised and locked in place with a positive lever action. The lower ratchet allows adjustment for canted decks.

For further information, write Jerry Howard, Sales Manager, Anixter-Mark, 5439 West Fargo, Skokie, Ill. 60076.

**Towing Winches Catalog
Offered By Skagit**

Skagit Corporation, leading manufacturer of marine towing and mooring machinery, offers a new color catalog containing complete details on the company's full line of towing winches.

The booklet provides pictures and large arrangement drawings of the Skagit waterfall towing

winches and side-by-side towing winches. Complete specifications for all six models are shown. Detailed descriptions are included of the uni/control system, a power coordinated brake-clutch-throttle control system, and the optional levelwind system.

For your free copy, write Fred W. Holder, Skagit Corporation, P.O. Box 151, Sedro-Woolley, Wash. 98284.

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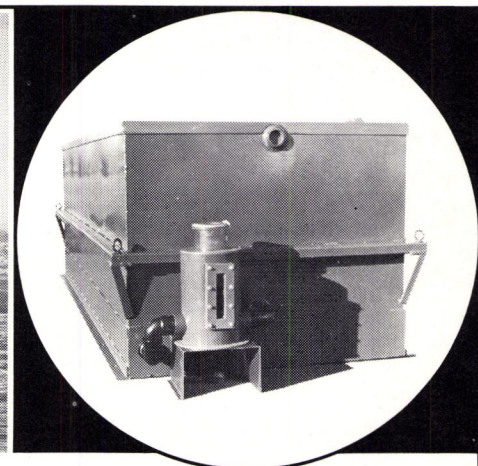
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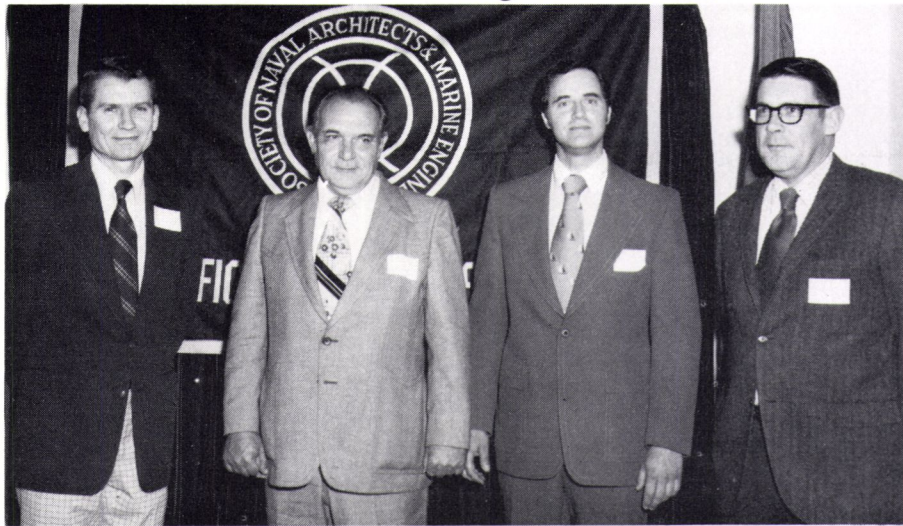
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to work for you.*

SNAME Pacific Northwest Section Holds Joint Meeting With ASNE



Principals shown at the joint meeting, left to right: Capt. James Nunneley, Shipyard Commander; Doug Hendrix, chairman, Pacific Northwest Section, SNAME; Charles Dick, speaker, and Capt. Lawrence Taylor, chairman, Puget Sound Section, ASNE.

Members and guests of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers met on June 2 at the Puget Sound Naval Shipyard Officer's Club in a joint session with the Puget Sound Section of the American Society of Naval Engineers. Election results were announced and a technical paper was presented.

Opening remarks were offered by SNAME chairman Doug Hendrix and ASNE chairman Capt. Lawrence Taylor Jr. Both societies were welcomed in remarks by Capt. James K. Nunneley, Shipyard Commander.

SNAME officers for 1978 include Gerald Talbot of Talbot, Jackson and Associates of Vancouver, British Columbia, as chairman of the Pacific Northwest Sec-

tion; Edward Stewart of Todd Shipyards as secretary-treasurer, and Gene Frampton of the U.S. Coast Guard as executive board member. Paul Zankich was elected as vice chairman for the Seattle, Wash., area. In the British Columbia area, Elijah Horner of Vancouver Shipyards was elected as vice chairman, and Robert M. Brown, Burrard Iron Works, was elected as assistant treasurer. In the Columbia River area, Tony Zager, U.S. Army Corps of Engineers, was elected vice chairman, and John D. Horner of the U.S. Coast Guard was elected assistant secretary-treasurer.

The technical paper, titled "Bimetal Aircraft Securing Fitting Development," was presented by Charles B. Dick, PE, of Puget Sound Naval Shipyard Design

Code 230.3. In his paper, Mr. Dick discussed the development, testing and ultimate selection for prototype evaluation of a bimetal collar securing fitting. The fitting consists of an explosively bonded aluminum/steel collar with the steel welded to a Navy Standard securing fitting and the aluminum welded to the ship's aluminum deck.

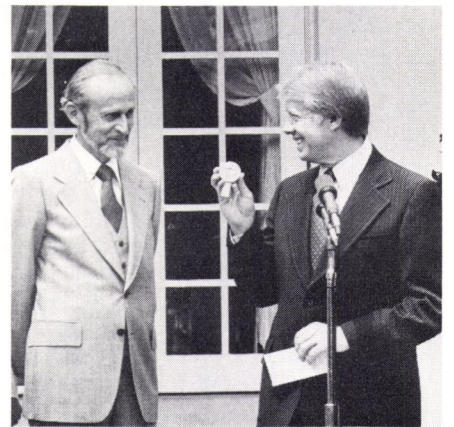
Mr. Dick explained that many of the helicopter decks on destroyers are 5000 series aluminum. The present method of attaching steel aircraft securing fittings to aluminum decks is by welding a stainless steel collar to a type 1 securing fitting cup and crossbar and bolting the assembly to the deck. Severe corrosion conditions due to exfoliation and galvanic action have resulted in costly repairs. On-site inspection of the Atlantic-based FF1052-class ship selected for prototype installation and evaluation demonstrated damage in some cases reaching beyond a 14-inch diameter and up to 25 percent of the deck plate thickness.

Bimetal fittings were manufactured at Puget Sound Naval Shipyard for installation by a private contractor using conventional aluminum welding techniques in January 1977. The fittings were preserved in a fashion which permit observation and comparison of corrosion patterns under various conditions expected during the evaluation period while the ship was experiencing normal helicopter "traffic." Copies of the paper are available from the section librarian, C.S. Bracken, Todd Shipyards Corporation, P.O. Box 3806, Seattle, Wash. 98124.

President Carter Presents \$25,000 Prize For Energy-Saving Device

An energy-saving device that replaced steam traps on U.S. Navy ships won a \$25,000 prize for the inventor, a civilian employee of the Navy, at a ceremony on the White House lawn.

President Carter made the presentation to Lawrence L. Guzik for a constant flow Drain Orifice that is saving the U.S. Navy \$10.5 million in energy costs yearly. Mr. Guzik is assistant director of the Aircraft Carrier Ship Logistics Division, U.S. Naval Ship Systems Command.



President Carter discusses the Drain Orifice with Lawrence L. Guzik, who received a \$25,000 cash award for his invention.

Two days later, the director of economic development for the City of Camden, N.J., where the device is manufactured by Flexitallic Gasket Company, presented Mr. Guzik with the key to the city.

Mr. Guzik worked with engineers at Flexitallic Gasket Company Inc., P.O. Box 680, Camden, N.J. 08101, on the development and testing of the Drain Orifice. He assigned the patent to the U.S. for Navy and other Government applications, and licensed Flexitallic Gasket Company to manufacture the device for commercial applications.

The Drain Orifice is now being used to improve steam system efficiency and save energy in many industrial plants, and has been recently recognized by receipt of the 1976 John C. Vaaler Honors Award as a significant energy-saving development. According to Richard G. Krueger, Flexitallic marketing manager, "the average industrial plant can achieve savings from 15-25 percent of its current energy cost to produce steam."

Bird-Johnson Awarded Propeller Blade Contract

Bird-Johnson Company, Walpole, Mass., is receiving a \$2,446,722 negotiated firm fixed price contract for propeller blades for DD-963 class destroyers. The Naval Sea Systems Command is the contracting activity. (N00024-77-C-4517)



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Cable "Carringtons"

M.T. "Broadsound"
35M Tug powered by two 2800 S.H.P. engines producing a bollard pull of 75 tonnes. The tug is fitted with towing equipment incorporating the double drum "Donkin" towing winch and stowage reel. "Broadsound" also is fitted with a high pressure foam/water/jet spray fire monitor installed atop the wheelhouse.

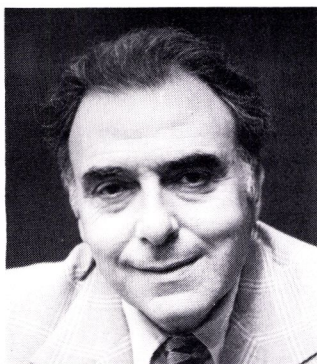
**Middle East
Sales Manager:**

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

European Agent:

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

Marine Transport Lines Names Germano VP



Anthony J. Germano

Anthony J. Germano has been elected a vice president of Marine Transport Lines (MTL), 60 Broad Street, New York, N.Y. 10004, with primary responsibility in the area of business development.

Fred S. Sherman, chairman of the board of MTL, who announced the election, noted that Mr. Germano brings 40 years of steamship experience to his new assignment. Prior to joining MTL, a subsidiary of GATX Corporation, Chicago, Ill., Mr. Germano served as an assistant vice president of the steamship subsidiaries of Bethlehem Steel Corporation.

Mr. Germano holds Bachelor of Science and Master of Business Administration degrees from New York University. He served in the U.S. Army during World War II, and again during the Korean Conflict, advancing from the grade of private to the rank of major.

MacGregor Publishes Ro-Ro Encyclopaedia

The dictionary defines "encyclopaedia" as "works which give a detailed account of the whole field of human knowledge, or of some particular section of it." Encyclopaedia is therefore a very apt term to use when describing MacGregor's new Ro-Ro brochure. With more than 400 Ro-Ro ships to its name, MacGregor has volumes of experience in all types of Ro-Ro transfer and access equipment, and this publication catalogs the full range in substantial, but easy-to-follow detail.

The early pages are devoted to describing the variety of ship types now using MacGregor equipment to facilitate the horizontal handling of cargo. In so doing, it inevitably also charts the progress of Ro-Ro ship and equipment design from the very earliest ships (MacGregor was developing a deepsea ship for the U.S. Navy 25 years ago) to the present day giants for owners like Seaspeed and Nedlloyd.

The main body of the book is occupied by a well-illustrated section detailing the many, many products now produced by MacGregor for Ro-Ro ships. It ranges from 50-meter-long (164-foot) stern quarter ramps and the "Machbridge 90" slewing ramp through elevators, internal ramps and cardecks to the more humble

but very necessary bulkhead doors and flush fitting hatch covers.

MacGregor's latest products, a range of link span ramps, are also explained, and information is given on the essential but often neglected question of after sales service. MacGregor with its worldwide network of service stations is able to offer the shipowner immediate first-class assistance whenever and wherever it is required.

Finally, there is the reference section, listing every Ro-Ro vessel that features MacGregor equipment. If after seeing the earlier parts of the book, the reader somehow still wanted more proof of MacGregor's prowess in all aspects of Ro-Ro, then the reference list will give it. Over 400 MacGregor Ro-Ro vessels are to be found there, ships which are providing MacGregor with an invaluable opportunity to watch and

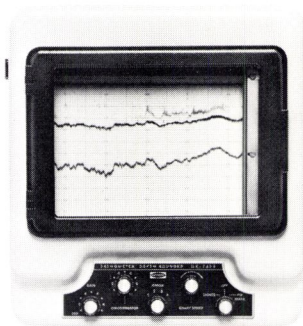
learn from Ro-Ro in operation worldwide.

Copies of the MacGregor Ro-Ro brochure can be obtained by contacting **Henri Kummerman**, MacGregor International, 28 Chemin du Pommier, 1218 Geneva, Switzerland, or **John Nydegger**, MacGregor-Comarain, Inc., 135 Dermody Street, Cranford, N.J. 07016, or any one of the company's many offices worldwide.

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July 15, 1977

New Shipyard Operating North Of Arctic Circle

Harstad Staalindustri, a new and extremely modern shipyard, is in operation. It is located in the city of Harstad in northern Norway, on about the same latitude as the north slope of Alaska. The new yard, which is building fishing boats, tugboats and other coastal vessels, is a joint venture between three repair and construction yards in the city. The

yard will build hulls to be outfitted at the parent companies.

The project was initiated in 1972, when the owners retained Shipping Research Services (SRS), an international consulting firm for shipbuilding and shipping with offices in Oslo, Norway, and Alexandria, Va., to make a feasibility study for the project. The study included preliminary plans for the yard and a forecast of profitability that showed that the project was feasible.

The owners established a joint subsidiary and retained SRS to prepare detailed project plans and cost estimates for the yard. The plans were completed and approved in 1974. Construction started in 1975, and in the fall of 1976 the yard was in operation. In April of 1977, the first hull—a 156-foot multipurpose fishing vessel—was launched.

The yard is a completely enclosed facility consisting of a fabrication shop and a large welding

and erection shop. The shops are heated and insulated. The heating system includes a heat recovery ventilating system.

Hulls are erected on indoor ways which are designed so that a hull can be pushed out in steps as it is being completed. This arrangement provides space for starting erection of the next hull before launching the first one.

Heavy emphasis was placed on employing labor-saving methods and equipment while staying within a reasonable investment budget.

Based on a thorough analysis of costs and savings, the owners decided to install a numerical controlled cutting machine and implement the AUTOKON system for computerized engineering and lofting. Shipping Research Services maintains and markets the AUTOKON system. This is one of the smallest yards that has implemented an N/C system for in-house operation.

The yard will produce five to six hulls a year, totaling 2,000 to 2,500 tons of steel. The total investments, including office building, came to less than \$10 million. Shipping Research Services Inc. is located at 205 South Whiting Street, Alexandria, Va. 22304.

Arnessen Announces London Expansion —Morris Appointed



Frederick Morris

The Arnessen Corporation announced they have expanded the operations of their London office, Arnessen Global Services, Ltd. According to Robert Izmirlian, executive vice president, the London facility now offers full service to the marine industry, including a complete line of electrical and mechanical spare and replacement parts for European and Japanese-built ships. Complete stocks are maintained in London for servicing vessels calling at European ports.

Mr. Izmirlian further announced that Frederick Morris, A.M.I.M.E., recently joined Arnessen Global Services, Ltd. as managing director. Mr. Morris has been active in the marine industry for over 20 years and brings with him a wealth of experience and knowledge of the marine supply business. He formerly held the position of vice president, Marine Operations for Europe, Africa and India, with the Drew Chemical Corporation.

Arnessen Global Services, Ltd. is located at 1-5 Clerkenwell Road, London EC 1 M 5 PA, England.

Almost everything on land and sea is within our power.

Your one safe source for hundreds of Caterpillar engines.


A hospital never skips a beat in a brownout, because Caterpillar power is there. A tugboat finds the muscle to tow a great ship out to sea, with a Caterpillar diesel engine.

Caterpillar is a great deal more than machines that move the earth. It's the power behind boats large and small, for work or pleasure; it's standby power for services and industry; low-cost power for trucks. And it provides that power with hundreds of different Caterpillar engines — all proven dependable — all backed by Cat Plus total customer service.

And they are all available at *the source* for power on land and sea.



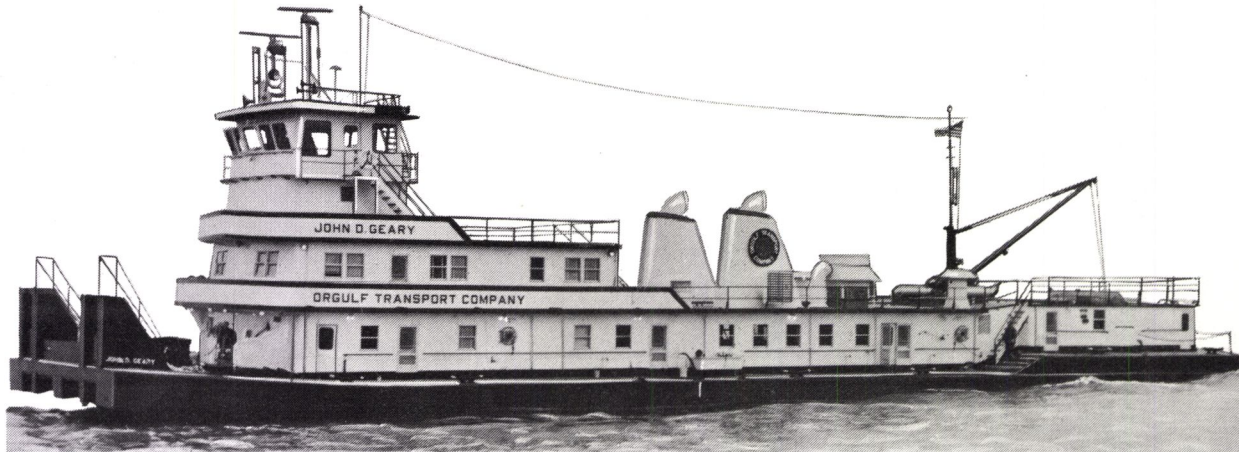
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H.O. PENN

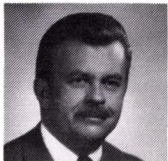
YOUR CATERPILLAR & CATERPILLAR LIFT TRUCK DEALER

H.O. PENN
CAT



MIDLAND'S 23rd

ST. LOUIS SHIP-BUILT TOWBOAT, THE 6600 HP, M/V JOHN D. GEARY



"People ask why we selected the increased horsepower. It's not to handle more barges . . . but to handle the same number faster and more efficiently." John D. Geary, President, Midland Enterprises, Inc.

"We consider speed, efficiency and maneuverability of extreme importance," continued Mr. Geary. "That's why we specified a St. Louis Ship Hydrodyne towboat, with plenty of horsepower. Our new boat is a sister ship to the M/V Yeager and M/V Taft, but it incorporates latest design improvements resulting

from model testing in the Netherlands. We believe St. Louis Ship's exclusive Hydrodyne concept provides maximum operating efficiency, improved handling ability, and greater thrust." For complete information, contact America's largest inland shipbuilding and repair firm at (314) 638-4000.



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DIVISION OF POTT INDUSTRIES INC.
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Dravo SteelShip Expands Facilities

Dravo SteelShip Corporation, Pine Bluff, Ark., has announced completion of a new addition to their main fabricating plant. This new addition is the first expansion since SteelShip Corporation was acquired by Dravo Corporation of Pittsburgh, Pa., in August 1976. The new 11,000-square-foot addition to their manufacturing fa-

cility has a clearance under the crane hook of 25 feet, allowing prefabrication of large components inside the structure. **Edward D. Fry**, vice president/general manager of Dravo SteelShip Corporation, estimates it will make possible a 25 percent increase in their production capabilities.

