

MARITIME REPORTER AND ENGINEERING NEWS

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**VLCC Texaco Caribbean
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(SEE PAGE 11)

MAY 15, 1977

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Conoco And Mitsui Group Verify Feasibility Of Floating Methanol Plant

The technical and economic feasibility of a floating methanol plant has been verified in a joint study by Continental Oil Company (Conoco), High Ridge Park, Stamford, Conn. 06904, and a Tokyo group of Mitsui companies consisting of Mitsui & Co., Ltd., Toyo Engineering Corporation, and Mitsui Engineering and Shipbuilding Co., Ltd.

The concept was advanced as a means of developing natural gas reserves in remote offshore areas. Such a floating plant would convert natural gas into the liquid, methanol, at the production site for transshipment by tankers.

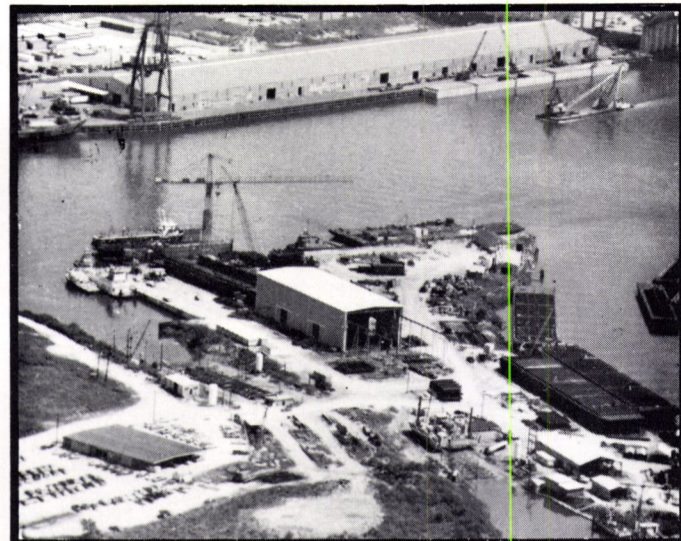
In a joint announcement, the firms said they have been proceeding since March 1976, with a study on a plant of 2,200-ton-per-day capacity. "This study, which is almost complete, confirms that a floating plant is technically feasible and more economical than land-based construction," they stated.

Their research stemmed from earlier studies performed separately by Conoco and the Japanese group. Conoco's studies, initiated in 1972, sought development of methods to develop gas fields too remote or too small to justify pipeline installations to shore. Studies by the Japanese group in 1974, based on a 1,000-ton-per-day plant, "obtained satisfactory results as to its technical and economic possibilities."

The joint study covered delivery systems to the plant, the question of converting a used tanker or building a new barge, detailed design of plant and vessel, transportation of methanol products, and potential methanol utilization.

The group listed three key advantages: where pipeline construction is uneconomic such a plant could be transferred from field to field; it could be built to exacting specifications in a shipyard, avoiding potential delays and the difficulties and higher costs of building a facility in a remote offshore area; and it would obviate the need for large investments in harbors, roads and related shore facilities.

Both Conoco and the Mitsui group are considering the possibility of making more definitive studies, especially of aspects not considered in detail in the study.



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**MARITIME
REPORTER
AND
ENGINEERING NEWS**

No. 10

Volume 39

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Do you have these common complaints about pumps for crude, resid, petrochemicals, refined petroleum products, viscous and non-Newtonian fluids?

- 1) There's no way to change capacity.
- 2) Efficiency could be better.
- 3) They run so hot that you have to cool them.
- 4) When you want them to run really hot, there's no easy way to heat them.
- 5) You're in trouble when they lose their prime.
- 6) Noise and maintenance are real problems.

Now there is a way to change capacity

GTS (geared twin screw) pumps from De Laval have many features which correct or bypass these difficulties. Take capacity, for example. The plot at right shows flow rate vs. speed for the five casing sizes available. What is important is that within each casing size, there are 4-6 capacities available.

casing size	nominal capacity (USgpm*)
133	100-950
208	400-2900
268	1300-4500
320	2500-5800
400	3400-9000

* $\Delta P=0$

Capacities can be changed just by changing screw sets (since the capacity of a screw pump depends on the lead of the screws). GTS pumps also give you the opportunity of specifying reversibility with full rated flow in either direction.

And you can get increased efficiency

Several design and manufacturing features increase economy of operation of GTS pumps. First, the thread profile is a double epicycloid which minimizes internal slip. This adds efficiency points to any calculation. Second, since the profile is symmetrical, tighter machining tolerances are possible. This increases

suction capability and adds to the overall integrity of design. And finally, timing gears are alloy steels, hardened and ground to reduce friction losses still more. All this adds up to fewer kilowatt hours used over the year.

Temperature control is possible too

Other design features make GTS pumps easy to keep cool or hot, as you desire. These are oversized bearings, the high efficiency timing gears and an extra-large oil reservoir which dissipates heat without the added expense of an external lube cooling system. But if you do want your pump to run hot to maintain fluidity, an integral heat chamber cast into the case can be readily adapted for either steam or hot oil. Complete steam jackets are also available for operating temperatures up to 600°F.

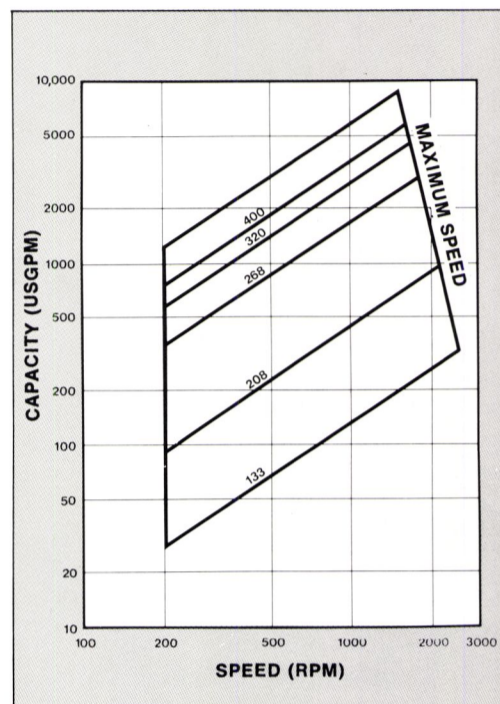
You don't have to lose your prime

Unlike conventional two-screw pumps, De Laval GTS pumps do not drain completely even if suction lines are evacuated. Fluid retained in the pump keeps screws wetted and lets full suction develop at all times. (For product change-over, there is a plug which permits complete draining.)

If the pump is run dry as in stripping tanks, retained fluid cools and lubricates the seals and packing, preventing damage to shaft or seals. No damage to the screws occurs either, since there is no metal-to-metal contact between the pumping elements. This last feature lets GTS pumps handle water and fluids of low lubricity and high vapor pressure.

There's no need to shout when this pump is running

The lack of direct screw contact and the unique profile of the screws which



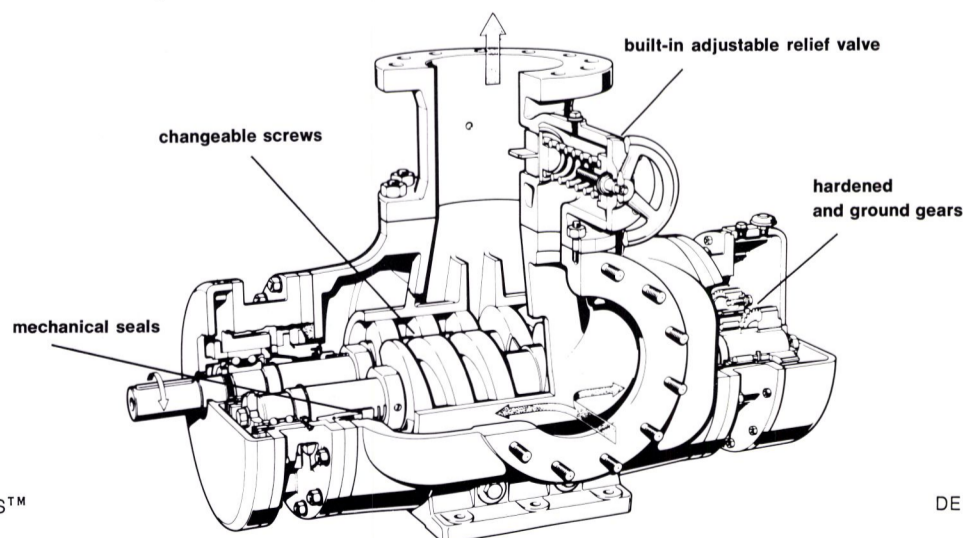
minimizes fluid shear do a lot to reduce noise. GTS pumps operate below 85 dB(A). This has significance not just for OSHA compliance but also for keeping your neighbors friendly.