In addition to production facilities, the plant's expansion includes a new truck unloading

dock, and inside storage for heavy engines and machinery. The new facilities also include locker room and lunchroom for an additional 150 employees.

Dravo SteelShip has recently completed a new outfitting dock used for boat and barge repairs, as well as new construction.

In addition to the vessels being constructed under contract, Dravo SteelShip Corporation is presently building four of their standard

SteelShip 48, SteelShip 50, and Mid-Streamer 52 vessels which are offered for sale as stock boats.

For more information concerning any of Dravo SteelShip's wide range of pushboats and special barges, write **Edward D. Fry**, vice president/general manager, Dravo SteelShip Corporation, Route 4, Box 167, Pine Bluff, Ark. 71602.

USCG Certified No-Discharge Oxidizing Toilet Now Available

An oxidizing toilet that can be fueled by either diesel oil or propane gas has been designed to meet commercial marine sanitation requirements by Clear Water, Inc., Walworth, Wis. Called Sani-Rator, the toilet has been tested by Underwriters Laboratory and certified as a Type III USCG MSD. It eliminates the need for sewage and saltwater piping, holding tanks, deodorizing chemicals and costly installation. It is particularly practical for use on tugs, barges, fishing boats, and other workcraft where space is limited.

The Sani-Rator can be installed most anywhere onboard a vessel where above-deck exhaust ventilation is possible. With the convenience of installation and the low cost of operation and maintenance, it would be practical for multiple installation or remote locations on large vessels, says the manufacturer.

The Sani-Rator has the capacity to handle the needs of a 12-man crew in a 24-hour day. The automatic cycle is timed to remove all moisture from the chamber in about 14 minutes. During peak use periods, the cycle can be interrupted.

Sani-Rator units are constructed of polished stainless steel, ductile Ni-Resist cast steel and porcelainized iron. All toilets are factory guaranteed against defective materials.

For more information concerning operation or installation of the fully certified Sani-Rator, contact **John Trimble**, Clear Water, Inc., a subsidiary of LaMere Industries, 227 North Main Street, Walworth, Wis.

Nippon Oil To Explore Continental Shelf With American Companies

The Nippon Oil Company announced in Tokyo that it would start exploration on the continental shelf between Japan and South Korea, in partnership with South Korean and American companies. The venture is the third in the area by Japanese companies since ratification by Japan of a continental shelf agreement with South Korea on June 9.

In the latest venture, Nippon Oil said that participants include the Korean American Oil Company and units of Texaco and Chevron Oil Companies as well as its own subsidiary, Nippon Oil Exploration.

We are the most International paint company.

"The world's largest manufacturer of marine coatings" is not a hollow phrase. It means that wherever you are, we are.

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Our ways can serve you better.

From blueprint to finished vessel, at FMC we have the flexibility to custom build a wide variety of marine structures to your specifications.

We can do it because we are **equipped**:

Acres of assembly bays house computerized lofting, numerical burning, and automatic welding equipment. Our yard offers 200 ton capacity crane service to 650 foot side-launch ways, and most importantly, qualified people who know how to do their job right!

We're versatile. We have the ways to serve you better. Contact us. Call or write Vice President, Sales, FMC Corporation, Marine and Rail Equipment Division, 4700 N. W. Front Avenue, Portland, Oregon 97208. Telephone (503) 228-9281, Telex 36 0672.

FMC Transportation
Equipment

T-2 EQUIPMENT

Selected Items Listed

UNUSED G.E. MAIN PROPULSION STATOR

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

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

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

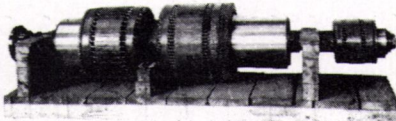
WESTINGHOUSE MAIN PROPULSION STEAM TURBINES

1 unit shrouded
WILL SELL ROTORS SEPARATELY

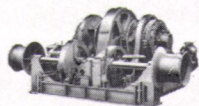
WESTINGHOUSE MAIN PROPULSION GENERATOR STATOR

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

WESTINGHOUSE 538 KW AUX. GENERATOR EXCITER ARMATURE



We have both types:
110KW—32KW—5.5KW
110KW—28KW—5.5KW



T-2 WINDLASSES (Located West Coast)

AH&D Model S-505—for
2 3/16" chain. Engine 12 x 14
—operating weight 42,700 lbs.
1 HESSE-ERSTED—LOCATED EAST COAST

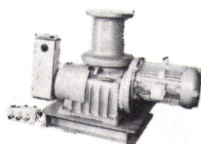
COMPLETE WESTINGHOUSE 538 KW TURBO GENERATORS

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

WESTINGHOUSE 538 KW TURBINE ROTORS

NEW DOCKSIDE OR SHIPBOARD MOORING CAPSTANS—REVERSING

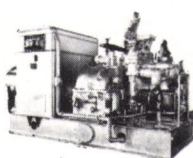
Duty 10,000 lbs @ 60 FPM



MOTOR: 10 HP—totally enclosed—fan cooled—continuous duty—horiz. flange mounted—special shaft & oil seal fitted—440/3/60—1760 RPM. CONTROL: Marine type watertight pushbutton—forward/reverse/stop—watertight starter box. DIMENSIONS: Barrel 10" diam.—top flange 14 1/2" diam.—bottom flange 16 1/2" diam.—ht. of spool 16"—approx. 26" wide & 36" long.

IMMEDIATE DELIVERY FROM STOCK

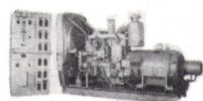
G.E. 600 KW GEARED TURBO GENS.



450/3/60/1200 RPM—961 amps—type AT1—0.8 PF. TURBINE: FSN-FN-20 6-stage—525 lbs/825°F—superheat 355°/371°F. GEAR: 10033/1200—RPM 1033—total—6390 lbs. steam/hr. steam flow.

75 KW CUMMINS EMERGENCY DIESEL GENERATOR SET

as removed from
U.S.N. Ship "Pecos"



ENGINE: Electric starting 6-cylinder Cummins, radiator cooled, with alarms. GENERATOR: 75 KW—93.8 KVA—440/3/60—1200 RPM—120 amps. Field circuit 125 volts—15.4 amps—with free-standing switchgear.

C4-S-A1 KAISER VESSEL MACHINERY

Formerly Operated By Bethlehem Steel Co.

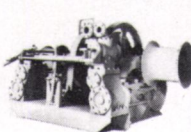
- 1 H.P. Westinghouse turbine—S.H.P. 4500—5358 RPM—440#—740°TT—instruction book 6535.
- 1 L.P. Turbine Rotor
- 3 Worthington-Moore 400 KW aux turbine rotors—seven stage—6097 RPM—form S6
- 1 Set reduction gears—type 14x10—single reduction double helical—6097/1200—for aux turbo generator sets
- Also quantity of boiler safety valves 1 1/2" & 2" Consolidated
- 1 Set HP & LP couplings for Westinghouse HP & LP turbines—9000 SHP normal—9900 SHP maximum
- Two main stop valves—boiler—600 series—5" Crane
- Pumps

9 x 12 2-SPEED ALL-STEEL STEAM WINCHES

for use as

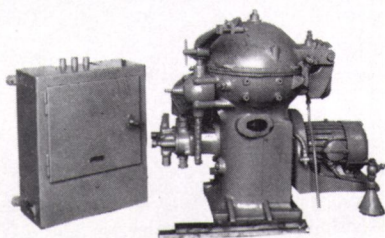
MOORING WINCHES OR GENERAL USE

20,000 LBS @ 110 FPM—7450 LBS @ 250 FPM



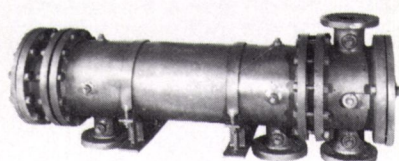
DRUM CAPACITY: 1250' of 1" wire in 9 layers or 2200' of 3/4" in 12 layers. Weight 11,300 lbs. DRUM DIMENSIONS: 22" diameter—20" between flanges; flange diameter 40"; two 16" gypsies. Drum brake—contracting band type—asbestos lining—foot operated. WINCH DIMENSIONS: 12' long—8' wide—5' 10" high. Reconditioned by U.S. Navy. Equal to new.

FUEL OIL OR LUBE OIL PURIFIER



De Laval—600 GPM—type B-1529C-60—with 3 HP 440/3/60 motor. Mfg by German De Laval. Has new stainless steel bowl. Spare parts available.

LUBE OIL AND FRESH WATER COOLERS



LUBE OIL COOLER

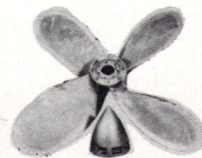
42.5 Square feet—weight 660 lbs—87 tubes 5/8" 0.049.

FRESH WATER COOLER

75.2 Square feet—weight 800 lbs—102 tubes 5/8" 0.049.
SUITABLE FOR ENGINES UP TO 900 BHP

FOR LST VESSELS

• PROPELLERS—Port & Starboard

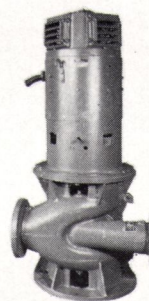


Also for tugs & motor vessels having LST propellers. 7.0' Diameter—4.583' pitch. Weight 1820 lbs. Available: 2 Starboard (reconditioned) 2 port (reconditioned) 1 port (new). Bronze.

• FIRE & BILGE PUMPS

Manufactured by Gould—horizontal centrifugal—bronze. 4" Suction—3" discharge—250 GPM @ 100 PSI—2200 RPM—30 HP 230 VDC motor with magnetic starter.

• BALLAST PUMPS



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

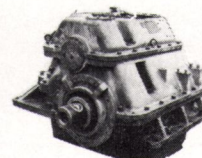
• ANCHOR WINDLASS MOTORS

Vertical—20 HP—230 volts D.C.

• RAMP WINCH MOTOR

20 H.P. gearhead deck ramp winch motor.

• PORT & STARBOARD REVERSE AND REDUCTION GEARS



1 Set—with Airflex clutch. Ratios—2.48:1 forward—2.52:1 astern. Suitable for use with 12-567A & 12-278A engines. Port & starboard units.

MATCHED PAIR 12-278A G.M. ENGINES

900 HP @ 744 RPM—8 3/4" x 10 1/2"—12 cylinders—VEE type on common base with reduction gear—2.48:1—Falk—port & starboard. Will sell separately.

• MISCELLANEOUS

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

SPECIAL OFFER T-2 AUXILIARY GENERATOR ROTORS

G.E. AUX. TURBINE ROTORS DORV-325M—5645 RPM

For G.E. 525 KW TURBO GENERATOR SETS



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

STATIONARY BLADING AVAILABLE



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ROSS COOLERS

ALL EX-LST UNITS—FORMERLY USED
WITH 12-278A & 12-567A ENGINES



TYPE 1596 — 317 SQ. FT.

12-567A use — water-to-water — flanged — 2-pass. 196 Cupro nickel tubes — 5/8" diam. — 18 Bwg. Copper shell — cupro-nickel heads. 5" seawater inlet — 4" freshwater inlet. Centers of fresh water inlets 84" — overall cooler length 9' 7-3/8".

TYPE 1566 — 252 SQ. FT.

12-567A use. Oil to water — flanged — Shell OD 16". 2-Pass — 196 Cupro-nickel tubes — 5/8" diameter — 18 BWG. 5" Seawater inlet — 3" oil inlet. Centers of oil inlets 55".

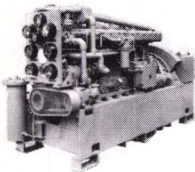
TYPE 1460 — 160 SQ. FT.

2-Pass — 15" diameter — 80" overall — 5" seawater inlet — 3" oil inlet — 5/8" tubes. Centers of oil inlets 49 1/4". Copper shell.

TYPE 848 — 75 SQ. FT.

Single pass — copper shell — 8" diameter — oil inlet & outlet 1 1/2" — overall length 60".

100 KW GBD-8 DIESEL GENs.



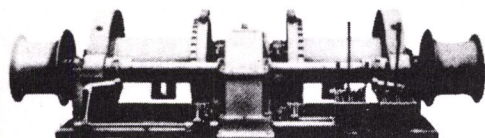
From LST vessels. 120/240 VDC — 417 amps — stab shunt — 1200 RPM — Delco gen.—self-excited. ENGINE: Superior GBD-8 — 8 cyl — 5 1/2 x 7 — 150 HP — 30 volt electric starting. Reconditioned to ABS. Dry wt 10,000 lbs — DAL 124" — 65-11/16" high — 42" wide. Ht necessary to pull piston 68". Fuel consumption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

DOUBLE-DRUM TOWING-MOORING-UTILITY WINCHES

DUTY:

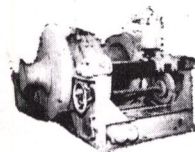
30,000 LBS @ 50 FPM
15,000 LBS EACH DRUM

USING BOTH DRUMS SIMULTANEOUSLY



DRUM: 22" diameter — 36" face — 2500 feet of 1 1/4" wire. Equipped with spooling device. MOTOR: 75 HP — 230 VDC — under-deck mounted — 262 amps — 1140 RPM. Complete with all controls — mfg by Commercial Iron Works. Winch heads declutchable. OAW 16'9" — OAH 57" OA Depth 7'7".

100,000 lb. Almon Johnson Constant Tension Mooring Winches

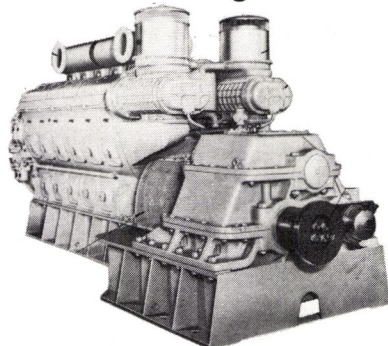


1 Available. In very good condition. Series 232 mooring & anchoring winches — automatic self-tensioning. Wide range from 100,000 lb line pull at 10 FPM to 26,000 lbs at 400 FPM. Gypsy line pull 12,000 lbs at 125 FPM. Drum declutchable through spiral jaw clutch for free spooling.

Driven by 50 HP — 230 VDC motors — Westinghouse CK — 575 RPM — 1/2 hour — 75°C rise — stab. shunt — 181 amps — max. RPM 1900. Cutler-Hammer brake — 18" — type NM.

MATCHED PAIR 900 H.P. G.M. 12-567A DIESEL ENGINES

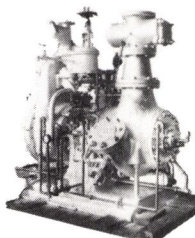
with Falk reverse and
reduction gears



ENGINE: 12-567A — 8 1/2 x 10 — VEE type — 2-cycle — 747 RPM — electric starting — serial Nos. 1041 & 1060. GEAR: Falk Air Flex — reverse and reduction — 2.48:1 forward — 2.52:1 reverse.

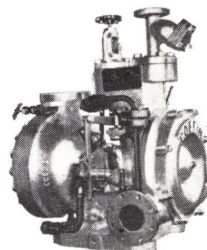
COFFIN FEED PUMPS — ALL SIZES —

TYPE DE



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

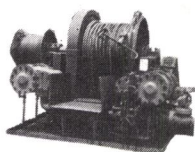
2 TYPE DE-B 214 GPM 2070' NET HEAD
7040 RPM — 241 HP. Steam pressure 597 PSI — superheat 100°-300°F. Typical serial No. DEB 1-25-37



TYPE CG

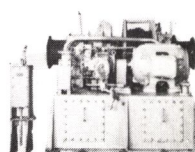
2 TYPE CG 350 GPM 1880' NET HEAD
7220 RPM — 311 HP. Steam pressure 580 PSIG — 0°-100° superheat. Exhaust 15 lbs — typical serial #5437-CG-8-8-33

12 x 14 AUTOMATIC STEAM TENSIONING MOORING WINCHES



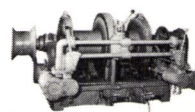
CAPACITY: First layer 20,000 lbs. @ 100 FPM, 16,000 lbs. @ 150 FPM. Drum will stow 1500 ft. of 1 1/2" wire rope in 9 layers. Overall width 8' 4 1/2" — overall length 8 1/2'. 3" Steam connection — 4" exhaust. Drum 2' diameter — drum width 2' 6 3/4". Manufactured by American Engineering Co.

50 H.P. ELECTRO-HYDRAULIC SINGLE DRUM SINGLE GYPSY MOORING OR CARGO WINCHES



7400 LBS at 220 F.P.M. — up to 700 feet of 1" wire. With hydraulic brake assembly. 50 HP — 440/3/60 squirrel cage Reliance motor — 1180 R.P.M. — 66 amps — Frame CC445N. Water Bug hydraulic pumps and motor. "A" end size 5 — "B" end size 5. Complete with deck mounted control.

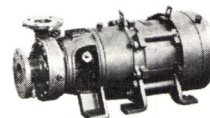
7 x 10 CLYDE DOUBLE DRUM WINCH



Drum 8500 lbs. @ not less than 120 FPM; 13,000 lbs. at no specified speed. Gypsy head 22,500 lbs. static pull. Foot brake to hold 17,000 lb. pull. Steam cylinders with standard 250 P.S.I. DIMENSIONS: 9' 5 3/4" wide over winch heads — 5' 10 1/2" wide over bedplate — 4' 1" deep over bedplate — 6' 5" overall (brake pedal, etc.) — 2" steam — 2 1/2" exhaust. Drums 16" diameter — 20" wide — 33 13/16" over flanges. Rebuilt by U.S.N. equal to new.

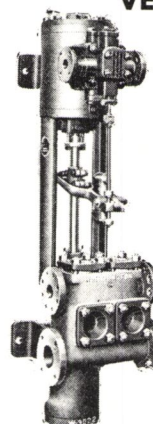
PUMPS

INGERSOLL-RAND FIRE & FLUSHING PUMPS



Reconditioned — with A.B.S. — 200 G.P.M. — 160 P.S.I. discharge. Suction 3 1/2" — discharge 3" — 3500 RPM — bronze construction — flanged. MOTOR: 20 H.P. — 440/3/60/3600 RPM — G.E. type KF — Frame 326 — full load amps 28.

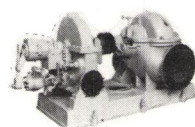
UNUSED WORTHINGTON VERTICAL SIMPLEX PUMPS



7 1/2 x 4 x 10 — 3" suction — 2" discharge — 1 1/4" steam — 1 1/2" exhaust. OAH 5'2"; OA depth 23"; OAW over air dome 2'2". Weight about 800#. Suitable for Liberty Ships EC-2 & Victory Ships VC2, AP2 & AP3. (Fuel oil service) Liquid capacity from 8 to 20 GPM — up to 350#. Also suitable for small boiler feed service. Steam WP 220# and 10# exhaust.

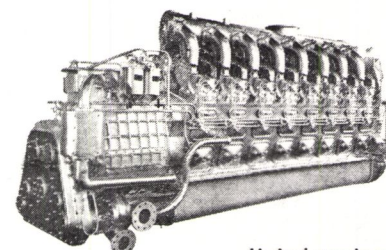
\$795

TURBINE-DRIVEN CIRCULATOR



6300 GPM at 25' or 4000 GPM at 35'. Pump — 12 x 14 — 75 HP turbine — 600 lbs — 5 lbs back pressure — 1200 RPM. Turbine manufactured by Whiten — type B.K.S. Pump manufactured by Lawrence

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



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MARITIME REPORTER/Engineering News

TOTAL WORLD WIDE BUYING POWER

(Non-buyers removed)

**BUYING
POWER**

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(Commercial, U.S. Navy and U.S. Coast Guard):
Companies, directors, owners, presidents,
vice presidents, secretaries, treasurers,
superintendents, managers and purchasing agents
Naval architects, engineers and
chief draftsmen

5,896

**VESSEL OPERATING COMPANIES, OCEAN, INLAND,
HARBORS, OFFSHORE OIL DRILLING,
PORT AUTHORITIES:**

(Owners, Agencies and brokers)
Companies, directors, owners, agents,
presidents, vice-presidents, managers,
secretaries and treasurers
Port engineers, superintendents, purchasing
agents, port captains, port stewards,
naval architects and engineers shoreside

9,282

PROFESSIONAL MEN:

Naval architects, engineers and
consultants shoreside

2,312

WORLD WIDE BUYING POWER TOTAL

17,490

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RECORD INCREASE IN CIRCULATION TO BUYERS

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As a service to readers, MARITIME REPORTER includes a Buyers Directory section in every issue.

Advertisers placing a series of display advertisements in MARITIME REPORTER within one year receive, at no cost, a listing in the BUYERS DIRECTORY in all 24 issues of MARITIME REPORTER during that same year.

The advertiser's company name and address appears under the appropriate product or service heading in the Directory in every issue whether an ad appears in every issue or not.

MARITIME REPORTER has a worldwide circulation to 17,490 marine buyers...TWICE each month. This means over 34,000 copies of MARITIME REPORTER are mailed to buyers every month. This gives each advertiser over 400,000 free directory listings to marine buyers in one year...in addition to the advertising.

No other marine magazine provides this service.

The exposure advertisers receive with marine buyers in MARITIME REPORTER is overwhelmingly superior to anything offered by any other marine magazine in the entire world.

IMPORTANT

Other marine magazines mail thousands of free copies indiscriminately to names taken from directories of recipients who have never requested the magazines. Demand to see the official circulation statements...check for non-requested free copies...be sure the readers want the magazine carrying your marine advertising.

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Tragosa Charters Seven Tidewater Vessels For Offshore Mexico

Tidewater Marine Service, Inc., Post Office Box 19264, New Orleans, La. 70179, will charter seven vessels to Tragosa (a Mexican marine company), which equipment is to be used in the extensive offshore drilling program recently announced by Pemex,

Mexico's national oil company. The seven-vessel package includes four large towing-supply vessels, one 180-foot supply vessel, and two crewboats. The vessels will be working off both the east and west coasts of Mexico, in the Gulf of Campeche and off Baja California.

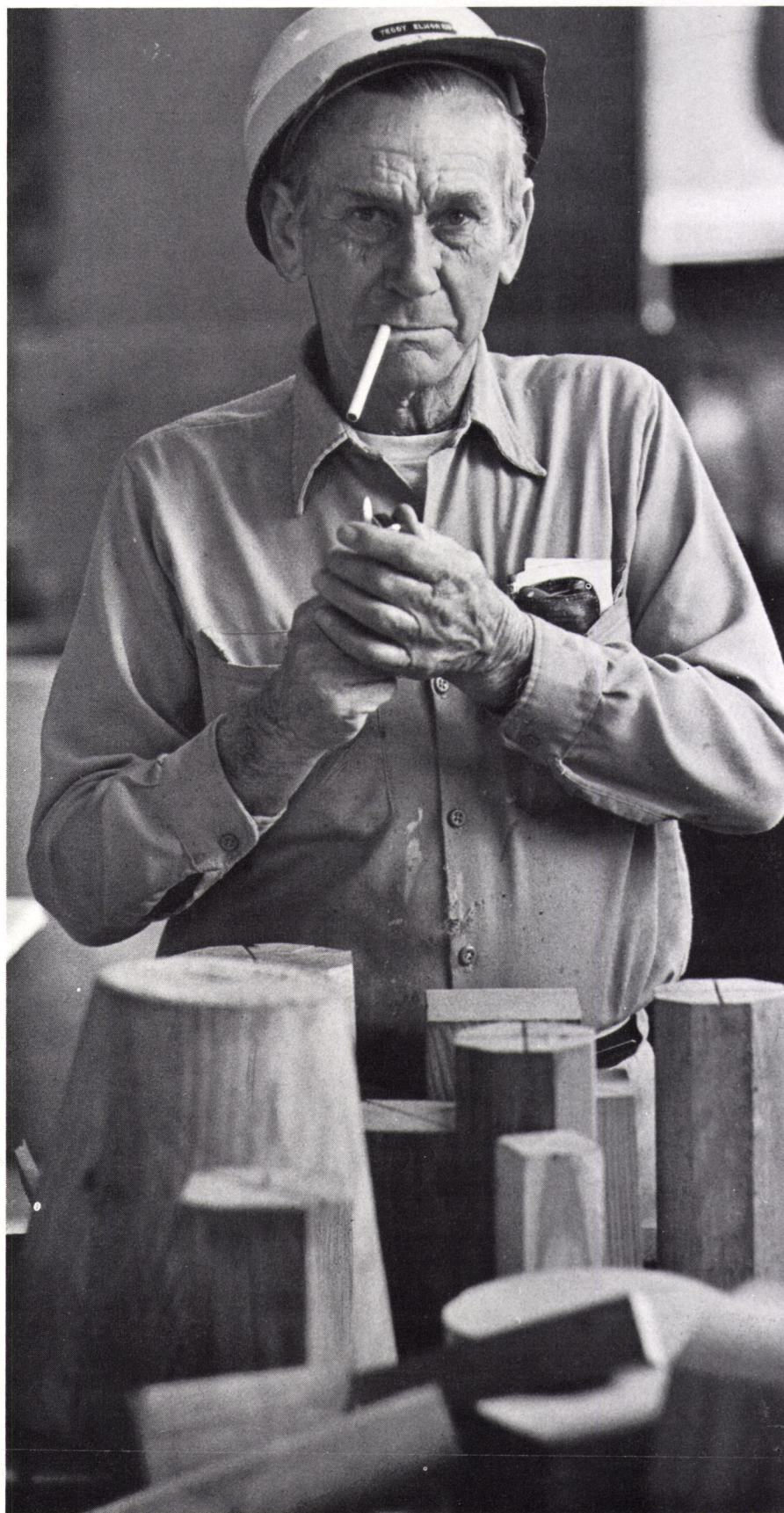
A spokesman for the New Orleans-based firm said several vessels are already in the area working and the others are en route

from various parts of the world including the Gulf of Suez, the North Sea and U.S. Gulf of Mexico. He said the vessels will be working under long-term contracts, and that the company hopes to participate in the anticipated expansion of activities offshore Mexico and Central and South America.

In March of this year, it was announced that Pemex would explore over 3,000 square miles in

the Gulf of Campeche in an attempt to establish offshore extensions of the enormously prolific Chiapas/Tabasco fields which now produce over 50 percent of Mexico's oil, although oil was only first discovered there in 1972. In contrast to the relatively shallow Gulf of Campeche where several fields have already been developed as extensions of onshore fields, exploration off the west coast will take place in frontier areas and in comparatively deep water.

It's a shame boats can't be all wood.



Because we have Teddy Elmgren. He's foreman of our carpentry shop.

He's been with us since our yard moved to this spot on the river, 34 years ago. And his daddy was with us before that.

Teddy's the kind of carpenter who's an expert with the caulking iron and mallets. And he can still use them.

He does unbelievable things with a varnish brush. And when he finishes some fine joinery, it's the best. Period.

That's the kind of work you get at Savannah. Whether it's minor carpentry, major conversions, voyage repairs, or scheduled drydocking, your work gets done by men who still care.

Men who have a "can do" attitude instead of "make do."

If that attitude appeals to you, try us. You'll also like our prices. They're lower than the big yards.

Savannah Machine and Shipyard.

As Teddy Elmgren might say: doing a bad job kind of goes against our grain.

The Savannah Yard.

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74 Trinity Place, Suite 1800

New York, N.Y. 10006 (212) 432-0350

Seaspeed Services Names K.W. Andren Port Captain In Baltimore/Portsmouth

Capt. K.W. Andren has been named port captain in Baltimore, Md. and Portsmouth, Va., for Seaspeed Services' new roll-on/roll-off ships to the Middle East.

Captain Andren is familiar to the ro/ro field, having previously served as port captain in both those ports for Atlantic Container Line.

Seaspeed operates the world's largest capacity ro/ro ships which call at Baltimore's Dundalk Marine Terminal and Portsmouth Marine Terminal.

De Laval Separator Issues Marine Brochure

Purification and thermal equipment for marine and offshore use are illustrated and described in a new 12-page brochure now available from The De Laval Separator Company.

The equipment is designed for unmanned operation aboard ships and on drilling platforms. It can be provided in configuration ranging from single units to multi-stage installations with instrumentation and automation for remote-controlled, unmanned engine rooms.

Featured in the brochure are centrifuges for fuel and lube oil purification, including a new WHPX controlled-discharge separator that can save users up to 40 percent annually in separation costs and pay for itself in as few as nine months. Other products shown include plate heat exchangers for cooling and heating oils and water, NIREX™ distillers for fresh-water production, and upflow IMMEDIUMFILTERS® for water-flood applications on offshore platforms. All equipment stresses low operator involvement and minimum maintenance requirements so as to be suitable for unmanned engine rooms.

Careful explanations and detailed diagrams afford a full understanding of the method of operation and application, as well as cost and labor-saving features of the De Laval equipment.

Copies of Bulletin #1714 may be obtained by writing to Robert Wimmer, The De Laval Separator Company, Poughkeepsie, N.Y. 12602.

R.J. Reynolds Industries Elects McEvoy To Board



Michael R. McEvoy

Michael R. McEvoy, executive vice president of R.J. Reynolds Industries, Inc., Winston-Salem, N.C., has been elected to the board of directors of the company.

Mr. McEvoy moved to the executive vice presidency last September from his position as chairman and chief executive officer of Sea-Land Service, Inc., RJR's containerized shipping business. As executive vice president, Mr. McEvoy sits on the RJR management committee as the corporate executive responsible for the company's transportation business.

Mr. McEvoy joined Sea-Land in 1956 as sales promotion manager. He later served as vice president and general sales manager, assistant to the president, and president and general manager before becoming chairman and chief executive officer in 1970.

A native of Alabama, Mr. McEvoy attended Auburn University and worked as a newspaper reporter, editor and columnist for the Mobile Press Register before joining Sea-Land.

In addition to Sea-Land Service, Inc., R.J. Reynolds Industries, Inc., a diversified worldwide corporation, is the parent company of R.J. Reynolds Tobacco Co.; R.J. Reynolds Tobacco International, Inc.; Aminol International, Inc. (petroleum); RJR Foods, Inc. (foods and beverages); and RJR Archer, Inc. (aluminum products and packaging).

American Abrasive Metals Announces New Non-Slip Roll-On Safety Coating

A new non-slip coating, proven in use by the U.S. Navy, is now available as original safety equipment for new or existing ships and offshore rigs, regardless of age. The safety coating is manufactured and marketed by American Abrasive Metals Co.

Called Epoxo, the low-cost coating simply rolls on in minutes to help stop slips and falls at sea. Epoxo's unique high-traction surface protects personnel and equipment, as well as providing vital non-skid safety for helicopter landing pads on offshore rigs. The coating is easily applied by shipyard or shipboard personnel. Sim-

ply roll, trowel or spray on. A two-man team can roll on up to 1,000 square feet in only 60 minutes.

Originally developed to meet critical requirements of the U.S. Navy, Epoxo Non-Skid Coating has been installed on the entire flight deck of every aircraft carrier constructed since 1960. Epoxo protects personnel, rolling equipment and aircraft under the rig-

orous conditions of carrier flight deck operations.

For the first time, this professional non-slip coating is offered to the commercial marine and offshore industry. With Epoxo, naval architects and everyone concerned with marine safety can now specify professional non-slip safety as an integral part of design for ships and offshore rigs.

Because of its special blend of

resins, Epoxo is unaffected by seawater, oil, gasoline, grease, most chemicals, hydraulic fluids, acids, alkalines, solvents and detergents.

Long-lasting, economical Epoxo can be applied to any properly prepared, clean, sound surface. For a free sample and literature, write to **Sheldon Rovener**, American Abrasive Metals Co., 460 Coit Street, Irvington, N.J. 07111.

Armco's Technical Library

Your Complete Source for Plate and Structural Steel Data

Comparative Data—Armco Heat-Treated Carbon Steels

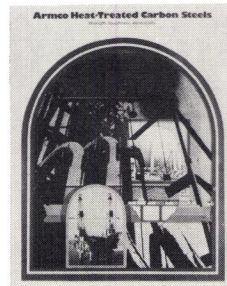
Armco Steel	ASTM Designation	Yield Strength* ksi (min)	Tensile Strength* ksi	Toughness (Nil Ductility Transition temp. F)	Weldability
LTM-N	A 633 Gr A & B	42	63/83	-70	excellent
LTM-QT	A 678 Gr A	50	70/90	-80	best of 50-ksi group
CT-N	A 633 Gr C	50	70/90	-70	very good
Lo-Temp	A 537 Cl 1 & A 633 Gr D	50	70/90	-60	good
CT-QT	ASTM Spec. Pending	60	80/100	inquire	very good
Super Lo-Temp	A 537 Cl 2 & A 678 Gr B	60	80/100	-70	good
VNT-N	A 633 Gr E	60	80/100	-50	good
QTC®	A 678 Gr C	75	95/115	-70	good
VNT-QT	ASTM Spec. Pending	75	90/110	-50	good

*Both yield and tensile strength decrease in thicker sections.

When you specify Armco, you're buying more than just special steel. You're also getting total technical assistance with the engineering data you need. This comparative table on our heat-treated steel plate properties is an example of our effort to keep you informed about the Armco steels you use.

Remember, we have a whole library of engineering data to support all our product lines, including alloy steel bars and plates, wide flange beams, and heat-treated carbon and alloy steel structural shapes, among others. For technical data on any Armco product, call our Houston office and ask for Steel Marketing: Phone 713/621-7700.

For more information on the Armco heat-treated plates featured above, send us the coupon for your free copy of our 28-page catalog shown here: Armco Steel Corporation, Dept. H-27, 1455 West Loop South, Houston, Texas 77027.



Gentlemen:

Please send me a copy of your Heat-Treated Carbon Steel Plates Catalog.

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Marine Surveyors To Hold 19th Marine Conference In New York In October

Joseph V. Sheridan, chairman, announced that The National Association of Marine Surveyors (NAMS) will hold their 19th Annual Marine Conference at the Hotel Americana in New York City on Thursday, Friday and

Saturday October 20, 21 and 22, 1977.

The three-day seminar on marine surveying and allied topics will be held in conjunction with a meeting of the membership on the morning of Saturday, October 22.

This will mark a new phase in the NAMS series of conferences. In the past, they were one-day meetings with expert speakers on

marine topics that cover the marine survey profession. This year's innovation includes, that in addition to the speakers, the second day will consist of several round-table meetings where attendees will be able to select from among the topics on the agenda that are of most interest to them. Following brief presentations from the moderator and the panel of speakers, there will be an open meeting

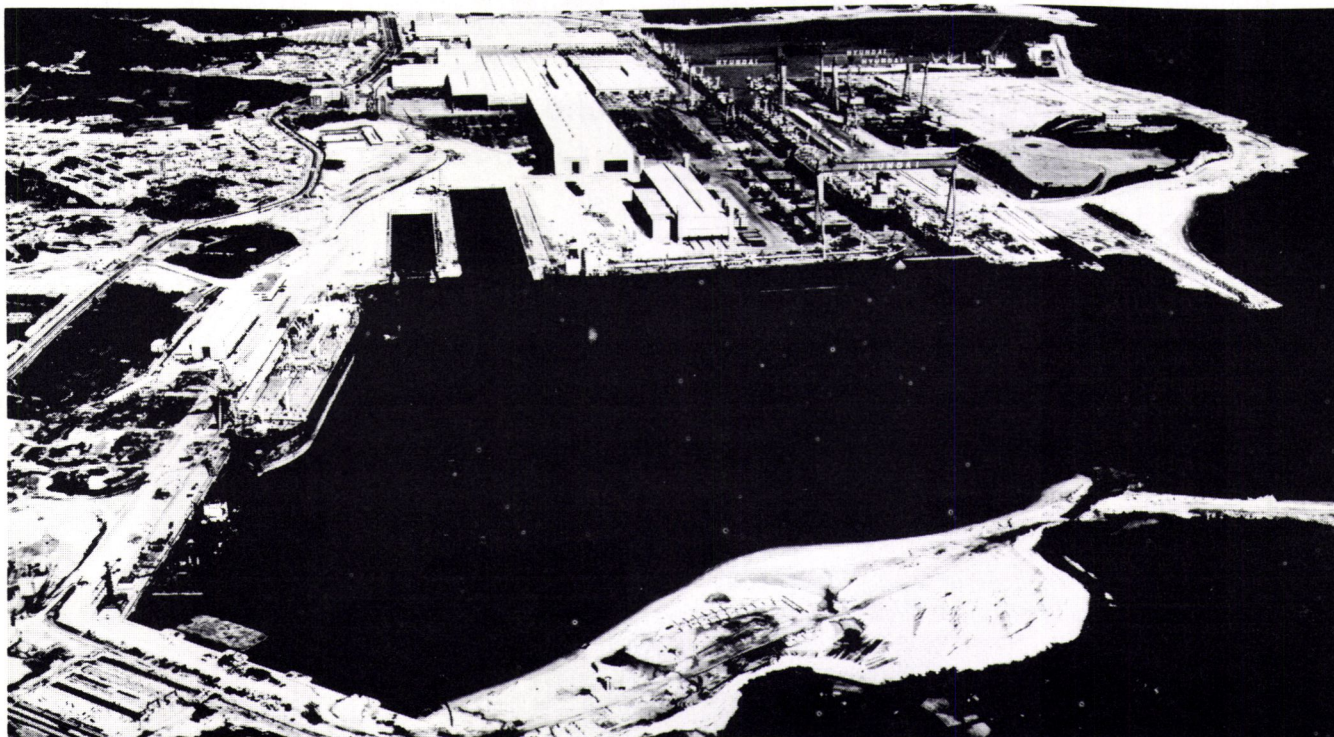
for questions from the floor.

NAMS is the professional association of marine surveyors, with members located throughout the United States, Canada, Central America, South America and Europe.

Guests at the Annual Marine Conference are drawn from all facets of the marine and insurance industry and Government.

Any person interested in attending should write to NAMS-Marine Conference, P.O. Box 55, New York, N.Y. 10038.

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ITT Decca Marine Eight-Page Brochure Explains Loran C

As a service to the marine community, ITT Decca Marine uses two of eight full-color pages in an 8½-inch by 11-inch brochure to explain what Loran C is, how it works to provide accurate navigation fixes, the difference between Loran A and Loran C, and the U.S. Coast Guard recommendations for Loran C receivers. Colorful charts and diagrams are easy to follow and informative.