There's no need to shout at it either

Maintenance of GTS pumps is really low. If you're skeptical, ask our other customers. Shaft end angular contact ball bearings are grease-lubricated, timing gears and heavy duty roller bearings are oil bath-lubricated. All bearings and gears are external to the fluid being pumped. Mechanical seals are standard and if you need them, you can get tungsten carbide facings for abrasive duty. (Double mechanical seals and stuffing boxes are also available.)

Summing things up, if you need a pump to handle viscosities up to 4,500,000 SSU at discharge pressures up to 300 psig, capable of tolerating suction pressures up to 100 psia and suction lifts up to 26" Hg — a pump that comes in horizontal, vertical and deep well configuration, that's efficient, versatile and not overly demanding of maintenance, that offers the reliability of IMO® three-screw pumps — it will pay you to find out more about the line of De Laval GTS pumps. For information, write IMO Pump Division, De Laval Turbine Inc., POB 321, Trenton, NJ 08602, or call 609: 587-5000.

DEVAL



GTS™

DEL306A

Dravo Corporation Names M.B. Meyer And J.J. Burke

M. Bruce Meyer has been appointed regional vice president, Far East, for Dravo International, with responsibility for spearheading and coordinating Dravo Corporation's marketing activities in that area.

J.J. Burke, formerly Dravo's regional marketing manager, Far East, will assist Mr. Meyer as general marketing manager.

Mr. Meyer was appointed Dravo's corporate representative in the Philippines a year ago, following 28 years with Exxon Corp., primarily in the Far East. He has had extensive general management and marketing experience in the Philippines as vice president and director, Esso Philippines, as well as in Japan, Taiwan, Hong Kong, India, Australia, Malaysia and Pakistan. He will be headquartered in Manila.

Mr. Burke has been with Dravo for 15 years, primarily in engineering, sales and project management for the company's Engineering Construction Division. A graduate of the University of Pittsburgh, he will be headquartered in Jakarta, Indonesia.

Based in Pittsburgh, Pa., Dravo is a diversified engineering, construction and manufacturing firm involved in power generation, pollution control, chemical process-

ing, petroleum, mining, minerals and metals processing, heavy construction, bulk materials handling, urban development, river transportation and shipbuilding.

Hitachi Zosen Creates New Ship Conversion Planning Department

To strengthen its service capabilities to shipowners the world over, Hitachi Zosen has recently established a Ship Conversion Planning Department as part of the Administration Division of the Shipbuilding Headquarters. The new department began operations on April 1, 1977.

The new department is organized specifically to meet shipowners' fleet diversification requirements through ship conversions. For this purpose, Hitachi Zosen's technologies and capabilities in the design and construction of new ships will be fully and effectively utilized.



Saburo Iwasaki

Director Saburo Iwasaki, general manager of the Ship Administration Division, will serve concurrently as manager of the new department.

The Ship Conversion Planning Department will (1) prepare designs based on shipowners' conversion requirements and supply shipowners with plans, in close coordination with Hitachi Zosen's sales divisions and its network of overseas offices and agencies, and (2) establish a centralized information control system based on shipowners' requests and compile same using Hitachi Zosen's stock of data on design, cost estimates and construction records from the company's works and shipyards. This will greatly enhance the company's business capabilities and allow it to respond speedily to shipowners' requirements.

DeLong Corp. Receives \$1,600,000 Barge Award

DeLong Corporation, 29 Broadway, New York, N.Y. 10004, is being awarded a \$1,664,988 time and material contract for rehabilitation of two barges for transportation to overseas operation in connection with the United States Army Europe Project. Work will be performed at Galveston, Texas. The St. Louis Engineer District, St. Louis, Mo., is the contracting agency.

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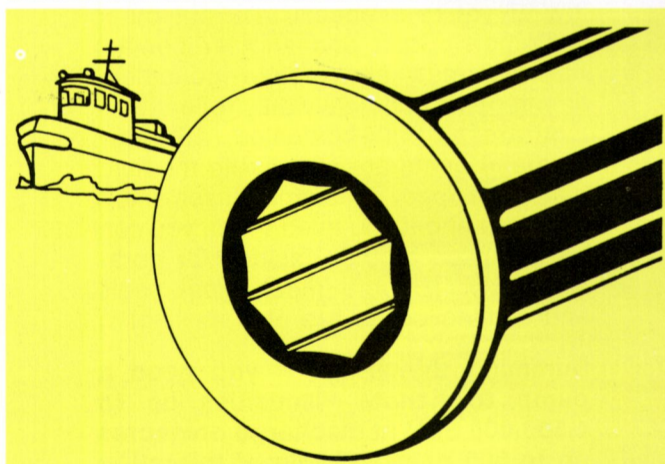
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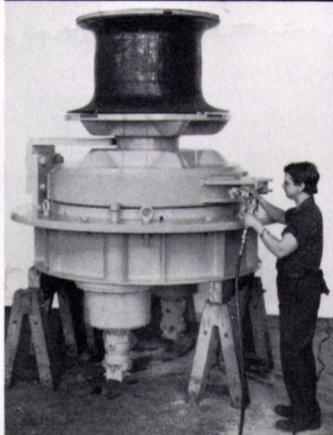


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How To Lift a 12,400 lb. Anchor With Your Finger



When Avondale Shipyards of Louisiana needed two heavy-duty capstan windlasses for a C.F. Industries bulk cargo barge, they called New England Trawler Equipment Company. Each of these 17,000 lb. brutes can lift a 12,400 lb. anchor from 165 fathoms, driven by a central electro-hydraulic power unit with infinitely variable, remote

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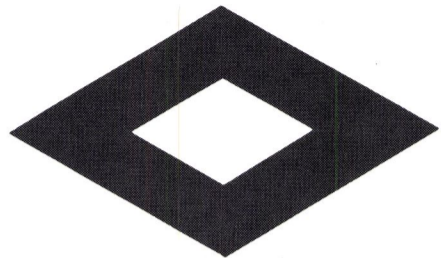


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Title XI Requested For 165,000-DWT Tankers Building At Avondale

Two subsidiaries of IOT Corporation—Shipco 2297, Inc., and Shipco 2298, Inc., 1400 Three Parkway, Philadelphia, Pa.—have applied for Title XI guarantees to aid in financing the construction of two 165,000-dwt segregated ballast tankers under construction at Avondale Shipyards, Inc., New Orleans, La.

Each vessel is scheduled for delivery in 1979. They will be 906 feet long, 173 feet abeam, and have operating drafts of approximately 55 feet. They will require 26 crewmen each, and are estimated to cost \$92,225,000 each.

The vessels will be operated by Interocean Management Corporation to carry crude oil from Valdez, Alaska, to the U.S. West Coast for the Standard Oil Company of Ohio (SOHIO). It is estimated that 23.5 round trips will be made per year.

Moody Offshore Asks Title XI Guarantee For Tug/Supply Vessel

Moody Offshore, Inc., 702 Moody National Bank Tower, Galveston, Texas, has applied for a Title XI guarantee to aid in financing the construction of an offshore service vessel, the M/V Java Seal, a 2,500-hp oceangoing tug/supply vessel.

The application supersedes an earlier one submitted by Moody on September 11, 1975. The depreciated actual cost of the vessel, which was delivered May 14, 1976, by Rockport Yacht and Supply Company, Inc., Rockport, Texas, is \$2.2 million. It has dimensions of 185 feet by 38 feet by 15 feet and is rated at 263 gross tons.

The Java Seal will be operated by Sealcraft Operators, Inc. in the worldwide offshore drilling trade. Moody Offshore is owned by **Robert L. Moody** of Galveston. Sealcraft and other affiliated organizations own and operate 13 offshore supply vessels.