Also covered are the relative values of pre-programmed receivers, full-system groundwave receivers, and groundwave sky-wave receivers such as the models 701, 708 and DL91MK2.

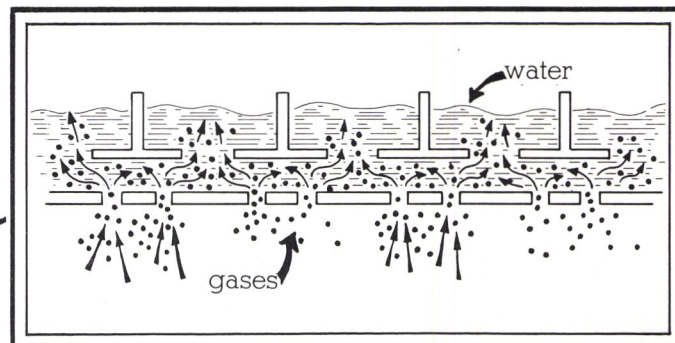
Brochures will be sent free upon request. Multiple copies for use as educational aids should be requested on the letterhead of the teaching organization (Power Squadron, C.G. Auxiliary, etc.).

Brochures are available from **Alan Thompson**, ITT Decca Marine, P.O. Box "G", Palm Coast, Fla. 32037.



TOP BRASS — In recognition of his continuing efforts in support of the American merchant marine, **Albert B. Wenzell**, vice president and general manager, Pacific Division of Prudential Lines, was the recipient of the San Francisco Propeller Club's annual Brass Hat Award. Here, Mr. Wenzell (right) accepts the 1977 Brass Hat plaque from **Thomas Crowley**, president of Crowley Maritime Enterprises and The Propeller Club. Four of the six remaining American-flag passenger ships still in service are owned and operated by Prudential. The four Cruiseliners—Santas Maria, Mariana, Mercedes and Magdalena—are American registered and staffed by an American crew.

The Key



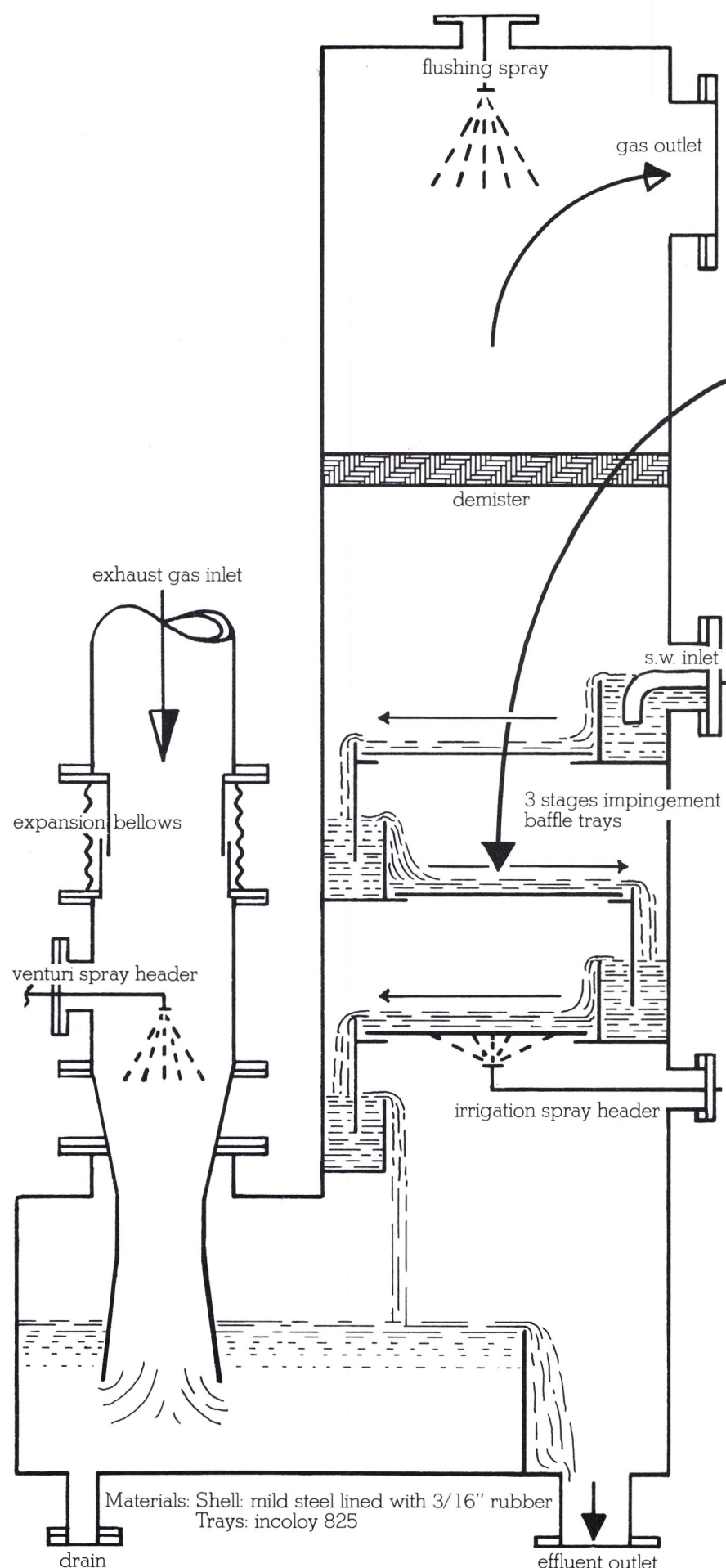
to an Airfilco Inert Gas System is its Scrubber

Hot gases from the boiler uptakes pass into the venturi agglomeration section. Water is sprayed into the gas flow at a point upstream of the venturi and the high velocity between the accelerating water droplets and the solid particles in the gas stream leads to very high particle removal efficiencies. The action of the baffle tray is shown. The turbulent mixing of the flue gas through the impingement type baffle trays provides very efficient cooling of the gas, removal of the solid particles from the gas stream and also absorption of the acidic components.

The Airfilco targeted sieve plate type scrubber has several advantages.

- A. High efficiency for cooling, particle removal, and gas absorption because of increased contact between gas and liquid.
- B. Overall height reduction.
- C. Easy access for inspection and maintenance of components.
- D. Eliminates risk of blockage or channeling of gases.
- E. The reversal of water flow direction across successive stages of baffle trays ensures that gas can not pass uncleaned.

Airfilco Inert Gas Systems are the state-of-the-art. Advantages of inerting include safety of personnel, pollution prevention, corrosion reduction, increased cargo discharge rates, increased cargo outturn, and reduced insurance premiums. Airfilco—the key to safety and economy. **So if you want the best, specify Airfilco. Avondale, Sunship and N.A.S.S.CO. have.**



AIRFILCO Engineering Inc.

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New Orleans, La. 70113 U.S.A.
(504) 525-9042 TWX-810-951-5168

Modar Names Pacetti Area Sales Manager

James Pacetti of Metairie, La., was recently appointed a Modar area sales manager. Modar, a subsidiary of Motorola Inc., is the distribution channel through which Motorola markets its complete line of marine radiotelephones and accessories for both the commercial trade and recreational markets.

Mr. Pacetti brings to the posi-

tion over eight years' experience in the marine electronics industry as a salesman and service technician. Most recently, he worked with Krupp Atlas Elektronik in Houston, Texas, a manufacturer of marine radar devices, depth sounders, and related electronic equipment.

Mr. Pacetti's area of responsibility will include the Southwestern states of Texas, Oklahoma, Arkansas, Louisiana, Mississippi, and Alabama.

READ SMOKE!

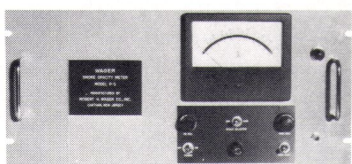
(WITH PINPOINT ACCURACY)

Detect and measure accurately smoke opacity in all situations — even in ambient light.

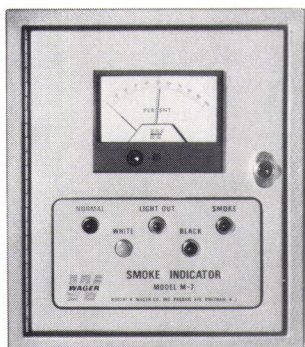
Versatile Wager Photoelectric Smoke Indicators give you a sensitive, automatic smoke opacity read-out on diesel engine, gas turbine, or steam boiler emissions. Differentiate between black and white smoke if you so desire. All read-outs are with a high degree of accuracy, to within 2% on a scale of 0-100%.

Write us for free spec sheets. Let us acquaint you with the many compelling smoke monitoring features of Wager Photoelectric, Visual, or combination Visual/Photoelectric Smoke Indicators.

Wager Smoke Indicators are the most dependable units available to help you comply with environmental regulations and to monitor combustion conditions for appreciable fuel economy.



New Models P-5/P-5W. For diesels and gas turbines: sensitive read-out with no interference from ambient light, on two scales, 0-100%, 0-20% (additional scales available). Control units can be portable or rack-mounted.

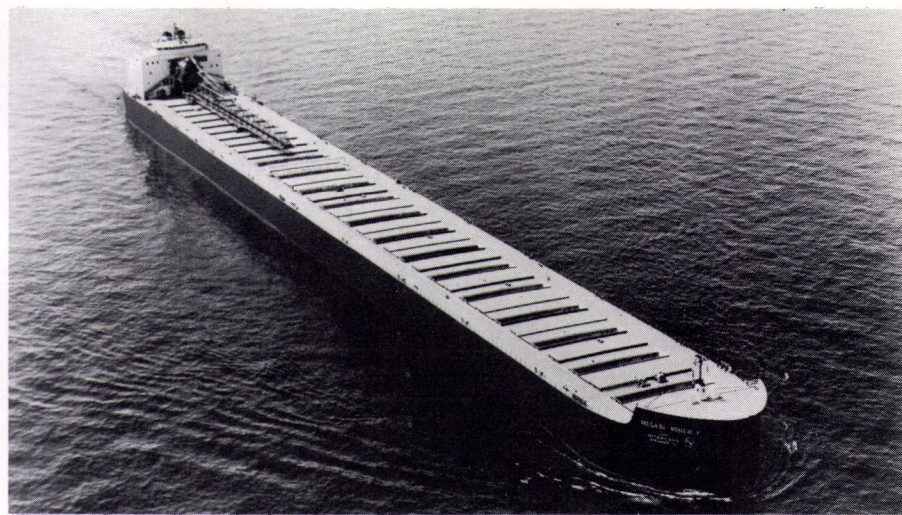


Models VM-7/VM-8. Long proven in marine service, specifically designed to operate in a rugged marine boiler environment, continuously, with minimum maintenance. Equipped with 0-100% scale, panel lights for instant smoke indication, and available with automatic lens cleaning. These Wager units meet or exceed all marine specs.

Write us.



ROBERT H. WAGER CO., INC.
Passaic Avenue
Chatham, NJ 07928 USA
Tel: (201) 635-9200



M/V MESABI MINER — Christened in Duluth, Minn., June 11, the M/V Mesabi Miner is the second of two of the largest ships ever built entirely on the Great Lakes. The new vessel was christened by **Mrs. Hubert H. Humphrey**, wife of Minnesota Senator **Hubert H. Humphrey** who delivered the keynote address during the formal ceremonies. Operated by Pickands Mather & Co.'s Interlake Steamship Company, the new vessel is 1,000 feet long, 105 feet wide, and can carry 59,000 tons of taconite (iron ore) pellets, or 52,000 tons of coal. Equipped with a 265-foot self-unloading boom, she can discharge taconite pellets at a rate of 10,000 tons per hour, or coal at a rate of 6,000 tons per hour. The vessel is powered by two 8,000-hp Colt-Pielstick diesel engines turning four-blade, Bird-Johnson "KaMeWa" controllable-pitch, 17½-foot-diameter (twin-screw) propellers, and can attain a top speed of 16 mph fully loaded. The Miner is the second of two supercarriers to be built for Pickands Mather's Interlake fleet by the AmShip Division of The American Ship Building Company at its Lorain, Ohio, shipyard. A sistership, the M/V James R. Barker, joined the fleet in August 1976. Pickands Mather is a subsidiary of Moore McCormack Resources, Inc.

ASNE Charleston Section Reports Activities



Officers of the Charleston Section of American Society of Naval Engineers for 1977, from left are: **Dick Weatherly**, counselor; **Marcus Googer**, vice chairman; **Comdr. Ron Fisher**, chairman; **Lt. Lee Hartzell**, secretary; **William Hightower**, treasurer, and **Rear Adm. C.S. Davis Jr.**, counselor. Not pictured are: **Reuben Lapin**, counselor; **Capt. John Sweeney**, counselor, and **Bob Knight**, counselor and past president.

The Charleston Section of the American Society of Naval Engineers reports a productive winter and spring. The first meeting in January included the election of officers and a presentation by **Joseph Schilling**, American Bureau of Shipping, Savannah, Ga., on "Construction Techniques of Present Day Ships as Compared to World War II Liberty Ships." In February, the Charleston area of the Joint Engineers Week Banquet was chaired by the Section.

In March, the subject of the meeting was "Ship Repair in the Charleston Area."

In April, there was a joint meeting with The Citadel Student Section of ASNE, with a movie and talk concerning Liquefied Natural Gas Spheres and Construc-

tion, by **Bill Baron** of General Dynamics.

In June, **Marcus Googer** assumed the chairmanship of the Charleston Section, with the transfer of **Comdr. Ron Fisher** to Naval Sea Systems Command, Washington, D.C.

The next scheduled meeting of ASNE in Charleston will be a joint meeting with the National Contractors Management Association (NCMA) on September 20, 1977.

Naval engineers and associated professions are invited to attend meetings at Charleston. Questions with regard to the Charleston Section of ASNE should be addressed to the Chairman, **Marcus Googer**, NAVSHIPYD Charleston, Charleston, S.C. 29408.

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MARINE FUELS AND LUBRICANTS

Port Of New York Maritime Association Elects Officers

At the Annual Meeting and Election of officers and directors of The Maritime Association of the Port of New York (MAPONY) held recently, **Eric Guy de Spirlet**, president, Belgian Line Incorporated, was elected president.

Charles T. O'Neill, president,

Jaton Environ, Inc., was reelected vice president and director, and **John B. Burguières**, vice president of marketing, Todd Shipyards, Inc., was reelected treasurer and director.

Elected as directors for a three-year term were: **Edward J. Barber**, Barber Steamship Lines, Inc.; **John D. Kerr**, Bethlehem Steel Corporation, Marine Division; **Bruce McAllister**, McAllister

Brothers, Inc.; **Robert E. Martin**, Universal Maritime Service Corp.; **Charles B. Parkhill**, South African Marine Corp. (N.Y.), and **Thomas A. Fain**, American Institute of Marine Underwriters.

Directors elected for a one-year term were: **William J. Hughes**, Hughes Brothers, Inc.; **William A. Sheehan**, Kirlin, Campbell & Keating; **Anton L. Aberson**, Atlantic Container Line, Ltd., and

George H. Blohm, Emerald Marine Corp.

Inspectors of election elected for a one-year term were: **Martyn L. Reynolds**, Barber Steamship Lines, Inc.; **Robert M. Burns**, ITT Decca Marine; **George Panitz**, New York Shipping Association, Inc., and **John Bruder**, The Perolin Company, Inc.



Eric Guy de Spirlet

In his annual message to the membership, Mr. de Spirlet reported that the Association had again enjoyed a prosperous year and that the principal goals, namely, the improvement of the quality and scope of its traditional marine intelligence services, closer ties with Lloyd's of London, continued development of inter-port cooperation, more involvement in legislative matters concerning maritime affairs, and participation in local port activities to help promote and develop the bistate region as a center of world trade and commerce, had all been attained.



ANNUAL AWARDS BANQUET — The Naval Ship Engineering Center, Philadelphia Division, recently held its Annual Awards Banquet. The Joseph Cacciola Technical Achievement Award for 1976 was presented jointly to **James Donnelly** and Master Chief **Harold Matson** for their efforts in the FFG-7 Land Based Propulsion System Test conducted at NAVSECPHILADIV. The Publications Award for 1976 was presented to **Daniel Conway** for authoring the paper entitled "Marine Gas Turbine Reliability Program." The paper was presented at The American Society of Naval Engineers ASNE Day 1976 Symposium. The paper presents a realistic, practical approach to evaluating the reliability, maintainability and availability of a long life mechanical system. The winners are shown above, left to right: **Daniel Conway**, Master Chief **Harold Matson**, and **James Donnelly**.

Fleet owners: Wrestling with MSD regulations? Winning is easy with Filteron S/MSD.

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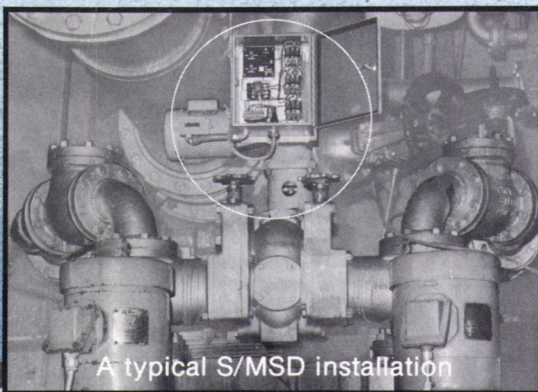
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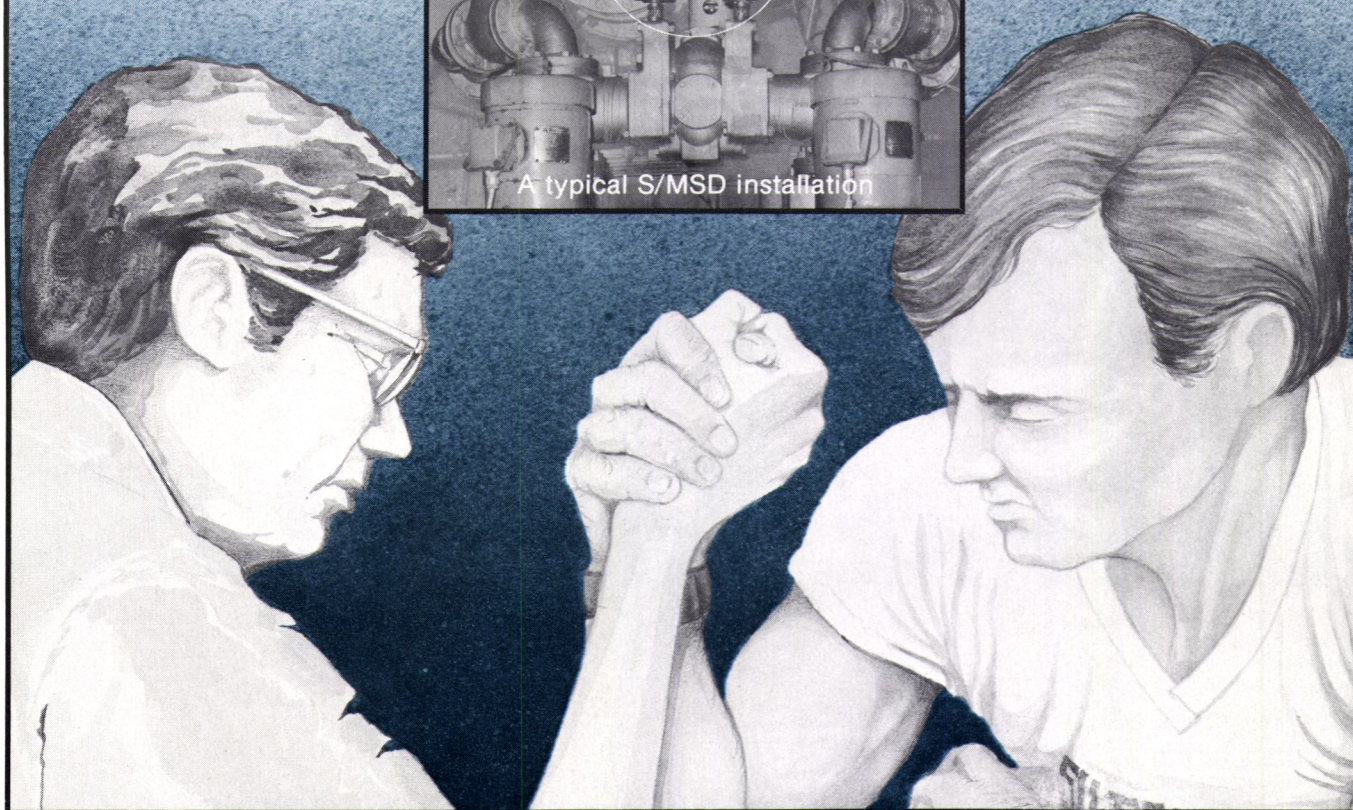
Several fleet owners are already saving time and money and eliminating certification problems with the S/MSD system. Filteron can help. Call George Behrendt or Leon Potter for more information, (713) 494-6111.