Literature Describes Solid State Salinity Indicating System

A new compact and low-priced Galbraith Pilot-Marine Solid State Salinity Indicating Panel designed to measure and monitor the amount of salt or chlorides dissolved in water is being marketed by Marine Electric RPD, Inc., 166 National Road, Edison, N.J.

The GPM Salinity Indicating Panel incorporates a solid-state design and should prove extremely valuable in the field of water purification and treatment. The unit is equipped with a remotely installed sensing cell and con-

stantly monitors the saline concentration. Local and remote alarms are triggered when the salinity concentration reaches a preset level. The unit also automatically dumps contaminated fluids during alarm conditions.

Among the many features of the GPM new Salinity Indicating Panel are its high accuracy due to automatic temperature compensation and a built-in voltage

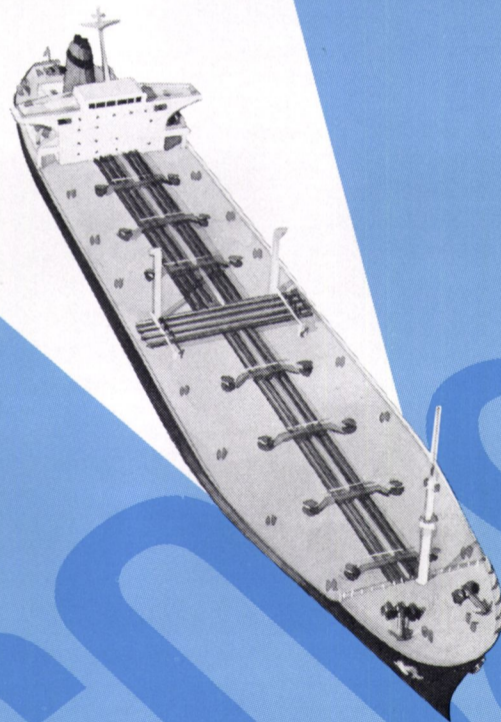
control regulator which keeps readings accurately during power-line variations. The unit, which can be flush and bulkhead mounted, provides meter readings in grains per gallon, parts per million or thousand, equivalents per million and megohms per cubic centimeter micromohms.

The GPM Salinity Indicating Panel, which is totally enclosed in a die-cast frame with front

panel resistant to abrasion, requires no maintenance and should prove valuable for use with evaporators and saline water conversion plants, boiler feed and condensate systems, reactor systems and powerplants.

Literature describing this new GPM Salinity Indicating Panel is available from **Robert Sterns**, Marine Electric RPD, Inc., 166 National Road, Edison, N.J. 08817.

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Camlock Appoints Alexander Industries

Alexander Industries, Inc. has been appointed exclusive sales agent for Camlock Flange Sales Corp. (C-L Couplings), covering the area of Texas, Louisiana, Mississippi, Arkansas, and Alabama.

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through in the connection of industrial size hoses used for the transfer of chemicals, petroleum products, food, water, waste products, fertilizer, cement and a multitude of other bulk products in liquid, powder, slurry and gaseous form.

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The C-L Coupling is vibration proof, tough and dependable in sizes from 2 inches to 27 inches in variety of materials with "O" rings for any application, and

also corrosion resistant and factory tested at 450 psi. ASA flanges are available on special order, as are special cryogenic C-L couplings usable to 320°F, all approved by governmental agencies and regulatory bodies throughout the world and meeting all requirements of the United States Coast Guard.

Alexander Industries will represent the C-L Coupling line through its offices in New Orleans, La., and Houston, Texas.

For further information, contact **R. Curtis**, Alexander Industries, Inc., 1901 Julia Street, New Orleans, La. 70113.

George Manchester Joins Uniflite, Inc.



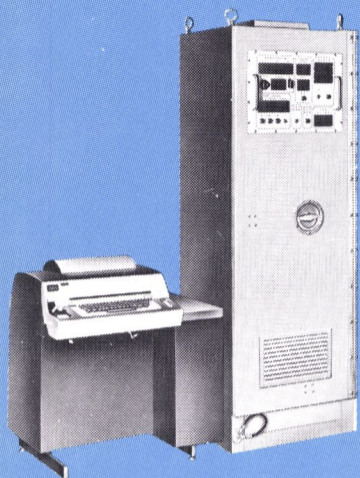
George H. Manchester

George H. Manchester has joined Uniflite, Inc., fire-retardant fiberglass boat manufacturer headquartered in Bellingham, Wash., as manager of commercial and military sales, according to **Alva M. Hill**, vice president of marketing. The company has a second plant in Swansboro, N.C.

Mr. Manchester has responsibility for worldwide sales of Uniflite boats 18 to 56 feet for a wide variety of commercial and governmental applications, including fishing, law enforcement, rescue, firefighting, medical emergencies, sightseeing and excursions, and special purpose-military assignments.

Uniflite boats comply with the U.S. Coast Guard regulations that require fiberglass vessels under 100 gross tons that carry more than six passengers for hire to be constructed of fire-retardant resins. It is also the only line of boats qualifying for classification and labeling by Underwriters' Laboratories (UL), attesting to the fire retardance and strength of the hulls. The company is also the largest builder of fiberglass boats for the U.S. Navy.

Mr. Manchester comes to Uniflite following three years as president of Offshore Marine, Inc., also Bellingham, a builder of sport and commercial fishing boats. Prior to that, he spent almost 20 years with Black and Decker Mfg., in several capacities, including regional sales manager, industrial construction project management, and sales development training. Earlier, he was with Porter Cable Machine Co.



would you buy it?

Because the last thing you want is costly ship breakdowns, the first thing you need is a Litton MTAS-1000 computer-based Marine Trend Analysis System. Originally designed for military applications, the MTAS has proven its dependability and operational capabilities in the rugged marine environment. Here are some of the ways the Litton Trend System will go to work for you.

It will guide the ship's engineer in setting up the steam propulsion plant to operate at peak efficiency. This will not only save on fuel, but will also significantly reduce the time in getting underway.

During the voyage, the MTAS will continuously monitor the performance of the overall power plant and associated machinery to detect any deviation or degradation from the norm, sufficiently early to avoid plant failure. Hard copy diagnostic print-out also provides direction for convenient preventative maintenance action.

Its network of sensors continuously accumulates data from the boilers, propulsion turbine, condenser, feedwater pumps and heaters, forced draft fans, electric power turbogenerator, lubricating oil systems and other important machinery. It will even detect an excess rate of marine growth accumulation on the ship's hull.

The system has been so designed with proven, advanced concepts of self-test so that no special skills are needed to operate or maintain it.

The Litton MTAS-1000 is designed primarily to avoid costly breakdowns and to cut ship operating costs. This advanced system can be expanded to include a machinery alarm system, a tanker cargo load monitoring system, and an integrated navigation and auto-pilot system.

For further information on the Litton MTAS-1000 Marine Trend Analysis System, please contact the Automated Marine Systems Department, at either of these locations: 21101 Oxnard Street, Woodland Hills, California 91364, U.S.A., Telephone: (213) 887-2015, TWX: 910-494-4860; 25 City View Drive, Rexdale, Ontario, M9W 5A7, Canada. Telephone: (416) 249-1231, TWX: 610-492-2210-2.



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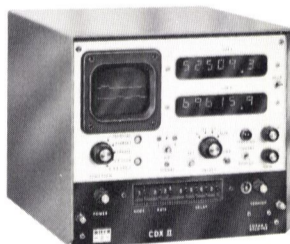
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Payment of principal and interest will be guaranteed by the United States of America under Title XI of the Merchant Marine Act, 1936, as amended, which expressly provides that: "The full faith and credit of the United States is pledged to the payment of all guarantees made under this title with respect to both principal and interest, including interest, as may be provided for in the guarantee, accruing between the date of default under a guaranteed obligation and the payment in full of the guarantee."

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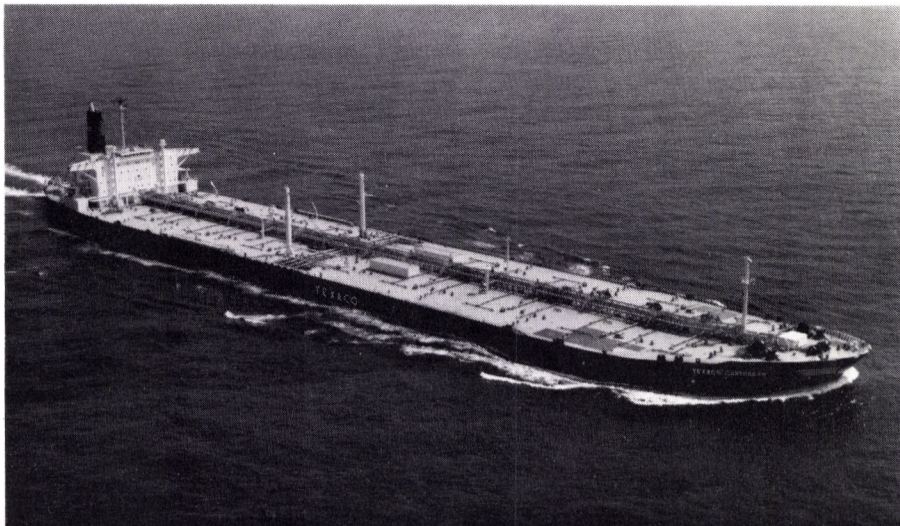
Wm. E. Pollock & Co., Inc.

Stuart Brothers

**Kidder, Peabody & Co. Incorporated is sole Underwriter of the Notes.*

April 15, 1977

IHI Delivers 269,800-DWT Texaco Caribbean



The Texaco Caribbean, fitted with special tanks for the onboard retention of oil residues, will be operated under long-term contract by Texaco Panama Inc., a wholly owned subsidiary of Texaco Inc.

The Texaco Caribbean, a very large crude carrier (VLCC) of 269,800 deadweight tons, built for the fleet of Texaco Panama Inc. by IHI (Ishikawajima-Harima Heavy Industries Co., Ltd.), was christened recently in ceremonies at the IHI shipyard in Kure, Japan.

The vessel was delivered last month and will be operated under long-term contract by Texaco Panama Inc., under the Panamanian flag. Texaco Panama, a wholly owned subsidiary of Texaco Inc., is engaged in worldwide marine transportation, as well as marketing in the Republic of Panama.

Sponsor of the Texaco Caribbean was Mrs. Jack C. Williams, whose husband is vice president in charge of Texaco's Refining Department — United States.

The Texaco Caribbean has an overall length of 1,105 feet, a breadth of 179 feet, and a loaded draft of 69 feet. The ship is powered by steam turbines developing a maximum of 40,000 shaft horsepower. The loaded service speed will be 16 knots.

The new Texaco VLCC is equipped with an inert gas system to maintain a nonflammable and nonexplosive atmosphere in its cargo tanks. The vessel features the latest electronic navigational aids, including a sonar/doppler system designed to improve safety when anchoring or docking. Texaco has been an industry leader in the installation of this system.

The Texaco Caribbean is also fitted with special tanks for the onboard retention of oil residues. The tanks used for ballast are extensively coated to protect against corrosion.

The Texaco Caribbean will join one of the world's largest tanker fleets. Texaco Inc. and its subsidiaries own or operate under term charter about 160 oceangoing tankers totaling approximately 17.3 million deadweight tons.

The addition of the Texaco Caribbean brings the total number of oceangoing tankers owned

or operated under bareboat charter or operating contract with Panamanian registry by Texaco Panama to 33 ships, totaling 3,827,960 deadweight tons. In terms of deadweight tonnage, the size of this Texaco Panama fleet has more than tripled over the past five years. In 1971, the total deadweight of these tankers in the Texaco Panama fleet, representing 28 ships, amounted to 1,181,354 tons.

The Texaco Caribbean has a cargo capacity in excess of two million barrels, which is enough to power an average-size electric power generating plant of 50,000 kilowatts continuously for two and one-half years.

Texaco petroleum products have been sold in Panama since 1938. Texaco Panama markets a complete line of Texaco products through its own wholesale and consumer organization, as well as through a network of retail service stations. Texaco Panama is also engaged in sales to the aviation and marine trades.

A sistership of the Texaco Caribbean, the Texaco Veraguas, was delivered to Texaco Panama by IHI in 1976.

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The floating drydock was designed by J.J. Henry Co., Inc., New York naval architects and marine engineers. Keel-laying for the drydock is scheduled for June 1977, and construction and outfitting will require approximately 15 months. Delivery to Norshipco is expected in late 1978. Towing the drydock from Ishibras's Rio de Janeiro shipyard will take about 45 days.

The annual drydocking and repair contract with El Paso Marine is for nine 125,000-cubic-meter LNG carriers, each approximately 940 feet long with a beam of 140 feet. The shipbuilder for the first three LNGs is Chantiers de France-Dunkerque, Dunkerque, France; for the second three, Avondale Shipyards, Inc., Avondale, La.; and the final three, Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

Norshipco president John L. Roper 3rd said he expects the firm's annual sales, currently \$54 million, to reach \$100 million in the next 10 years, and to be \$200 million within the next two decades, because of the new drydock. "We recognized that with the larger ships entering Hampton Roads, and with those on the drawing boards and under construction, it was necessary for Norshipco to expand our facilities to remain competitive in the world market," he said.

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The drydock will have the latest automatic cleaning and

painting equipment, assuring that high-quality work can be done very quickly. This equipment is designed to produce very little or no disturbance to the environment.

Norshipco currently has under construction a 1,030-foot-long concrete pier as part of the expansion of the Berkley plant. The new pier is being built by Tidewater Construction Corporation at a cost of approximately \$5 million, and is scheduled for completion in June of this year.

The drydock will be moored adjacent to the new pier and parallel to the channel of the Southern Branch of the Elizabeth River, allowing ships up to 1,200 feet long with a beam of up to 160 feet to enter the drydock directly without turning.

Norshipco expects the project to expand the yard's payroll extensively. "We look for our payroll, currently 2,200, to increase by 300 to 400 employees initially, and to exceed 4,000 persons by 1981," Mr. Roper said. Norshipco is currently the largest nongovernmental employer in South Hampton Roads.

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The El Paso Marine ships will be used to carry LNG from Arzew, Algeria to terminals in Cove Point, Md., and Savannah, Ga. Norshipco anticipates that starting in the spring of 1979 each of the nine ships will be in the Berkley yard for annual repairs.

Johnston Brochure Describes New Boiler

A new four-page full-color brochure about the specifications for the new Twin-Fire firetube boilers made by Johnston Boiler Company is now available. The Twin-Fire is a compact, high-capacity packaged unit capable of producing up to 69,000 pounds per hour steam output.

According to the company, the Twin-Fire offers simplicity of operation, low maintenance, and efficiencies of 85 percent without the aid of an economizer.

To order the free literature, write to Robert Shedd, Johnston Boiler Company, Ferrysburg, Mich. 49409.

Simrad Introduces New Depth Recorder

Simrad, Inc. of Armonk, N.Y., a world leader in marine electronic products, has just announced its new "Value Line" of depth recorders (fishfinders).

Labeled "Skipper," these new products greatly expand the recorder line of which Simrad has an established international reputation.

According to Simrad, the "Skipper" trademark will signify the highest quality obtainable at bud-

getary prices. Sales and service assistance will be from established Simrad dealers throughout the nation.

Initial offerings include the Model 2001, an 8-inch straight line recorder rated at 600 watts. Accurate recordings, down to 400 fathoms are obtainable over a selection of 12 depth ranges. For depths to 800 fathoms, the "Skipper" Model 2002 is suggested.

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

Thorne Hilts Named Ship Superintendent At Dillingham Ship Repair

Thorne Hilts has recently joined Dillingham Ship Repair, Portland, Ore., as ship superintendent, according to Scott Fitzwater, assistant general manager. He was formerly senior port engineer for the Pacific Northwest for American President Lines.

Mr. Hilts has previously been port engineer for Hendy International, Los Angeles, Calif., and served with the merchant marine

prior to that time, completing a number of maritime schools. They included Combustion Engineering School, Chattanooga, Tenn.; Turbine School, DeLaval Company, Trenton, N.J.; General Motors Diesel School, New Orleans, La.; U.S. Government Management School, Seattle, Wash.; and Laws School of Engineering, Oakland, Calif. Mr. Hilts received his chief engineer's license in 1957.