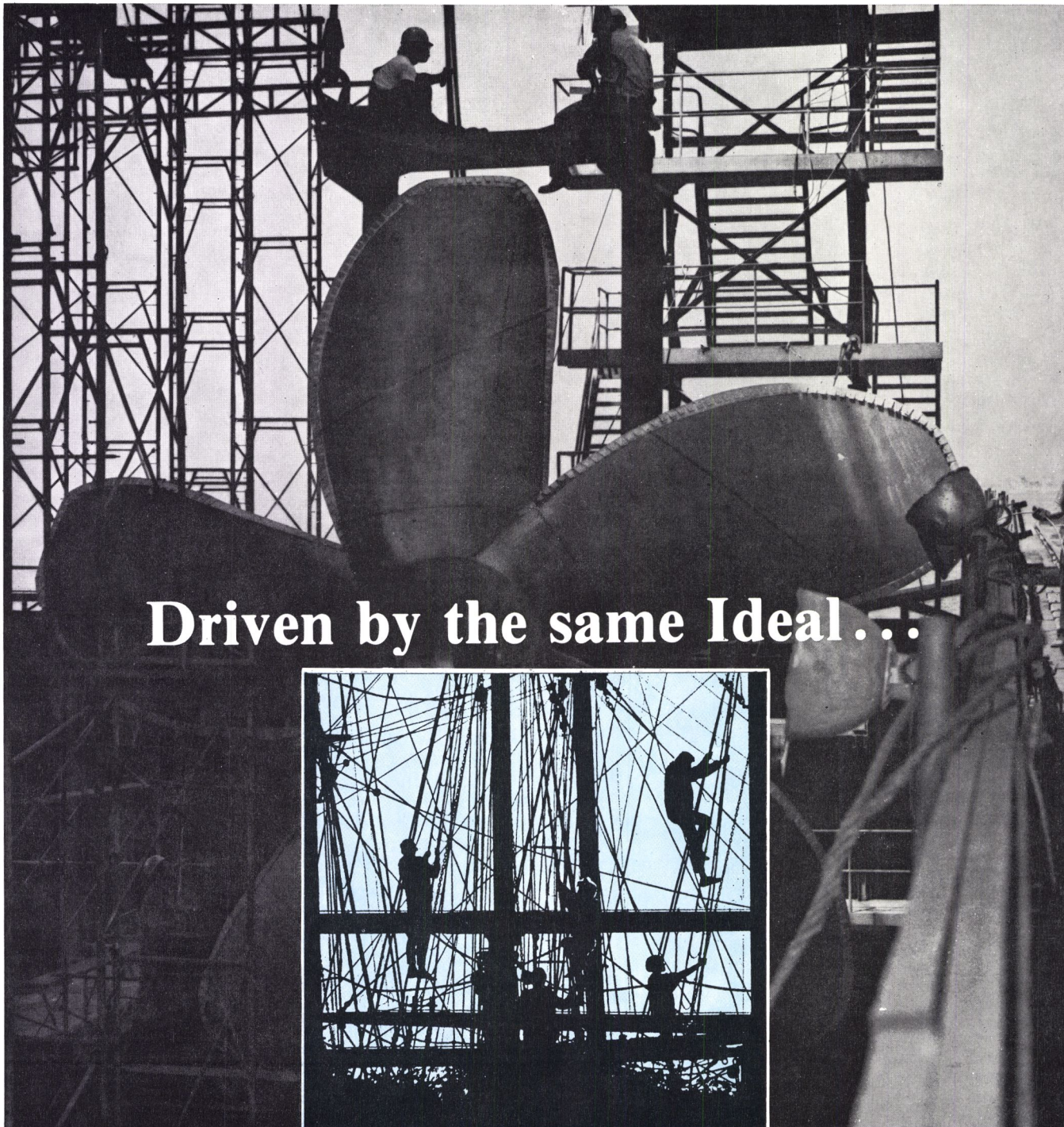
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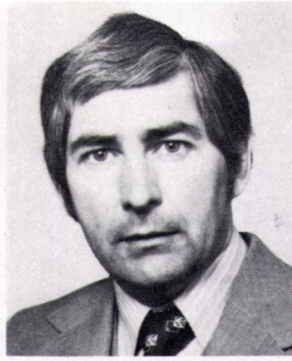
Zapata Marine Realigns Marketing Group Posts



C. Daniel Summitt



J. Paul Herrmann



Paul W. Hendrie

Zapata Marine Service, Inc. has announced that it has named three men to new assignments in its marketing group. The Houston, Texas-based subsidiary of Zapata Corporation operates a fleet of 48 vessels worldwide, which provide a range of capabilities for off-shore operators. Another four tug/supply vessels currently are under construction.

Zapata Marine said that C. Daniel Summitt will become director of marketing, responsible for the company's worldwide sales

and contracting efforts. He has served recently in operations management for Zapata Marine. Earlier, he was manager of manning and development for Zapata Off-Shore Company. Prior to joining Zapata in 1974, Mr. Summitt had a successful career as a U.S. Naval officer. He recently completed the Harvard University Advanced Management Program.

Zapata said that J. Paul Herrmann will serve as sales manager for the Western Hemisphere, to be based in Houston. A nine-year

veteran of Zapata Marine, Mr. Herrmann most recently has been sales manager for Europe, Africa and the Middle East, based in London, England. Earlier Zapata assignments included sales and operations management positions in the U.S. and Far East.

Assuming the post of sales manager-Eastern Hemisphere is Paul W. Hendrie, who joined Zapata Marine as technical sales director early this year. The holder of a naval architecture degree, Mr. Hendrie served for nine years in various technical capacities with Offshore Marine Limited before joining Zapata. Mr. Hendrie will continue to be based in London.

Over 1,500 Attend ASNE Annual Meeting

"Military/Civil Maritime Partnership-Naval Engineering's Pathway to Future Progress" was the theme of this year's annual national meeting of The American Society of Naval Engineers. The meeting, ASNE Day 1977, was held at the Shoreham-Americana Hotel in Washington, D.C. This was the 60th annual meeting of ASNE, and was attended by over 1,500 people interested in the field of naval engineering and its allied engineering disciplines.

The two-day meeting began after registration on Thursday morning with the presentation of three papers dealing with military/civil maritime cooperation. The annual luncheon followed with an address by E.M. Hood, president and chairman, board of directors, Shipbuilders Council of America. At the luncheon, ASNE president John Nachtsheim presented the charter to the new local section representing the Puget Sound Area in the State of Washington. Following the luncheon, there were two more technical sessions of three papers each, followed by a cocktail party. This party was held in the exhibits

area so that the socializing could be combined with an interesting and informative tour around the many and diversified commercial and Government displays.

Friday morning started off with an early breakfast attended by Society officers, national committee chairmen, and chapter representatives. The third session of six papers filled the remainder of the morning. The final six papers were presented in the afternoon to complete the technical sessions of ASNE Day 1977.

The culmination of the annual meeting was the banquet held on Friday evening. The Honorable Robert J. Blackwell, Assistant Secretary of Commerce (Maritime Affairs), was the featured speaker. Awards for outstanding accomplishment in the naval engineering field were also made at the banquet. The ASNE Gold Medal Award was given to Rear Adm. Wayne E. Meyer, USN "For his brilliant leadership as a naval engineer in the development, prototype production, and successful testing at sea of the AEGIS combat system." The ASNE Solberg Award was presented to Herbert V. Hitney, "In recognition of his outstanding leadership and personal contributions in the field of anomalous radio propagation and his advancement of naval engineering through ingenious research and development." The Jimmie Hamilton Award for the best original paper published in the "Naval Engineers Journal" during 1976 was presented to co-authors Jack W. Abbott and Charles M. Atchison; the title of their paper was "Pneumatics—An Analysis for Auxiliary Power Use." At the banquet, charters were presented for new student chapters at the University of Texas at Austin, Texas, and at the U.S. Merchant Marine Academy at Kings Point, N.Y.

Next year's annual meeting will be held on May 4-5, 1978, at the Shoreham-Americana Hotel, Washington, D.C.



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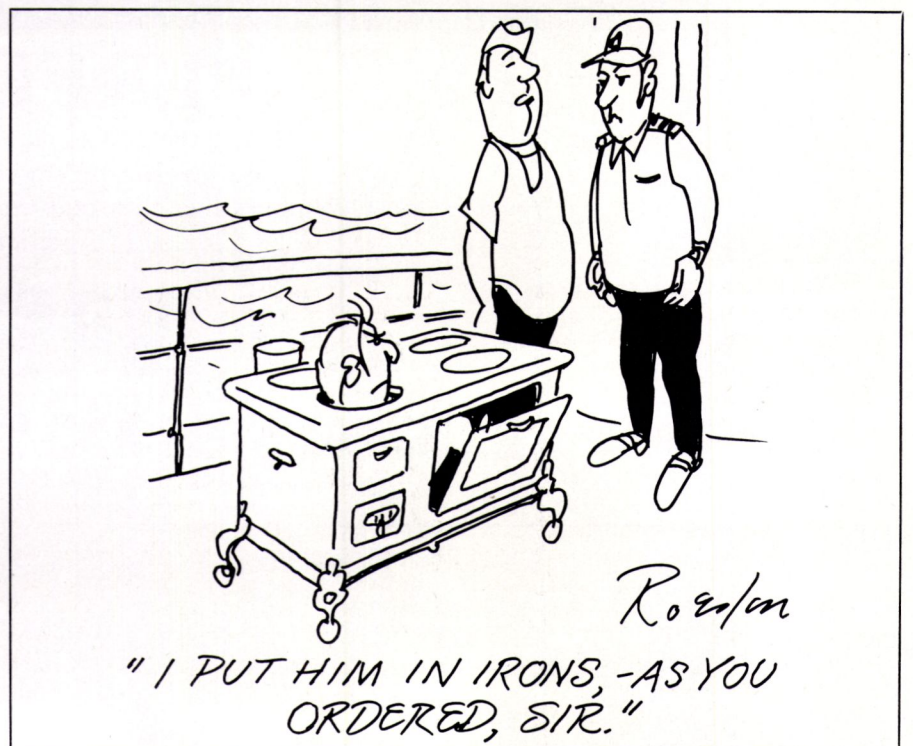
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New Luxury Hotel Barge Begins Thames Cruises



Powered by a Leyland Thorneycroft diesel, the Bonjour has full-service hotel accommodations for eight guests, and a 30-foot-long outdoor observation deck.

Bonjour, a luxuriously fitted 72-foot, self-propelled hotel barge started a career of cruising on the Thames June 8, following her launching in Worcestershire, England.

Her maiden voyage and subsequent trips will take passengers to scenic and historic spots from Hampton Court, past Windsor Castle, Runnymede and Eton to Oxford, taking in many of the activities connected with Queen Elizabeth II's Silver Jubilee, throughout the 1977 season.

The full-service hotel barge, which has accommodations for eight guests, will operate on cruises of six days and six nights, with rates from \$300 to \$350 per person.

Bonjour was built for Stanley and Jarrett Kroll of New York, an experienced yachting couple who have for several years cruised the Thames and the waterways of a dozen European countries. Out of the Kroll's experience has come a book, "Upstream/Downstream, Cruising the Waterways of Europe," to be published next spring by Harper & Row.

The master of Bonjour is Capt. Norman Riddle, a former lieutenant commander in the Royal Navy, assisted by his wife and first mate, Anna, plus one additional crew member. Mrs. Riddle's artful cuisine was chronicled in the March 1976 Gourmet Magazine, when the Riddles were operating their barge Water Wanderer on the Canal du Midi in southern France.

Morrison-Knudsen Offers New Brochure On Marine Capabilities

Morrison-Knudsen, one of the world's largest design/engineering/construction corporations, has issued a 12-page full-color brochure describing the company's complete global marine capabilities. Through its many divisions and subsidiaries, Morrison-Knudsen has extensive experience as a turnkey contractor in dredging, port, dock and pier construction,

Bonjour was built by Tolladine Boat Services, Ltd. of Stoke Prior, Worcestershire, which combined the latest in marine technology with high standards of hand-made excellence. According to the Krolls, her heavy displacement steel hull, 14-foot beam and quality machinery, including a 113-horsepower Leyland Thorneycroft diesel engine, make the 76-ton vessel an ideal luxury Thames cruiser.

The boat has four spacious, wide-windowed and individually heated staterooms, stall showers, library, dining salon with panoramic windows and stereo, and a 30-foot-long outdoor observation deck. Passengers who want to go ashore can use one of several bicycles carried aboard.

The exterior of Bonjour is colorfully hand-painted in the traditional working barge motif of roses, diamonds and castles — an essentially English folk art. Her interior, of hand-rubbed teak, redwood and parana pine, reflects a standard of old-world craftsmanship rarely seen today.

Guests eat all but three meals onboard; on three evenings they go ashore to dine at inns or restaurants of their choice.

Principal charter agent for Bonjour is Continental Waterways, Ltd., 22 Hans Place, London, SW1, although reservations can be arranged through American Express and other U.S. travel agents, booking through Continental Waterways.

harbor development, submarine pipelines, man-made islands for offshore oil drilling, port industrial installations, terminals and bulk materials handling facilities, causeways, bridges, outfalls, and more.

This informative booklet details the worldwide experience in all areas of marine/offshore engineering design and construction. For your free copy of the marine capabilities brochure, write Joseph T. Powers, Morrison-Knudsen Company, Inc., P.O. Box 150, New London, Conn. 06320.

Seaworthy Engine Systems Appoints Jack E. Horner



Jack E. Horner

The appointment of Jack E. Horner as senior marine project engineer has been announced by David A. O'Neil, president of Seaworthy Engine Systems, Inc. Seaworthy is engaged in engineering consulting for marine propulsion, fuel optimization and control systems for marine gas turbines, diesel and steam powerplants.

In his new capacity, Mr. Horner will be responsible for project engineering for marine power-

plant applications and installation, as well as specializing in controls selection and ancillary support systems.

Mr. Horner graduated in 1963 from the University of Bridgeport in mechanical engineering before joining General Dynamics/Electric Boat and the Quincy Divisions.

Prior to joining Seaworthy, Mr. Horner was a senior test engineer while involved with fuel cell development and as a resident site engineer for Northeast Utilities in their nuclear construction program.

Seaworthy Engine Systems, Inc. provides unique engineering and technical services to the marine industry in the steam, diesel and gas turbine propulsion systems, fuel systems management and vessel operation areas. Seaworthy's customers include shipowners and operators, engine manufacturers, as well as the U.S. Government.

Seaworthy's offices are located at 73 Main Street in Essex, Conn. 06426.

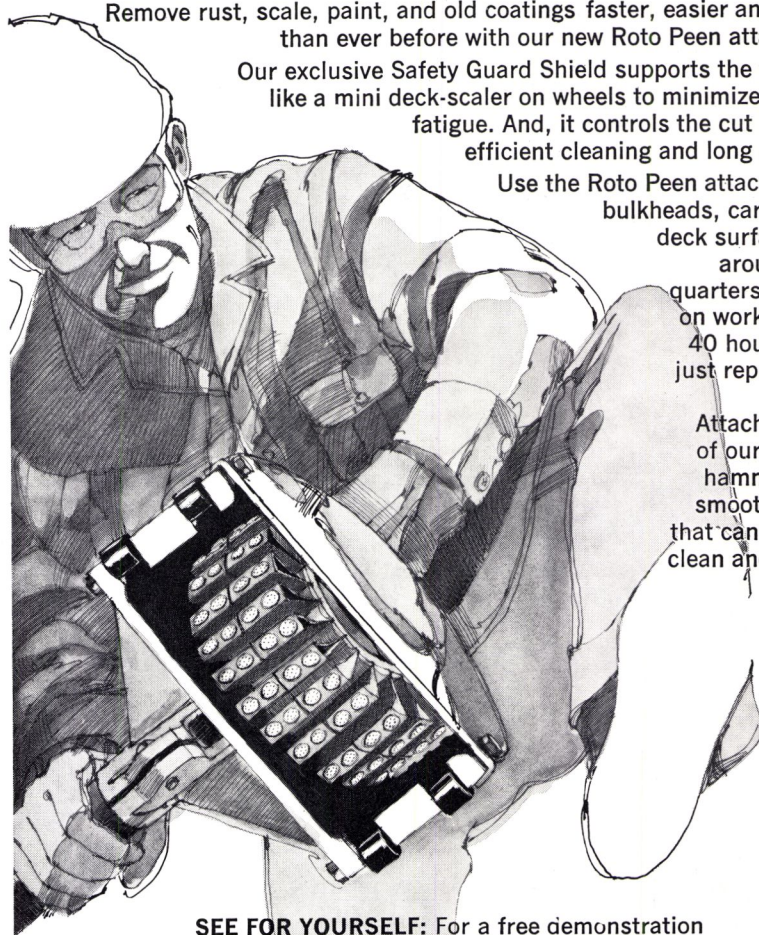
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National Maritime Council Elects Barker Chairman

At a recent meeting in Washington, D.C., the National Maritime Council board of governors unanimously elected **James R. Barker**, chairman and chief executive officer of Moore McCormack Resources, Inc., Stamford, Conn., as their new chairman.

Mr. Barker succeeds Paul F.

Richardson of Paul F. Richardson Associates, Inc., Holmdel, N.J., whose term expired. Mr. Richardson served as chairman of the NMC board of governors since the organization's inception in 1971. He will continue to serve with the board.