A past president of the Puget Sound Area Society of Port Engineers, Mr. Hilts currently serves on the board of governors of the Society of Port Engineers, Columbia River Area.

Sperry Vickers Names Edward H. Farnan



Edward H. Farnan

The appointment of Edward H. Farnan to the position of manager of marketing services has been announced by Sperry Vickers. He will remain at the firm's Troy, Mich., World Headquarters.

In his new position, Mr. Farnan will head Sperry Vickers's warehousing and forecasting departments. He has over 20 years of engineering and management experience and most recently served as warehouse operations manager.

Mr. Farnan holds a bachelor's degree in engineering from the University of Maine, and a master's degree in engineering from the University of Illinois.

Sperry Vickers, a division of the New York-based Sperry Rand Corporation, is a leading manufacturer of fluid power components for in-plant machinery, mobile equipment, aircraft, and marine applications.

Financial Aid Sought For Tug/Supply Vessel To Be Built By Halter

Offshore Supply Ships, Inc., 663 Farmington Place, Suite 101, Gretna, La., has applied for a Title XI guarantee to aid in financing the construction of a 2,700-bhp, twin-screw tug/supply vessel to be built by Halter Marine Services, Inc., New Orleans, La.

Estimated actual cost of the 199-gross-ton, 180-foot vessel is \$1.9 million. Offshore Supply—affiliated with Offshore Service

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Donald Rumsfeld Guest Speaker At Worthington Technical Awards Dinner Honoring Young Engineers

Young engineers, designers and researchers from the U.S., Canada, and Mexico received \$9,500 in prizes recently at Windows on the World in New York. The formal dinner concluded the first biennial Henry R. Worthington North American Technical Awards Contest, sponsored by the Polytechnic Institute of New York. Guest speaker was **Donald H. Rumsfeld**, former Secretary of Defense.

First prize of \$5,000 was awarded to Dr. **R.L. Evans**, British Columbia Energy Commission, Vancouver, B.C. Second prize of \$2,000 was awarded to co-authors **John F. Hurley** and **Edward O. Hartel**, AVCO Lycoming, Stratford, Conn. Dr. **Budugur Lakshminarayana**, Pennsylvania State University, received the \$1,000 third prize.

Honorable mention awards of \$500 went to Dr. **George F. Round**, McMaster University, Hamilton, Ontario; Dr. **Tommy Y.W. Chen**, Hydro-Turbine Division, Allis Chalmers, York, Pa.; and Dr. **Jimmy S. Chow** with **A.Y. Hou** and **L. Landwebber**, Westinghouse Research Labs, Pittsburgh, Pa.

More than 90 entries covering pump technology were evaluated by judges from three countries, for prizes of \$5,000, \$2,000 and \$1,000, and three honorable mention awards of \$500.

The awards commemorate Henry Rossiter Worthington, American inventor-engineer, who began his pump manufacturing firm in Brooklyn, N.Y., in 1840. He was also a founder of Polytechnic Institute.

The purpose of the awards contest is to encourage young engineers and technical experts to contribute to improvements in pump design, performance, operation and

maintenance. Worthington will publish the winning papers in book form.

The awards were presented by **Lee J. Topp**, president of Worthington Pump Inc., before an audience of 150 educators, scientists, engineers, industrialists, public officials and editors. The contest is modeled on the biennial Worthington European Technical Award, begun in Italy in 1967.



Pictured left to right at the First North American Henry R. Worthington Awards Dinner are **Lee J. Topp**, president, Worthington Pump Inc.; **Donald H. Rumsfeld**, former Secretary of Defense, guest speaker, and **George Bugliarello**, president of the Polytechnic Institute of New York.

Worthington Pump Inc. is the world's largest pump company, with 23 manufacturing plants throughout the world. It serves a broad spectrum of industries which, worldwide, represent a multibillion-dollar market. More than half of Worthington Pump's products are manufactured abroad or exported to customers outside the United States.

Matson Navigation Elects Shearer And Potter VPs

Burt A. Shearer and **Hobert O. Potter** have been elected vice presidents of Matson Navigation Company, it was announced by **R.J. Pfeiffer**, president.

Mr. Shearer is Matson's Pacific Northwest area manager in Seattle, Wash., and **Mr. Potter** is general manager of pricing in San Francisco, Calif.

Mr. Shearer started with Matson in 1946 after serving as a merchant marine deck officer. He held managerial positions in San Francisco and Honolulu, and in Taiwan with Matson's former Far East freight service before becoming Pacific Northwest area manager in 1972.

Mr. Potter joined Matson in Los Angeles in 1962, and later served in San Francisco and Honolulu before returning to San Francisco in 1967. He was named general manager of pricing in 1970.

Cooney Pipe & Copper Works Offers 60-Page Brochure On Marine Fittings And Valves

Cooney's Pipe & Copper Works, a division of Cunico Corporation, has published a new 60-page brochure. The company manufactures specialty nonferrous pipe fittings and piping system fabrications. Other Cunico products include heat exchangers, coolers, chillers and evaporators. Cooney also provides custom pipe bending and the repair of pipe systems, tanks, etc.

The new catalog includes drawings, applications, pictures, part numbers of Class 200, Class 700 and forged fittings in various nonferrous alloys, and information and diagrams for heat exchangers, condensers and special fabrications.

For a copy of the brochure, write to **William J. Mayrose**, Cooney Pipe & Copper Works, 214 North Hawaiian Avenue, P.O. Box 306, Wilmington, Calif. 90478.

Maritime Reporter/Engineering News

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Crouse Hinds — Cutler Hammer
Federal Pacific Electric Co.
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Pauluhn Electric Mfg. Co., Inc.
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**ASNE Pascagoula Section
Hears Technical Paper
On Marine Boiler Controls**

The March 1977 meeting of the Pascagoula Section of the American Society of Naval Engineers was held at the Tiki Restaurant, Gautier, Miss. The cocktail hour was followed by a business meeting, which included a reading of the financial statement and adjustments in assignments for the president's staff. Dinner was followed with a technical presentation on marine boiler controls.



Shown at the recent ASNE Pascagoula Section meeting, left to right, are: **Frank J. Burger**, secretary; **John W. Dirriwachter**, author; **A.C. LiCausi**, Section chairman, and **Tony Iacobucci**, treasurer.

The business meeting was chaired by **A.C. LiCausi**, Section chairman. The minutes of the January 25, 1977 meeting were read and approved.

Tony Iacobucci, treasurer, read the treasurer's report of January 25, and advised that the Pascagoula Section's cash on hand was \$520.

Mr. LiCausi stated that **Don Hall** would perform the functions of Membership chairman for the year 1977, and would be assisted by the following: **Jake Lindgren**, past chairman; **Capt. William E. McGarrah**, councilor; **Dr. Dean Rains**, councilor, **Frank Burger**, secretary, and **Zenas Andrews**, former secretary.

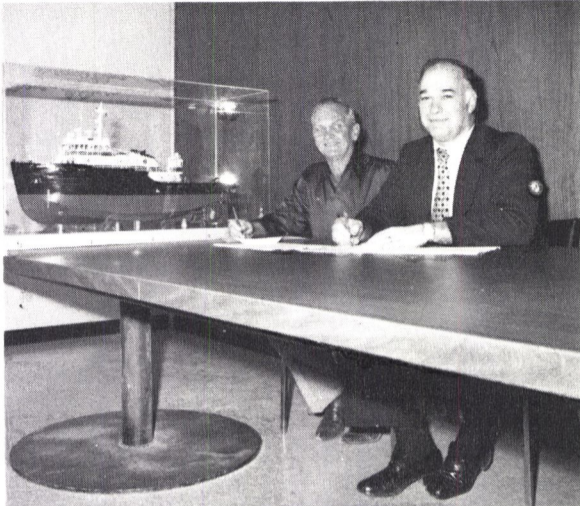
Publicity will be handled for the year by **Mr. Burger**, with assistance from **Mr. Hall**, **Captain McGarrah**, **Mr. LiCausi**, and **Mr. Eldridge**.