The NMC governors, top U.S.-flag carrier management, labor, shipbuilding, and government leaders, paid tribute to Mr. Rich-

ardson's distinguished leadership and outstanding contributions in the furtherance of the NMC objective of a unified maritime industry working together for a strong, stable United States-flag merchant marine.

Mr. Barker had previously served as chairman of NMC's Executive Committee. Elected to replace him in this position was W.J. Amoss Jr., president, Lykes

Bros. Steamship Company of New Orleans, La.

A nonprofit organization, the National Maritime Council has been credited with the creation of a new climate of unity within the entire U.S. maritime industry. It has also been influential in bringing about the existing labor-management stability and the developing of a more responsive relationship between the exporter-importer community and the U.S.-flag shipping industry.



James R. Barker

Thirty-five chief executives of U.S.-flag ocean carriers, maritime labor unions and shipbuilders meet regularly as members of the board of governors. The United States government is also represented on the board by the Assistant Secretary of Commerce for Maritime Affairs. In addition, leading traffic executives representing 140 U.S. business firms engaged in foreign trade actively participate in NMC programs as shipper advisors to the NMC.

Through regional activities, the NMC has developed a communication between the maritime industry and the foreign trade community throughout the country, utilizing shipper forums which stimulate a frank exchange of views between shippers at large and the industry. At the same time, the NMC Shipper Advisory Boards have guided the council in seeking solutions to transportation problems affecting U.S. exporters and importers. In turn, shippers have achieved a better understanding of the conditions which influence the service capabilities of U.S.-flag carriers.

Revised Catalog Available From Amprobe Instrument

Amprobe Instrument of Lynbrook, N.Y., has made available a 16-page catalog of troubleshooting instruments, accessories, technical specs, and pricing information.

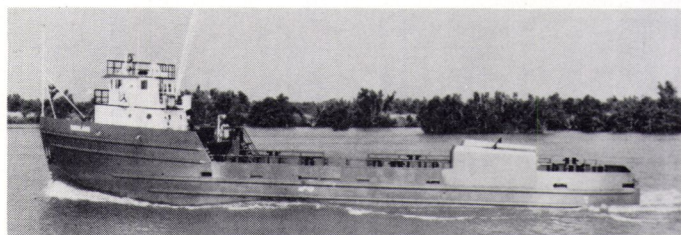
The revised and expanded Test Equipment Catalog gives facts on Rotary Scale Clamp-ons, Junior Clamp-ons, Industrial Multimeters, Voltprobe® Voltage Testers, Megohmmeters, Fastemp® Thermometers, Strip Chart Recorders, Recorder Accessories, and Clamp-on Accessories.

For a copy of the catalog or further information, write to George Behrens, Amprobe Instrument, 630 Merrick Road, Lynbrook, N.Y. 11563.

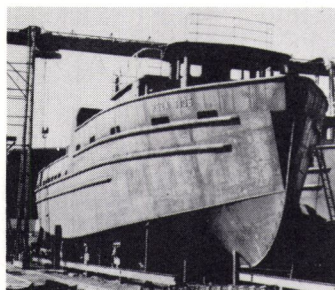
Hey! WE BUILD ALL THESE, TOO.



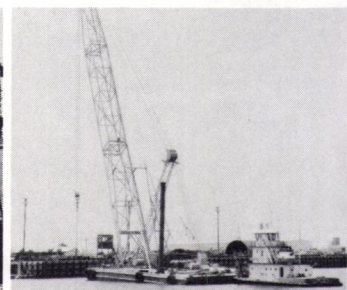
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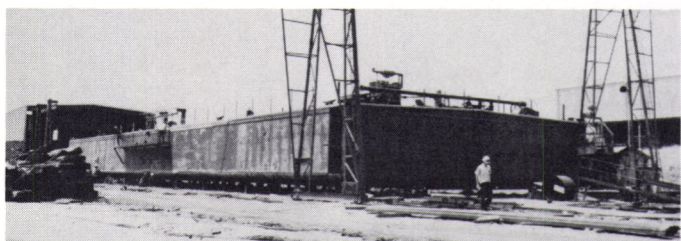
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Arnessen Announces Roto Peen Scaler

The Arnessen Corporation has announced the availability of the Roto Peen Scaler, an attachment which will turn the well-known Arnessen Chipping Hammer into a mini deck scaler that removes rust, scale, paint and coatings—on bulkheads, in cargo holds, and on deck. This attachment has a Safety Guard Shield which controls the depth of the cut, while at the same time acting like a deck scaler on wheels.

The combination of the Arnessen Chipping Hammer and Roto Peen Scaler attachment being on wheels is lighter and easier to use.

For further information or free demonstration, contact **Julie Tountas** at Corrosion Dynamics, Inc., Subsidiary of The Arnessen Corporation, 1100 Walnut Street, Roselle, N.J. 07203.

Lincoln Warren Named ODECO Vice President Oil & Gas Exploration

Ocean Drilling & Exploration Company, 1600 Canal Street, New Orleans, La. 70160, has announced the appointment of **Lincoln E. Warren** as vice president-oil and gas exploration to spearhead its effort to uncover new oil and gas reserves.

"Lincoln Warren's excellent technical abilities will be instrumental in the process of making sound investment decisions in this area. He brings to the company a lifetime of broad experience in the exploration for oil and gas.

"The company's strategy over the near term will be to devote most of its resources to search for new oil and gas reserves. This will be a major expansion from our previous role as the world's largest offshore contract driller with a sideline of oil and gas, to a substantial oil and gas producer as well as a leader in the contract drilling business," said **Hugh J. Kelly**, ODECO president and chief executive officer.

Founded in 1953, ODECO is the world's largest offshore drilling contractor, with 40 rigs of four major classes and, in addition, explores for and produces oil and gas, provides underwater diving services and has insurance interests.

ODECO oil and gas expenditures were \$66 million last year and are budgeted to approximately \$75 million in 1977, with most of the expenditures targeted for development of the company's 7 percent interest in the Ninian Field in the British sector of the North Sea, and a number of Gulf of Mexico properties.

As these properties are placed on production, the resulting cash flow will add substantially to ODECO's capacity for new investments, Mr. Kelly said.

Mr. Warren formerly served as

general manager of Gulf Oil Corporation southeastern exploration district and retired after 32 years of service with Gulf.

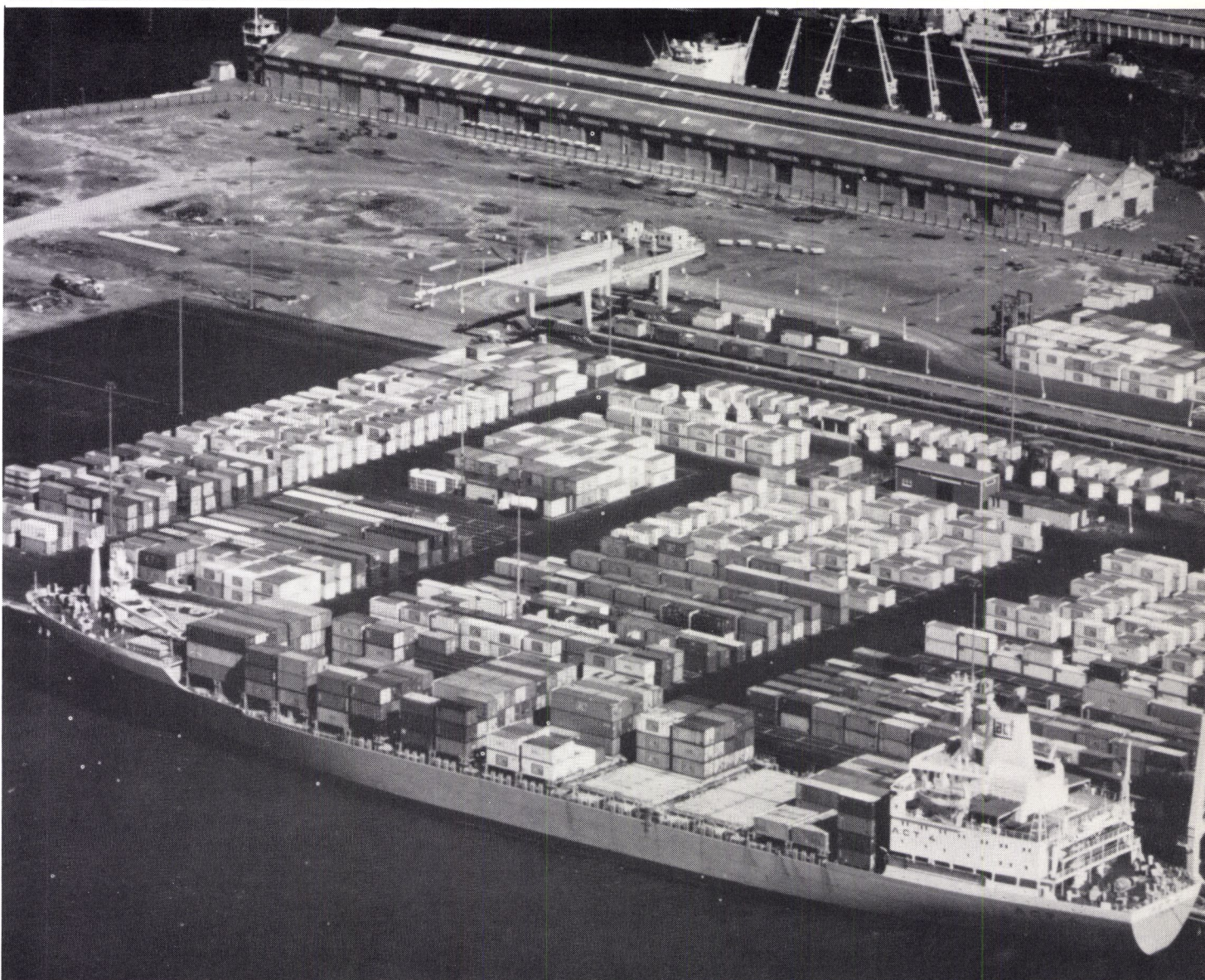
A geology graduate of the University of Texas, he joined Gulf in 1945 and became chief geologist for West Texas in Midland, Texas, in 1951. Mr. Warren was later named exploration manager for Western Gulf Oil Company, Los Angeles, Calif. He has held

additional assignments in Denver, Colo., Jackson, Miss., New Orleans, La., and Houston, Texas.

Mr. Warren has served on numerous committees of American Petroleum Institute, including the Government Liaison Committee on Research. Last June, he was named chairman of the oil and gas panel in the National Planning Conference on the "Commercial Development of Oceans,"

sponsored by the U.S. Maritime Administration, the National Oceanic and Atmospheric Administration (NOAA), the Department of the Interior and the Energy Research and Development Administration (ERDA).

Currently, he is a member of the American Association of Petroleum Geologists and a Fellow of the American Association for the Advancement of Science.



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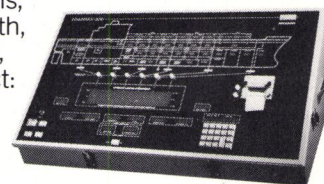
Face it. Time is money. And so is accuracy when you're making load distribution calculations. So, if you have a way to make them faster than a LOADMAX system can, don't read any further. If not, then our LOADMAX story could open the door to greater profit per voyage for your ships.

Modern containerships, product tankers, RO-RO, LASH—as well as LNG, VLCC and bulk carriers—have made accurate load calculation more complex than ever. Hull stress, shear force, bending moments, stability and trim are all critical factors to be reckoned with. Thus, old rules of thumb, mechanical analyzers, manual calculations, even analog systems with cumbersome thumbwheels and pointers just don't measure up any more. That's why we introduced LOADMAX. It's digital...pushbutton...instantaneous...instantly readable...continuously updated...and accurate. The LOADMAX 200, for example, can be used

*computation cycle time

to make stability, draft and stress calculations simultaneously in a fraction of the time required by other calculation methods. And with unsurpassed accuracy.

If you're a shipowner you probably already know about Raytheon's reputation for reliability and service. Now, if you're interested in maximizing your ship's profitability, there's a lot more you should know about the Raytheon LOADMAX. To get the whole story contact the Marketing Manager at Raytheon Company, Maritime Systems, West Main Road, Portsmouth, R.I. 02871. (401) 847-8000, ext. 2236. In Europe contact: Raytheon Copenhagen, Siljengade 6, Copenhagen 2300, Denmark.



RAYTHEON

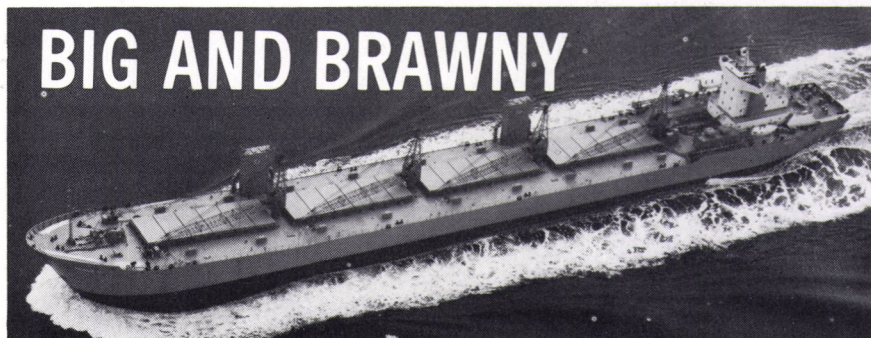
ITT Mackay Marine To Market Radar

An agreement to market and service a line of marine radars and marine collision avoidance apparatus was announced in Raleigh, N.C., by a unit of International Telephone and Telegraph Corporation.

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Papers On Navy C-P Propeller Program And Spray Patterns Of Jet Thrusters Discussed At Joint SNAME Chesapeake/ASNE Meeting



Participating in the SNAME Chesapeake/ASNE meeting, left to right: **G. Boatwright**, moderator; **M. Hauschildt**, author; **Capt. W. Wyatt**, USN DD 963 Program Manager; **A. Jennings**, **G. Selecman**, and **J. Angelo**, authors, and **J. Buck**, moderator.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers and the Flagship Section of The American Society of Naval Engineers held a joint meeting recently at the Officers Club of the Bethesda Naval Medical Center. The meeting featured the presentation of two papers—one on the U.S. Navy controllable-pitch propeller program, and the other a student paper on spray patterns produced by jet thrusters.

The presentation of papers followed a social hour and dinner attended by about 150 members. The first part of the technical session was moderated by **G. Boatwright** of NAVSEC. The paper was entitled "U.S. Navy Controllable Pitch Propeller Programs," and was authored by **Maurice**

Hauschildt, **Richard Petros** and **Joseph Angelo**. Mr. Hauschildt presented the paper, which described the U.S. Navy controllable-pitch propeller research and development program of the late 1960s and early 1970s. It discussed the failure of the USS Patterson (FF 1061) and the USS Barbey (FF-1088) research propellers, and the redesign and test of the Barbey propeller. It also discussed the Spruance (DD 963) propeller land-based tests and sea trials. The application of the data obtained from the R&D program to the DD 963, FFG 7 and future Navy designs was also discussed.

A discussion period followed the presentation of the paper. The discussers included **Capt. W. Wyatt**, DD 963 Program Manager, **R. Rockwell**, DTNSRDC, **C. Noonan**, DTNSRDC, and **D. Ridley**, Bird-Johnson Co.

The second paper, "Spray Patterns Produced by Vertical Disk Thrusters Above Water Surfaces," was written by **George E. Selecman** and **Alan N. Jennings**, both of whom are students in the Aerospace and Ocean Engineering Department of Virginia Polytechnic Institute and State University. **Jon Buck** acted as moderator for this paper, which was presented by Mr. Selecman.

The paper presented an investigation of spray patterns produced by vertical disk thrusters over water surfaces. This work has application in understanding the spray which is likely to be produced by VTOL aircraft operating over water. The tests were conducted at DTNSRDC and at VPI. Qualitative analysis of test films from DTNSRDC led to experiments which showed a strong dependence of droplet size on Weber Number, Froude Number and the height of the disk thruster above the water surface. Dimensional analysis was used to devise a mathematical relationship between the most probable droplet size and the above mentioned parameters.

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Northwest Marine Iron Works Names Grider And Hiller

Northwest Marine Iron Works has added two marine specialists to its staff in Portland, Ore.



James M. Grider

Joining Northwest Marine Iron Works are **James M. Grider** and **David L. Hiller**. Mr. Grider has been appointed quality assurance supervisor, and Mr. Hiller joins the firm in a management training capacity.

Both were previously employed by Chevron Shipping Company. Mr. Grider was inspector of new ship construction in Europe and the United States the past seven years. He also has worked in a similar capacity in Japan.



David L. Hiller

Mr. Hiller brings seven years of engineering experience to Northwest Marine Iron Works. He holds a B.S. degree in marine engineering from the U.S. Merchant Marine Academy at Kings Point, N.Y., an M.S. degree in naval architecture from the University of California at Berkeley, and a U.S. Coast Guard chief engineer's license.

Portland, Ore.-based Northwest Marine Iron Works specializes in major vessel repairs, ship conversions and new barge construction.

Frank A. Nemec Resigns From Lykes

Frank A. Nemec has tendered his resignation as president, chief operating officer and director of Lykes Corporation and all its subsidiaries, the company has announced. Mr. Nemec has elected to take early retirement for personal reasons. Lykes Bros Steamship Co. is a subsidiary of Lykes Corporation.

J.T. Lykes Jr., chairman and chief executive officer, will assume the additional duties of corporation president, the announcement states.

Marine Electric RPD Markets Steering Gear Power Failure Alarm

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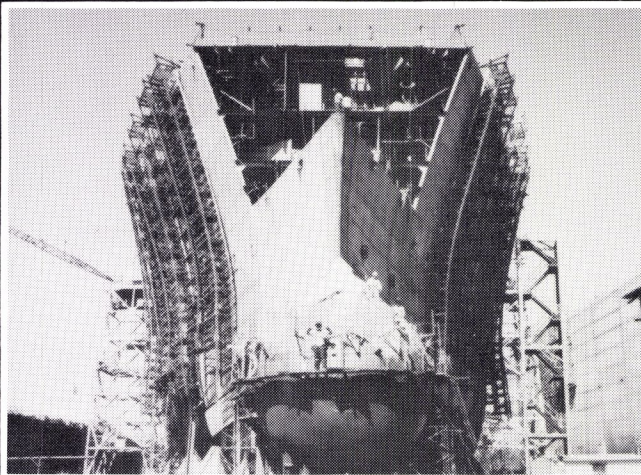
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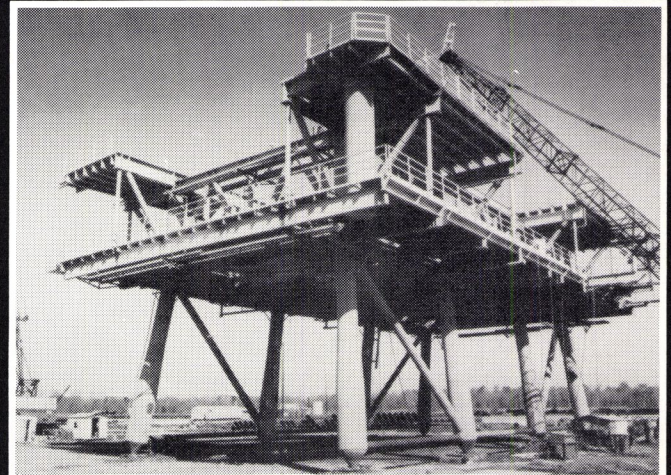
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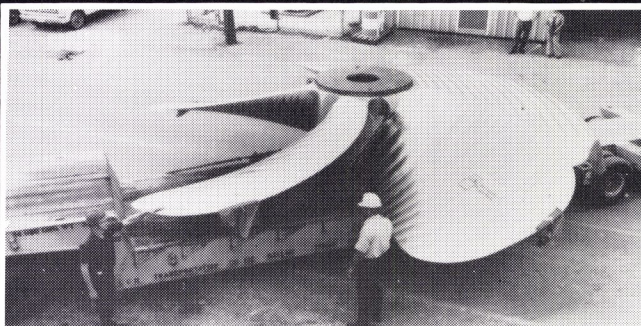
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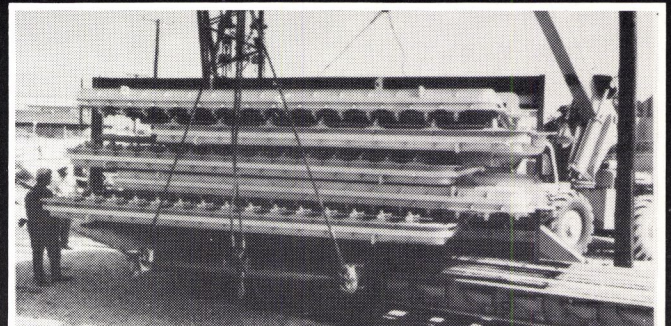
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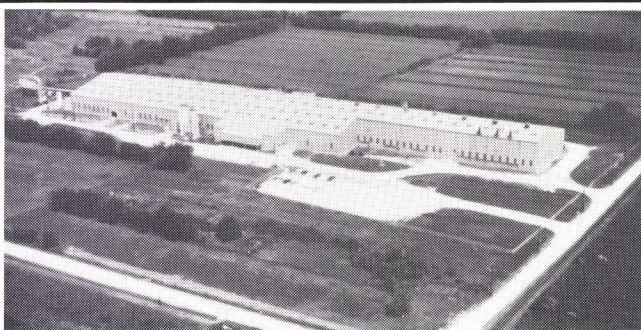
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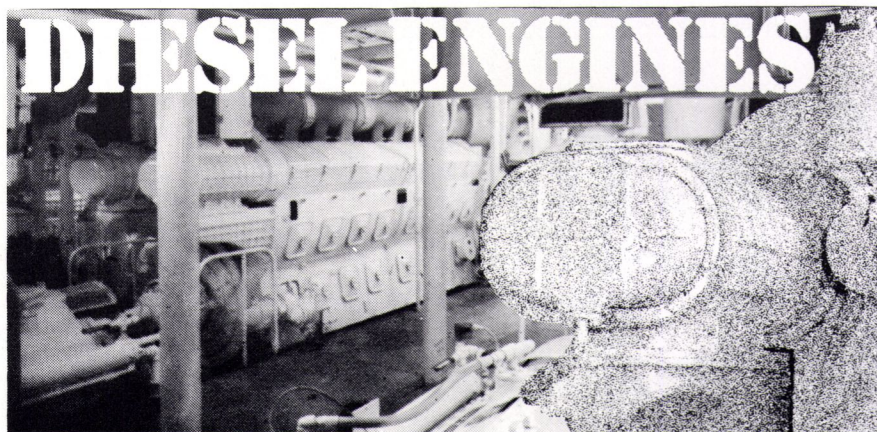
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Motorola Brochure Describes Handie-Talkie Portable Radios

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and photographs are also used to describe the versatility and wide market acceptance of these new radios. Features and options are also included.

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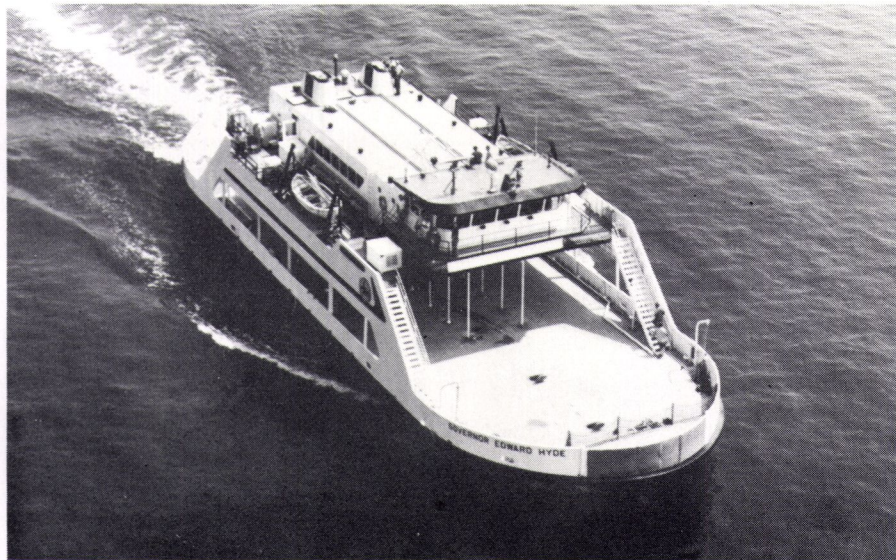


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Equitable Delivers Ferry To State Of No. Carolina



The new ferryboat, the Governor Edward Hyde, powered by Caterpillar diesels, travels at a maximum speed of 14.5 knots.

Equitable Shipyards, Inc., New Orleans, La., recently delivered the 161-foot all welded steel, twin-screw, diesel-powered ferryboat Governor Edward Hyde to the State of North Carolina, Department of Transportation Division of Highways at the Cedar Island Ferry Terminal Facility, Cedar Island, N.C.

The vessel will have a capacity of 300 passengers and 34 automobiles. The new ferry is expected to run from the existing terminal on the southern end of Ocracoke Island to the Hyde County mainland.

The vessel was designed by the Ferry Division of the State's Marine Engineering Section under the direction of **Ray A. Dossett**, marine engineer. With a length of 161 feet, the vessel is 48 feet at maximum beam and has a de-

sign draft of 7 feet. Displacing 550 tons, it travels at a maximum speed of 14.5 knots under propulsion of two 900-hp Caterpillar diesel engines. Passengers and crew can travel in comfort, as both the lounge and pilothouse are air-conditioned.

Equitable is a wholly owned subsidiary of Trinity Industries, Inc., a Dallas, Texas-based manufacturer of industrial, marine and structural metal products. The Equitable shipyards are the world's largest builder of lighter aboard ship (LASH) and SEABEE barges, and builds tugboats, crewboats, towboats, supply vessels, and other floating marine equipment for the offshore oil industry.

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Skipper, Simrad's trade name for their Value Line of recording echosounders, has been further enhanced by the addition of the Model 701 fishfinder.

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As with all Skipper and Simrad recorders, the new Model 701 features whiteness, the ability to separate ocean bottom from fish swimming close to that bottom. Outstanding sensitivity, variable paper speed, straight line presentation, high output power, outstanding sensitivity, and compact size are but a few of the many features which make the 701 ideal for the budget-conscious fisherman who demands reliable performance.

For further details, contact **Gilbert N. Nelson**, Vice President of Marketing, Simrad, Inc., One Labriola Court, Armonk, N.Y. 10504.

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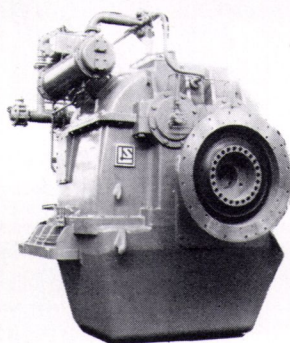


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SNAME Chesapeake Section Elects Officers— Hears Paper On Domestic LNG Vessel Construction



Pictured in the Officers Club, left to right: J. Lisnyk, secretary-treasurer; T. Robinson, Executive Committee; Comdr. W. Kime, USCG, moderator; T. Connors, author; N. Hammer, discussor, and F. Sellars, Section chairman.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers held its final meeting of the 1976-77 season at the Officers Club of the Walter Reed Medical Center in Washington, D.C. The meeting included election of officers for the next year, awards, and the presentation of a paper on domestic LNG vessel construction.

Following a dinner and social hour attended by about 65 members, the Nomination Committee, headed by past chairman **Ron Kiss**, presented a slate of officers for the next year. The slate included Dr. **Reuven Leopold** for chairman, **Walter Schmid** for vice chairman, **James Lisnyk** for secretary-treasurer, and **Alexander Landsburg** for Executive Committee. The slate was elected unanimously.

The award for the best paper of the year was then made to Lt. Comdr. **W.D. Snider**, Lt. Comdr. **G.J. Buffleben**, Lt. Comdr. **J.R. Harrauld**, Comdr. **K.F. Bishop**, and Lt. Comdr. **J.C. Card**, all of the USCG, for their paper, "Management of Mid-Atlantic Offshore Development Risks." Following this presentation, a Certificate of Appreciation was given to **Frank Sellars**, this year's chairman, for a job well done.

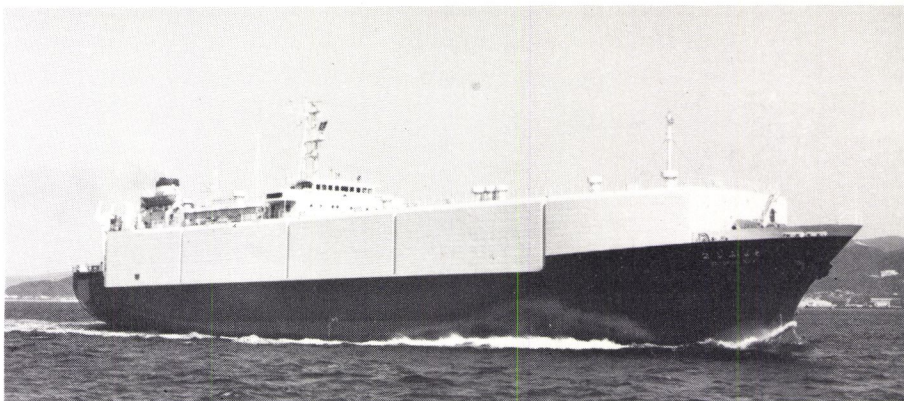
Comdr. **W. Kime** then acted as moderator for the presentation of the technical paper entitled, "Update: Domestic LNG Vessel Construction." The paper was authored by **Thomas G. Connors**, manager, Marine Engineering Division of Engineering Office and Ship Construction of the Maritime Administration. In his paper, Mr. Connors noted that in the nine-month interval between September 1972 and June 1973, the Maritime Administration entered into contracts with three separate U.S. shipyards and nine shipowners to construct a total of nine 125,000-cubic-meter LNG vessels under the Title V — Construction Differential Subsidy (CDS) Pro-

gram. The total value of these contracts was almost \$900,000,000. Under the Title V Program, the Maritime Administration will pay the difference between the domestic contract price of a vessel or series of vessels, and the calculated foreign cost. The shipowner then only pays the foreign cost.

The paper then went on to convey an understanding of the problems that have been encountered in the LNG vessel construction program, so that the success of that program in overcoming the initial hurdles could be more fully appreciated.

All problems encountered in the design and construction of the vessels have been overcome by hard work, careful planning, cooperation between the involved parties, plus a certain amount of ingenuity. The LNG vessels presently under construction in the United States make up fully 50 percent of the LNG vessels under construction in the world. The LNG program to date has been a huge undertaking for many people and companies in the marine industry: shipyards, owners, design agents, equipment suppliers, regulatory bodies and Government. It is an undertaking for which any and all involved can justifiably be proud. All three vessel designs described in the paper have approximately the same principal characteristics — power, speed, etc. The only basic difference between the three designs is the choice of the cargo containment system. The particular cargo containment system utilized for each vessel design gives it its own distinctive outboard profile, and sets it apart from the others. For this reason, the cargo containment system of each design was given the most attention in the paper.

Following the presentation of the paper, discussions were given by **W.D. Thomas**, **M. Roberts**, Lt. Comdr. **T. Green**, and **N. Hammer**.



CAR CARRIER FROM HITACHI ZOSEN — The Toyofuji No. 2 (shown above) a 6,500-gt car carrier built at the Setoda Shipyard of Naika Zosen (an Hitachi Zosen affiliate) was recently delivered to her owner, Toyofuji Shipping Co., Ltd. She is a multi-deck, single-screw, diesel-driven car carrier with aft engine room, twin-deck assembled car and single-deck knockdown car holds below the freeboard deck, and a single-deck knockdown car hold above the freeboard deck. Capacity is 131 assembled cars and 36 lots of knockdown cars (one lot comprises assembly parts for 60 complete cars). Assembled cars are loaded using shore ramps located on both sides of the aft part of the loading deck, and are driven through the hold ramps to their storage positions. Knockdown cars are brought in by truck to the storage decks, where they are stowed by fork lifts. The Toyofuji No. 2, with a trial speed of 18.66 knots, has an overall length of 384 feet, a beam of 62 feet, and a designed full load draft of 21 feet.

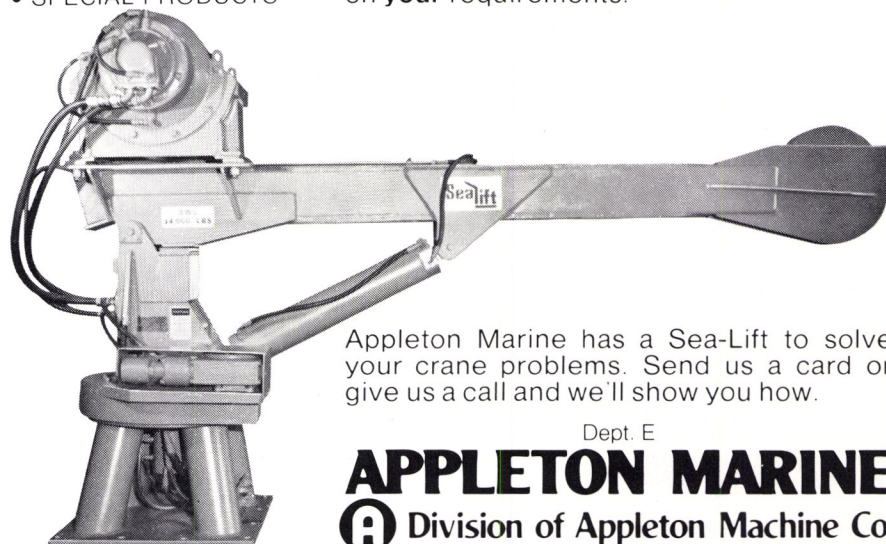
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SNAME Los Angeles Section Honors Past Chairmen —Discusses Paper On Slow-Speed Marine Diesels



Los Angeles SNAME Section honors its past chairmen (from left): **Vernon Shelton**, 1957-58; **Harold D. Ramsden**, 1956-57; **Paul Bukunt**, 1964-65; **Robert E. Apple**, chairman, 1975-76; **Thomas B. Wilson**, 1971-72; **Robert A. Rourke**, 1970-71; **William A. Hood**, secretary-treasurer; **Frank A. Kuntz**, vice chairman, and **Nat Friedland**, 1967-68.

Traditionally, at the last scheduled meeting of the year, the Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers reserves the occasion for honoring its past chairmen. **Robert E. Apple**, outgoing chairman for the year, continued this tradition with graciousness and consideration. The invitations to the honored guests were personalized and the attendance gratifying. The membership, too, got a feel for it and turned out well in response to Mr. Apple's previous announcements of the celebration. Next year, he will be joining this same select group to receive in turn with them the accolades so rightly earned.

There was also a special presentation to Mr. Apple by **Frank Kuntz**, vice chairman, of a certificate of appreciation for his years of dedicated service to the group.

The paper session at this May 1977 SNAME meeting of the Los Angeles Metropolitan Section was introduced by Mr. **Kuntz**. **John Hollett**, papers chairman, had previously arranged for this meeting and invited the speakers. More pressing obligations prevented his attending, and dictated the substitution. Mr. **Kuntz** encouraged a lively discussion from the floor, following the formal presentation of the paper.

It was accomplished by a team of speakers, **Paul J. Rutan**, **James R. MacMorran**, and **Harry Comerford**, all of the Marine Division, Westinghouse Electric Corporation, Sunnyvale, Calif. The principal aspects of their discussion covered the propulsion means for ships in the future, and their firm's participation through a licensing agreement with Sulzer Brothers, Ltd. of Winterthur, Switzerland, to produce a slow-speed diesel engine domestically.

The paper itself was titled "A Slow-Speed Marine Diesel Engine in Review," and was written by Mr. **Comerford** in cooperation with Mr. **MacMorran**. It delineated the comparative cost factors of engine size, weight, fuel consumption ratios, etc., and illustrated comparative cost analyses of operating ratios. It also described some of the requirements for ancillary systems. As specifically stated, it was not their purpose to discuss the engine in detail, but rather to illustrate the operational and support systems the marine engineer must arrange for in the machinery space.

The presentation itself was conducted by Mr. **MacMorran**, following a brief opening statement by Mr. **Rutan**. The latter's emphasis was on domestic owner's and operator's

needs to consider slow-speed diesel engines in the future to reduce fuel costs and to become more competitive with foreign operators. **MarAd**, he said, has agreed to grant limited waivers on initial foreign components to help encourage a domestic manufacturing capability. Many potential U.S. suppliers have expressed interest in participating in such programs and will be welcome.



At the meeting of the Los Angeles Metropolitan Section, standing (from left): **Harry Comerford**, author; **Frank A. Kuntz**, vice chairman; **Paul J. Rutan**, speaker, and **William A. Hood**, secretary-treasurer; seated (from left): **Robert E. Apple**, chairman, and **James R. MacMorran**, speaker.

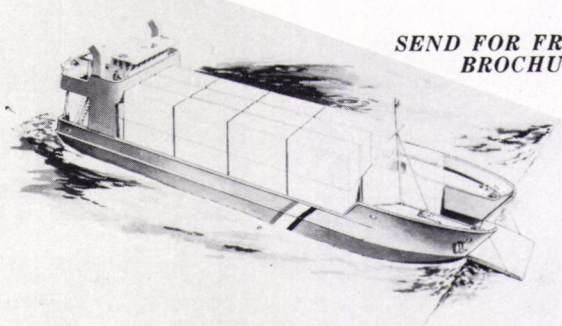
Mr. **MacMorran's** efforts covered the detailed portions of the paper, along with an elaboration of those illustrated in the accompanying slides. He treated well the technical aspects of the engine installation in the machinery space, its own performance requirements, as well as those of the ancillary systems needed. There was much more available in the literature made available to the members attending than could be adequately treated in the time allowed.

Subsequently, his presentation was supported by a question-and-answer period enthusiastically participated in by most of those attending. Another guest, and a fourth member of the team, **Ernst P. Jung**, marine manager for Sulzer Bros. USA in New York, assisted in answering the more technical aspects of the inquiries. The members' interests were further incited by the openness of the discussion, and it was apparent that many more of their questions were being answered in close groups with the individual speakers following the adjournment of the meeting.