The technical paper, titled "The Evolution of Boiler Room and Engine Room Controls," was presented by **John W. Dirriwachter**, manager of engineering, General Regulator, Dallas, Texas. It involved a brief history of marine controls, accompanied by an extensive slide presentation concentrating heavily on the latest developments in the field of marine controls. It included a history from the 1930s, with varying developments through the 1940s, 1950s, and 1960s.



**Quality Equipment To Build
Two Supply Vessels For
Gulf Mississippi Marine**

Quality Equipment, Inc. of Houma, La., has announced a contract with Gulf Mississippi Marine of New Orleans for the construction of two 180-foot by 38-foot by 14-foot supply vessels. Both Quality and Gulf Mississippi are divisions of Pott Industries of St. Louis, Mo.



Max Harding, president of Quality Equipment, and **Lavell Isbell**, president of Gulf Mississippi Marine, sign a contract for two 180-foot by 38-foot by 14-foot supply vessels. Model of Gulf Duke, also built by Quality, is in the background.

The vessels, scheduled for delivery in July 1977 and September 1977, are powered by EMD 12-E2s with Reintjes 3:1 gears.

Six 1,000-cubic-foot mud tanks will allow these vessels to carry more mud than the normal supply vessels.

Each vessel will be USCG inspected and classed by ABS for full ocean service.



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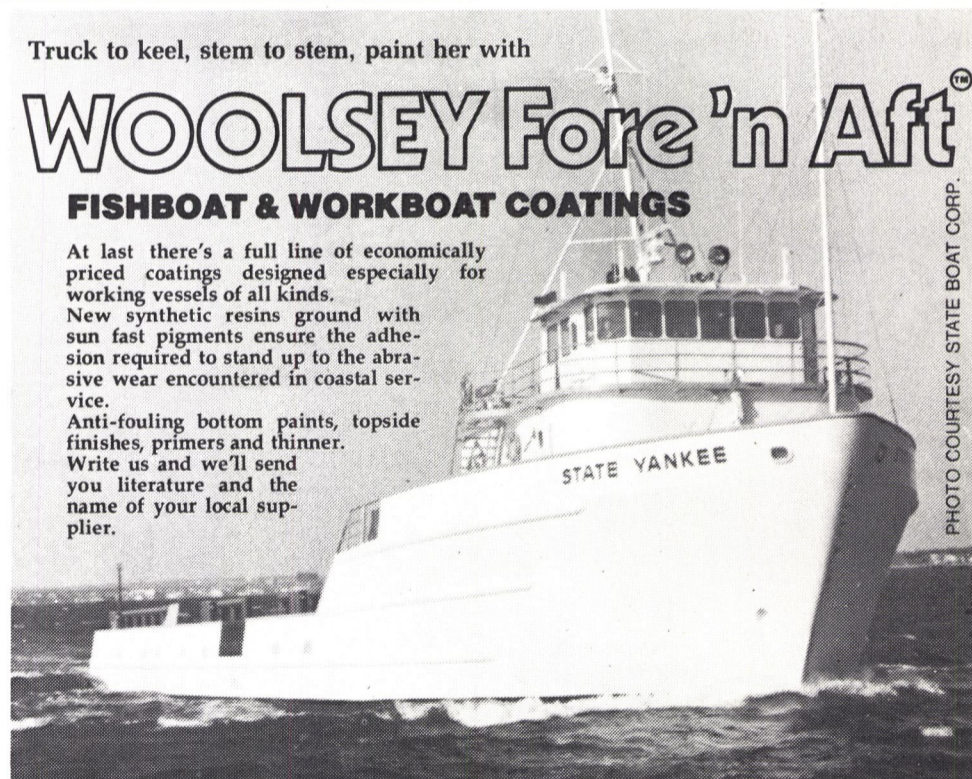


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Woolsey Marine Industries, Inc.
100 Saw Mill Road, Danbury, CT 06810

Simrad Introduces New Depth Recorder

Simrad, Inc. of Armonk, N.Y., a world leader in marine electronic products, has just announced its new "Value Line" of depth recorders (fishfinders).

Labeled "Skipper," these new products greatly expand the recorder line of which Simrad has an established international reputation.

According to Simrad, the "Skipper" trademark will signify the highest quality obtainable at bud-

getary prices. Sales and service assistance will be from established Simrad dealers throughout the nation.

Initial offerings include the Model 2001, an 8-inch straight line recorder rated at 600 watts. Accurate recordings, down to 400 fathoms are obtainable over a selection of 12 depth ranges. For depths to 800 fathoms, the "Skipper" Model 2002 is suggested.

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

Thorne Hilts Named Ship Superintendent At Dillingham Ship Repair

Thorne Hilts has recently joined Dillingham Ship Repair, Portland, Ore., as ship superintendent, according to Scott Fitzwater, assistant general manager. He was formerly senior port engineer for the Pacific Northwest for American President Lines.

Mr. Hilts has previously been port engineer for Hendy International, Los Angeles, Calif., and served with the merchant marine

prior to that time, completing a number of maritime schools. They included Combustion Engineering School, Chattanooga, Tenn.; Turbine School, DeLaval Company, Trenton, N.J.; General Motors Diesel School, New Orleans, La.; U.S. Government Management School, Seattle, Wash.; and Laws School of Engineering, Oakland, Calif. Mr. Hilts received his chief engineer's license in 1957.

A past president of the Puget Sound Area Society of Port Engineers, Mr. Hilts currently serves on the board of governors of the Society of Port Engineers, Columbia River Area.

Sperry Vickers Names Edward H. Farnan



Edward H. Farnan

The appointment of Edward H. Farnan to the position of manager of marketing services has been announced by Sperry Vickers. He will remain at the firm's Troy, Mich., World Headquarters.

In his new position, Mr. Farnan will head Sperry Vickers's warehousing and forecasting departments. He has over 20 years of engineering and management experience and most recently served as warehouse operations manager.

Mr. Farnan holds a bachelor's degree in engineering from the University of Maine, and a master's degree in engineering from the University of Illinois.

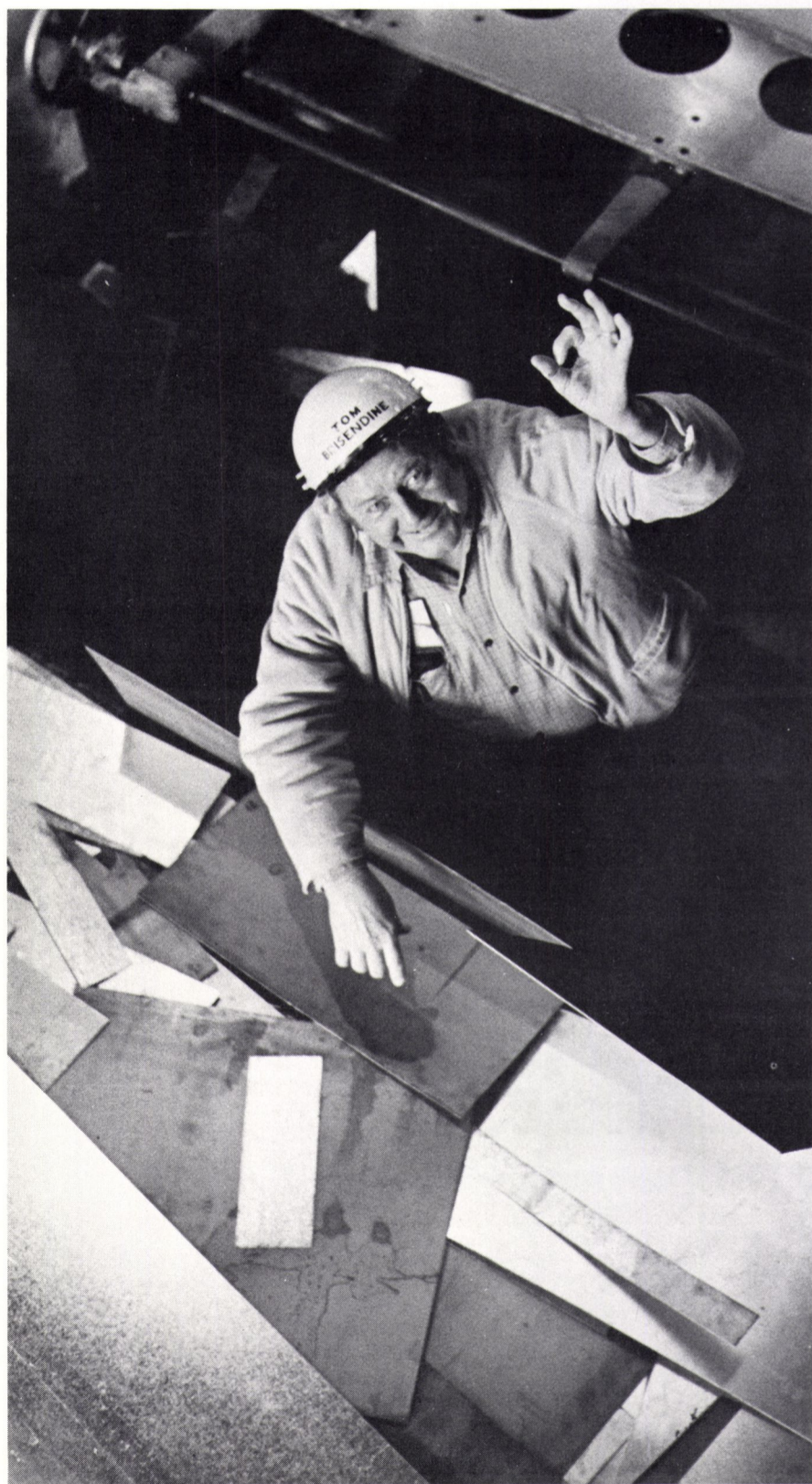
Sperry Vickers, a division of the New York-based Sperry Rand Corporation, is a leading manufacturer of fluid power components for in-plant machinery, mobile equipment, aircraft, and marine applications.