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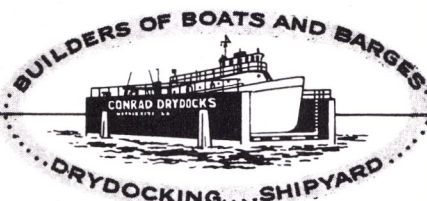


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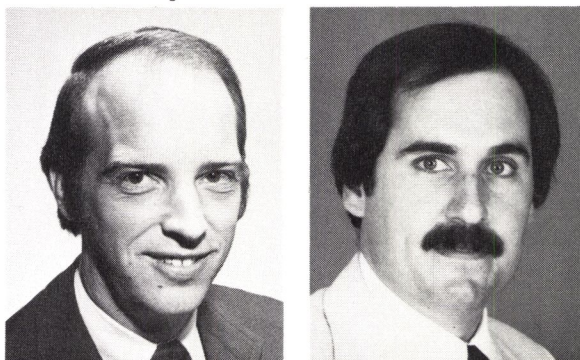
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Bostdorff And Morrison Named To Crowley Caribbean Division



Donald Bostdorff

Mark Morrison

Two appointments have been made in the Caribbean Division of Crowley Maritime Corporation, according to a recent announcement by Robert Homan, general manager of CMC affiliate Trailer Marine Transport Corporation, Jacksonville, Fla.

Donald Bostdorff has been named general manager of marine operations for the Caribbean Division, and Mark Morrison, Caribbean Division controller.

Mr. Bostdorff joined Crowley in 1969 and most recently served as assistant marketing director for Global-Transport Organization, a joint venture involving Crowley. Prior to that position, he was manager of marine operations for CMC's Alaska Division.

Mr. Morrison, a C.P.A., has been with Crowley since 1974, and was previously corporate cost accountant in Crowley's San Francisco, Calif., office.

Crowley's Caribbean Division operations include TMT, Gulf Caribbean Marine Lines, Inc., Interisland Intermodal Line, and CTMT, Inc.

Texaco Names Ambler Manager, Canada/Latin America/West Africa International Crude Sales Dept.

John D. Ambler has been appointed manager, Canada-Latin America-West Africa, in the International Crude Sales Department of Texaco Inc. In his new assignment, he will be located in New York City.

Mr. Ambler was graduated from Virginia Polytechnic Institute with a Bachelor of Business Administration degree in 1956. He joined Texaco that same year as a sales trainee in the Marketing Department-United States at Norfolk, Va. In 1965, he was appointed district sales manager in Baltimore, Md., and in 1968 staff assistant, executive sales, in New York. Following assignments in Chicago, Ill., and New York, Mr. Ambler was named general manager of Texaco Olie Maatschappij B.V. in Rotterdam, the Netherlands in 1972. He was appointed managing director of Texaco Oil A.B. in Stockholm, Sweden, in 1975.

Prudent Industries Acquires Lloyd & Scott

Prudent Industries Ltd., a Delaware corporation, has recently acquired 100 percent interest in Lloyd & Scott Brass Foundry, Inc., 22nd and Tatnall Streets, Wilmington, Del. 19802, a business which was incorporated in Wilmington in 1928. In its 50 years of existence, Lloyd & Scott Brass Foundry, Inc., has specialized in the manufacturing of non-ferrous castings for the marine industry. The company shall continue to operate as a wholly owned subsidiary of Prudent Industries Ltd., with the new management striving to upgrade and modernize the foundry's facilities.

ZAPATA

**PROJECT INSPECTOR—MACHINERY
Marine (ULCC) Construction**

Zapata Bulk Transport has an immediate opening for a machinery inspector experienced in marine construction. Maritime academy graduate preferred. Sea-going experience and Marine Engineer's license required.

Successful applicant will be responsible for onboard inspection of all machinery installation and tests, including deck and cargo machinery. Responsibilities also will include drawing reviews and approval, test memo review and approval, and vendor equipment inspection and approval.

Base of operations will be Newport News, Va. for duration of project (August 1979). Relocation costs paid, attractive salary, and excellent benefits.

Send resume to B. R. McCarn, Corporate Director of Employee Relations, Zapata Corporation, P. O. Box 4240, Houston, Texas 77001.

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Must be familiar with marine electrical power systems, marine electronic systems, and shore-based industrial electrical distribution systems. Knowledge of domestic and foreign-flag commercial and military vessels is desired. Electrical engineering degree also desired. All basic benefits, plus six weeks' vacation and company-paid insurance and pension plans.

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Major international oil company is seeking an individual for design and construction department.

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Salary commensurate with experience. Qualified candidates should reply in confidence to:

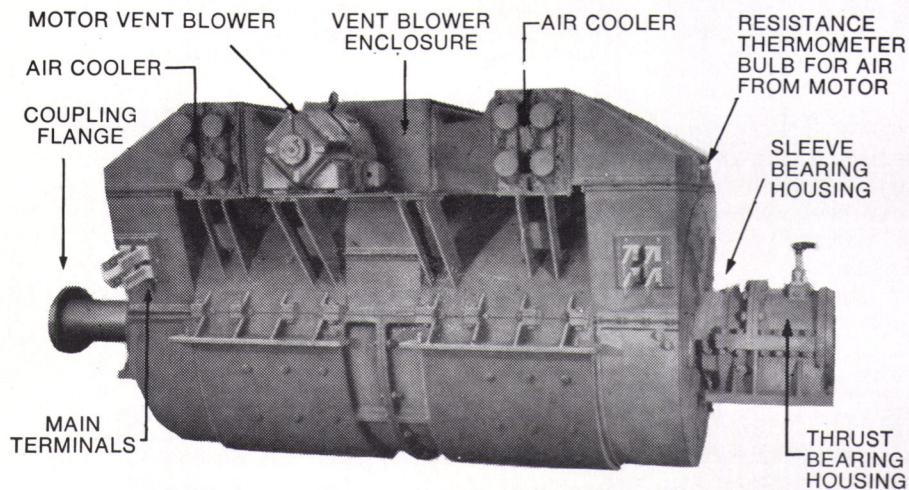
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Marine Department
P. O. Box 7880
Bala-Cynwyd, PA 19101
Attn: Mr. W. F. Muir

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1 only—3 Drum CLYDE HOIST

Model 10 with Swinger

ADDED FEATURES

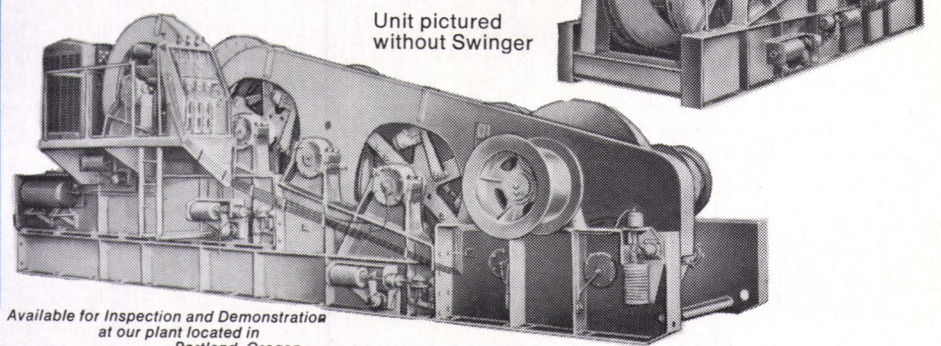
POWER: G.M. 8V-71 Diesel with 3 Stage Torque Converter 11,500 series and Air Compressor.
OP. CONTROLS: All Air, Air Paul and Air Friction Brakes with Controls console mounted at operators stand.
CLUTCH: Internal expanding band friction, two shoes, 50" dia. and 6" wide.
BRAKES: External contacting, single band, two piece construction, 57" dia. and 7" wide.
BEARINGS: Drums are taper roller bearing mounted. All shafts turn in Anti-friction bearings.
SWINGER: Two drum attached type with slack take up.

Less than 1,000 Hours operating time on Unit—Ready to work NOW!

HOIST SPECIFICATION

MODEL: Frame 10—3 drum with 2 drum swinger.
LINE PULL: 30,000 Lbs.
DRUM SIZE: Dia. 25"—lgh. 36"—Flgs. 57"
DRUM CAP.: 4170 Ft. of 1 1/2"
3500 Ft. of 1 1/4"
RATING: 37,500 lbs. S.L.P. at 150 FPM—
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This Unit is in **EXCELLENT CONDITION**—
Ready to work **NOW**—THE PRICE IS RIGHT!



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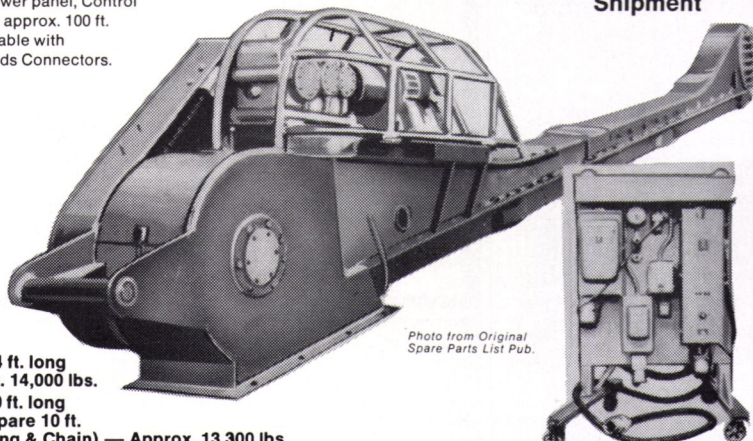
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Each with 75 HP, TEFC Motor, 220/440 volts, 3 phase, 60 cycle and Twin Disc Fluid Coupling and Gear Reducer.
Model: 14.5 HCMR-16.

CAPACITY: Up to 150 Tons of Wheat per hour (prox. Max. Material Size 2" to 3").

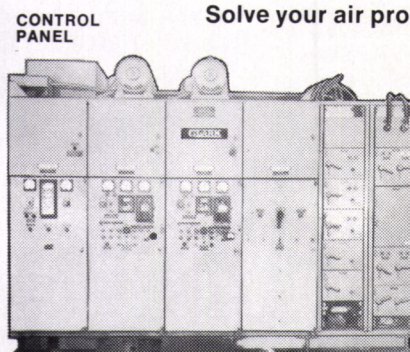
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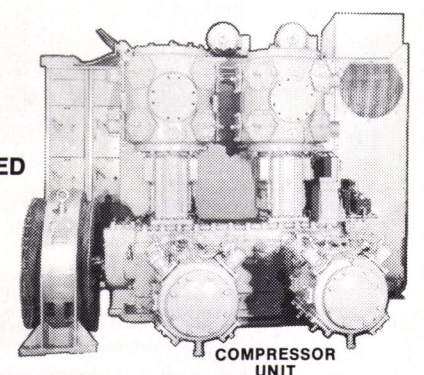
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Hugh Sturdivant

Sales Manager, Marine & Industrial Sales Div.

Phone: 503/228-8691

Telex: 36-0503 • Cable: "ZIDELL"

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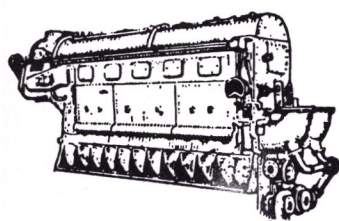
Contact: Hugh Sturdivant

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MARINE DIESEL GENERATORS

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

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

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

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

Many other units in stock

TURBINE GENERATORS—AC and DC Voltage

A. C.

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

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

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

D. C.

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

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

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

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

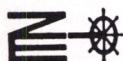
1 — 300 KW, ALLIS-CHALMERS Turbine, 440 PSI, 470 HP, 8000 RPM, with Allis-Chalmers Generator, 300 KW, 240/240 Volts DC, Type HO, 1200 RPM.

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

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

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

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Size A1	Size A5	Size A12
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3—INGERSOLL - RAND, Size 5x5x4x4, 50 CFM, 150 PSI, with G.E. Motor, 20 HP, 440/3/60.

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

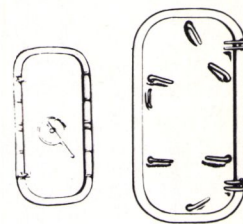
2—WORTHINGTON, 20 CFH, 3000 PSI, 4 stage, 585 RPM, with Worthington Steam Turbine, 47 HP, 5502 RPM.

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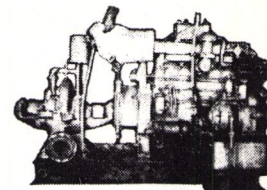
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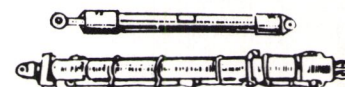
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FIRE PUMPS



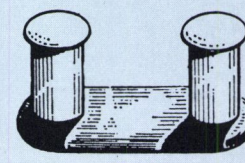
2—BUDA, Model 6-LD-468, Diesel Engine: 6 cylinders, 100 BHP, Marine, Gardner Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280' head, 6" suction and 5" discharge.

HYDRAULIC CYLINDERS

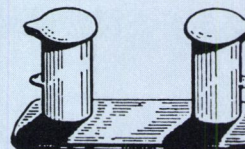


Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
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10"	26"	3.75"	58 1/2"	double
2"	8"	1 1/2"	20"	double
2.5"	15"	1.12"	25 1/2"	double
3"	8"	1.37"	15 1/2"	double
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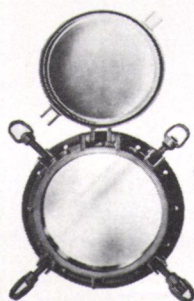
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NEW 2200 HP HAWSER TUG: 80'x27'x12', ABS specs, 16-149 GMs, 40 KW gens, Dec. delivery \$680,000.

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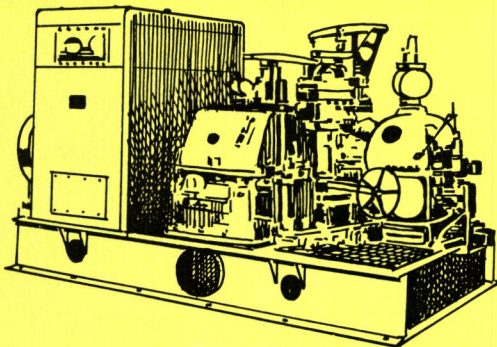


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750 KW GENERAL ELECTRIC TURBO GENERATOR UNIT

Turbine: Type FN3-FN24, seven (7) stage, 10033 RPM. **Reduction Gear:** Single helix, single reduction, 10033/1200 RPM. **Generator:** 750 KW, Type ATI, 450 V, 3 phase, 60 cycle. Steam conditions 525 lb. psi gage at 825 degrees F. total temp. at throttle and one (1) lb. psi absolute back pressure at turbine exhaust flange.

600 KW GENERAL ELECTRIC TURBO GENERATOR UNIT

Turbine: GE type FN, 6-stage, 10,033 RPM. **Reduction Gear:** GE triple-helix, triple reduction, 10033/1200 RPM. **Generator:** GE type ATI, 600 KW, 6-pole, 0.8 pf, 450 VAC, 3 phase, 60 cycle, 1200 RPM. **Exciter:** GE type MPLI, 7.5 KW, 120 VDC, direct connected. **Air cooler:** Surface type, for generator, complete with control panel.

538 KW WESTINGHOUSE TURBO GENERATOR UNIT

Complete with L.O. Coolers and exciters. **Turbine:** Westinghouse 538 KW, 5010 RPM. Inlet pressure 435 psi. Temp. 750 degrees F. TT. Exhaust pressure 28 1/2 hg. vac. **Generators:** (1) 400 KW, 450 VAC, 3 pole, 60 cycle, PF 80%, 1200 RPM, ship's service. (2) 32.5 KW, 125 VDC, 1200 RPM, variable voltage exciter. (3) 110 KW, 125 VDC, 1200 RPM, constant voltage generator. (4) 5 KW, 125 VDC, 1200 RPM, ship's service Generator-Exciter. **Reduction Gear:** Ratio 5010/1200 RPM.

535 KW GENERAL ELECTRIC TURBO GENERATOR UNIT

Complete with L.O. Coolers and exciters. **Turbine:** General Electric Mfg. drawing P-8453535, 3 stages, type DORV-325, 5645 RPM, rating 535 KW, inlet pressure 590 lbs., Superheat 325 degrees F., exhaust pressure 1 1/2 ABS. **Reduction Gear:** General Electric, type S-162-D, Class, 535 KW, Mfg. dwg. T-8453535, 5645/1250 RPM. **Generator:** General Electric, Dwg. T-8453535, type ATB-976, KNA 500, 450 volts AC, 3 phase, 60 cycle, 400 KW, 642 amps, 1200 RPM, PF .8, Frame 976, Exciter 120 volts DC. Control panel: General Electric, Dwg. 6367270, Type XF-100492, 6 circuits, 450 volts AC.

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ABS, 6275-31, AB-142-WD-8-10-44, 1701461
T8604259, 6275-31 67-KU-102032, A853BY 21 Jan. 1967.

5400 KW WESTINGHOUSE TURBINE ROTOR

ABS report 66KU11942 A853B, 6 Sept., 1966,
Marks: 6275-45. AB-142 WD9-30-44, 170-1467, 8604259-1, 6275-45.

5400 KW ELLIOTT TURBINE ROTOR

ABS, 67-LA9644-830, AB-JCB-3-31-67, 9013039-9230P1, 66-KU-11895, A853 1071941, AB142 WDG-4-45.

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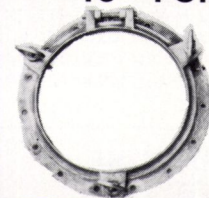
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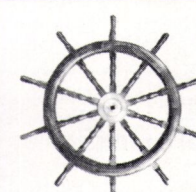
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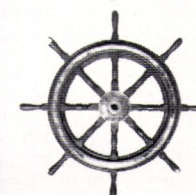
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Anchorage Marine Services Incorporated, 844 Biscayne Boulevard, Miami, Florida 33132

J.L. Blutworth, P.O. Box 5217, Houston, Texas 77012

Boquer & Associates, P.O. Box 30184, New Orleans, La. 70190

Breit & Garcia, Naval Architects, 441 Gravier St., New Orleans, La. 70130

CADCOM Inc., 2024 West St., Suite B, Annapolis, Md. 21401

R.A.CADY-Marine Survey Practice, 2301 Leroy Stevens Road, Mobile, Ala. 36609

Catalina National, Inc., 1725 Monrovia Ave. (Suite A4), Costa Mesa, CA 92627

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Schottel of America, Inc., 21 N.W. South River Dr., Miami, Fla. 33128

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Jim's Pump Repair Co., 165-20 Chapin Ct., Jamaica, N.Y. 11432

Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

Terry Corporation, P.O. Box 1200, Windsor, CT 06101

Worthington Pump Inc., P.O. Box 1250, Mountainside, N.J. 07092

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Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602

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Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edoberi 1-Chome, Nishi-Ku, Osaka, Japan

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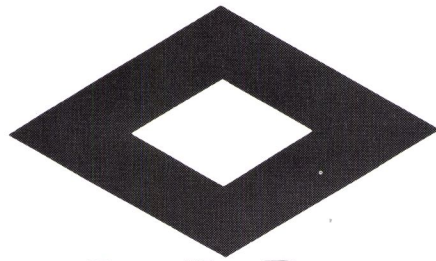
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