Financial Aid Sought For Tug/Supply Vessel To Be Built By Halter

Offshore Supply Ships, Inc., 663 Farmington Place, Suite 101, Gretna, La., has applied for a Title XI guarantee to aid in financing the construction of a 2,700-bhp, twin-screw tug/supply vessel to be built by Halter Marine Services, Inc., New Orleans, La.

Estimated actual cost of the 199-gross-ton, 180-foot vessel is \$1.9 million. Offshore Supply—affiliated with Offshore Service Ships, Inc., which operates a similar vessel—plans to operate the new vessel in the offshore oil trade.

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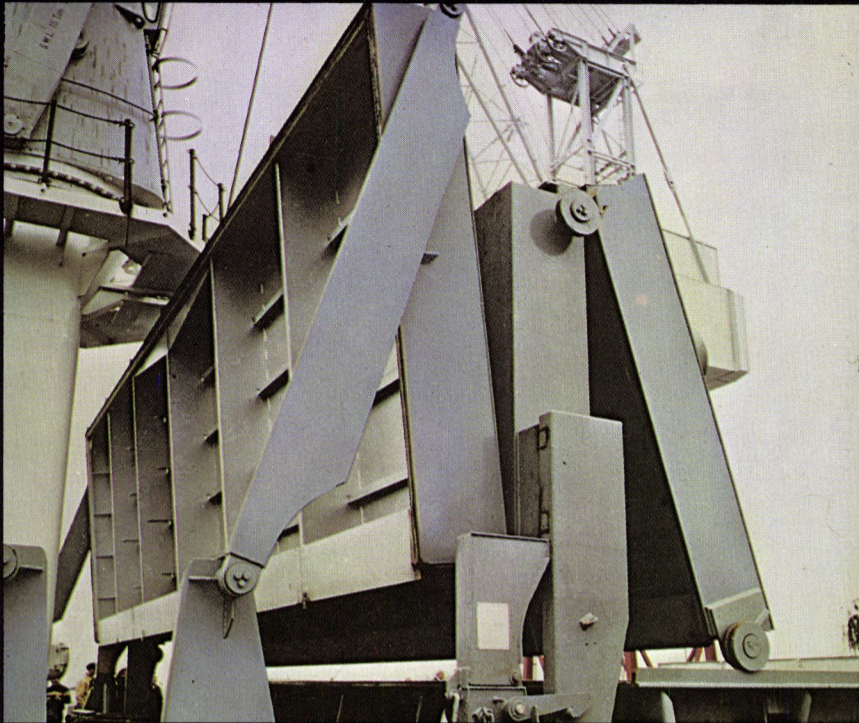
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New York, N.Y. 10006

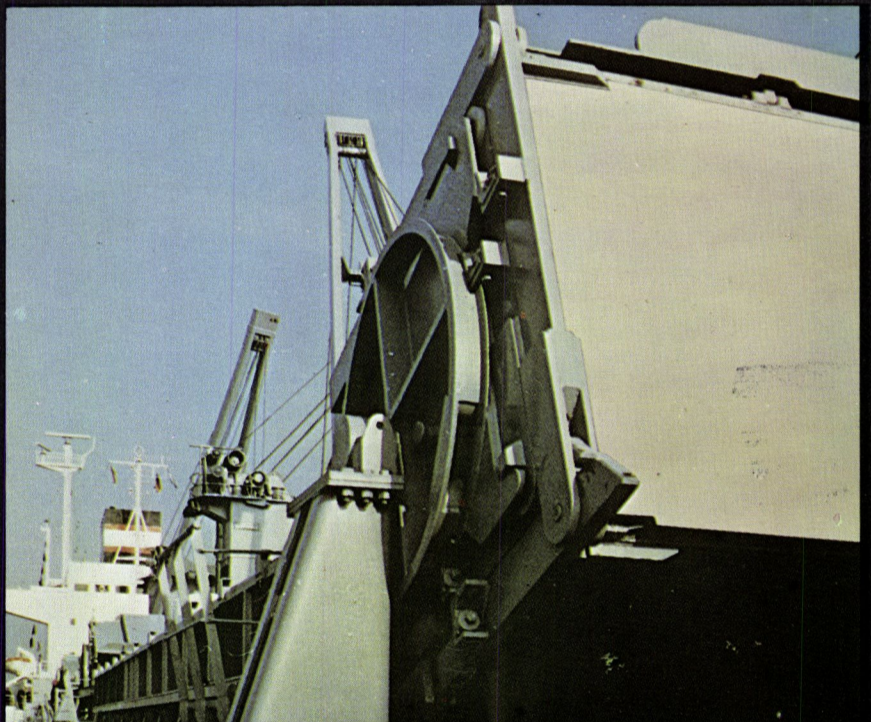
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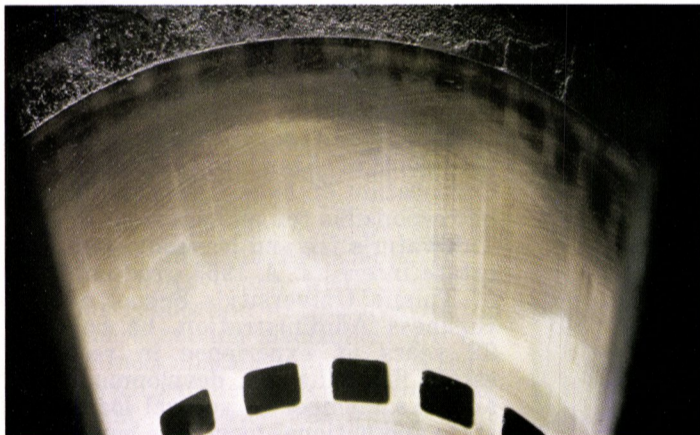
How Shell's Tornus keep thousands of work boats



Oil has helped churning ahead for over ten years.



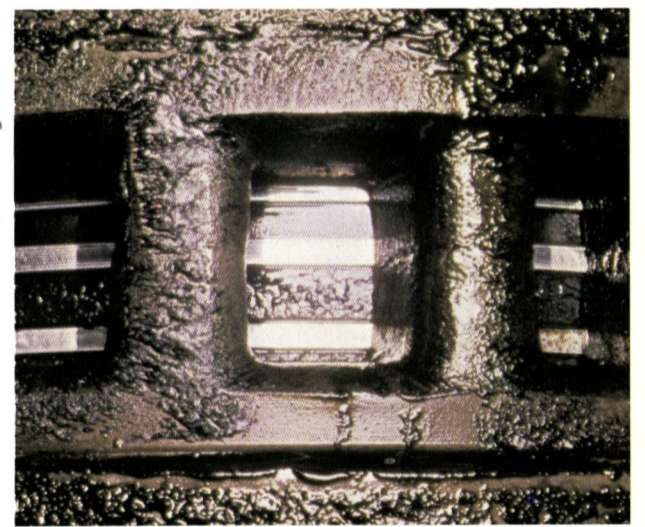
Engines in hard-working inland waterways towboats, (above), and ocean-going tugs (left) have their work cut out for them. So does the engine oil. High-dispersancy Tornus Oil protects main engines against wear, helps promote operating efficiency.



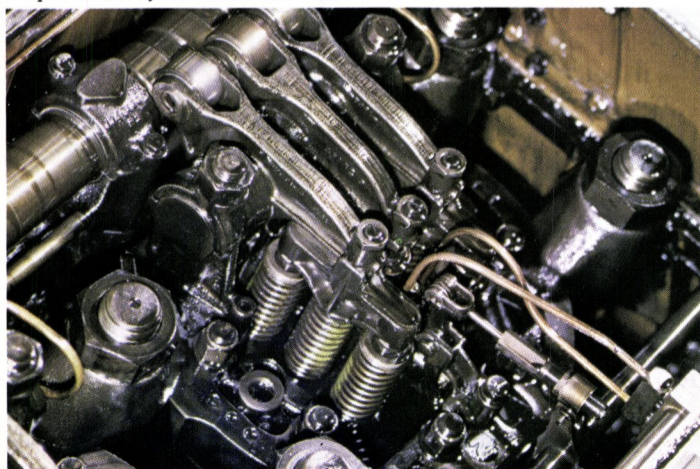
After 18,864 hours this cylinder liner from an EMD-12 645 E5 still shows original crosshatch marks. A tribute to the excellent wear protection of Shell Tornus Oil.



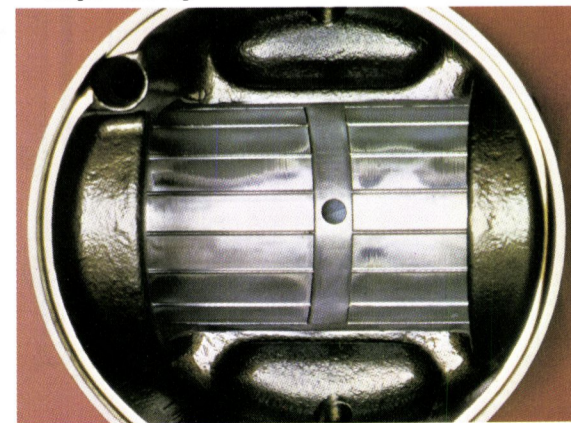
After over 23,000 hours, piston #1 of the starboard engine of an EMD 16-645 E7 shows light lacquer on skirt; rings in good condition, none stuck; only normal drag lines. Tornus Oil fights wear and lacquer buildup.



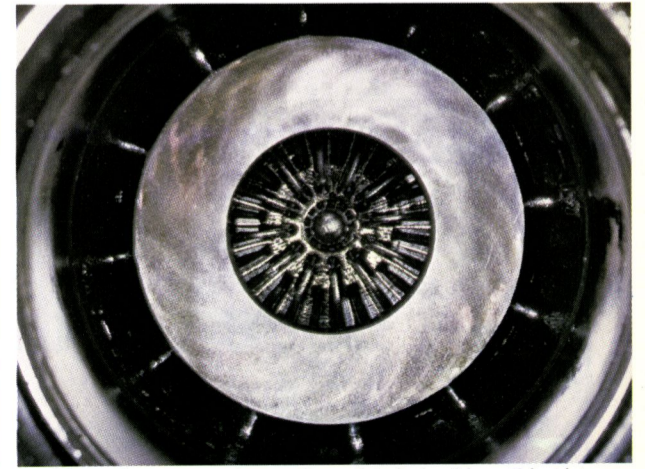
Ports are wide open from EMD 645 E with 20,000 engine hours on Tornus Oil. No deposits. Rings in good condition without need for replacement.



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.



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.



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.

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.

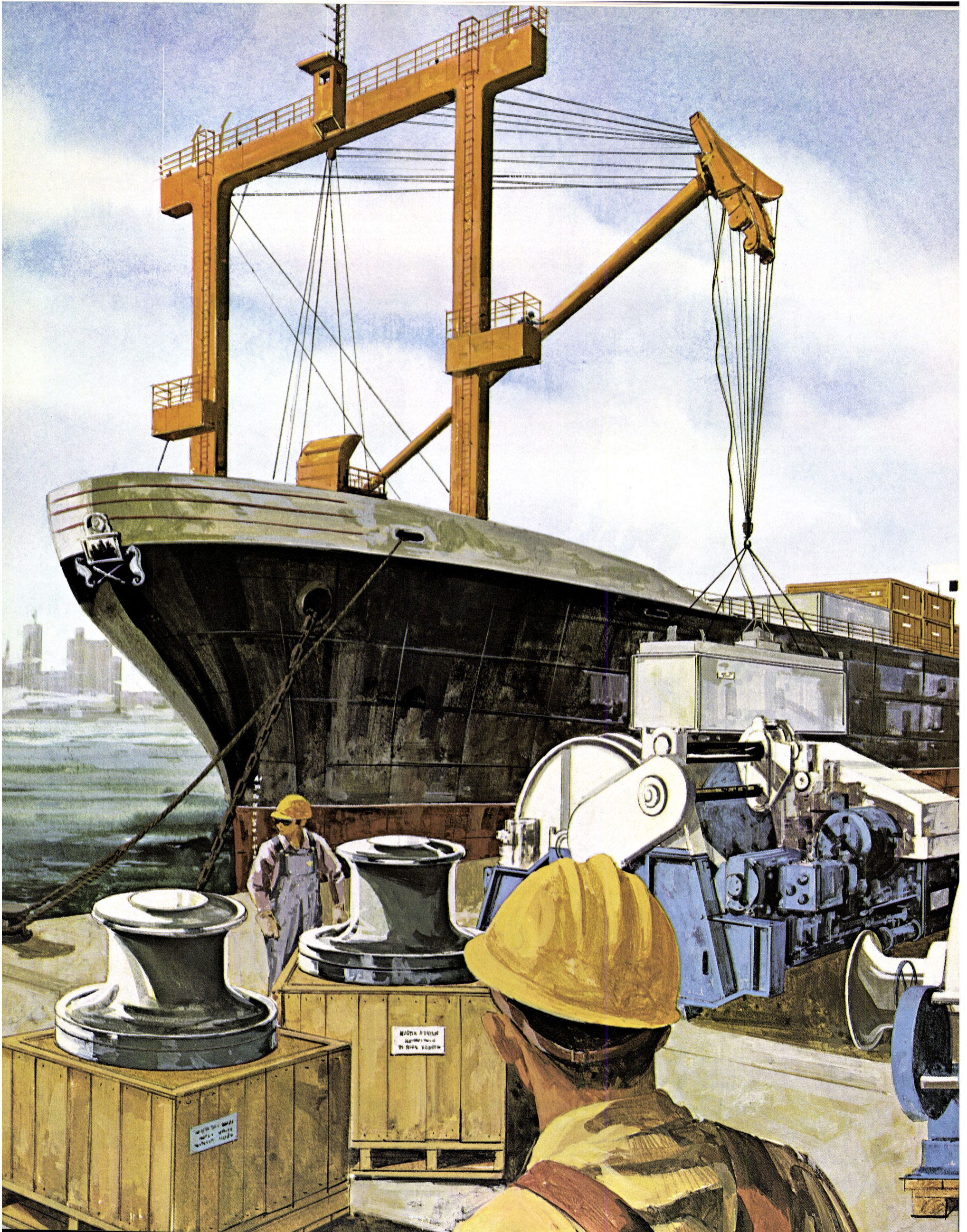
Shell's Caprinus R Oil can help extend oil drain intervals *indefinitely* in EMD power, and stretch the service life of oil filters. It offers excellent alkalinity retention to combat corrosive combustion products and help reduce frequency of overhauls. Caprinus R is Shell's answer to the need for extra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



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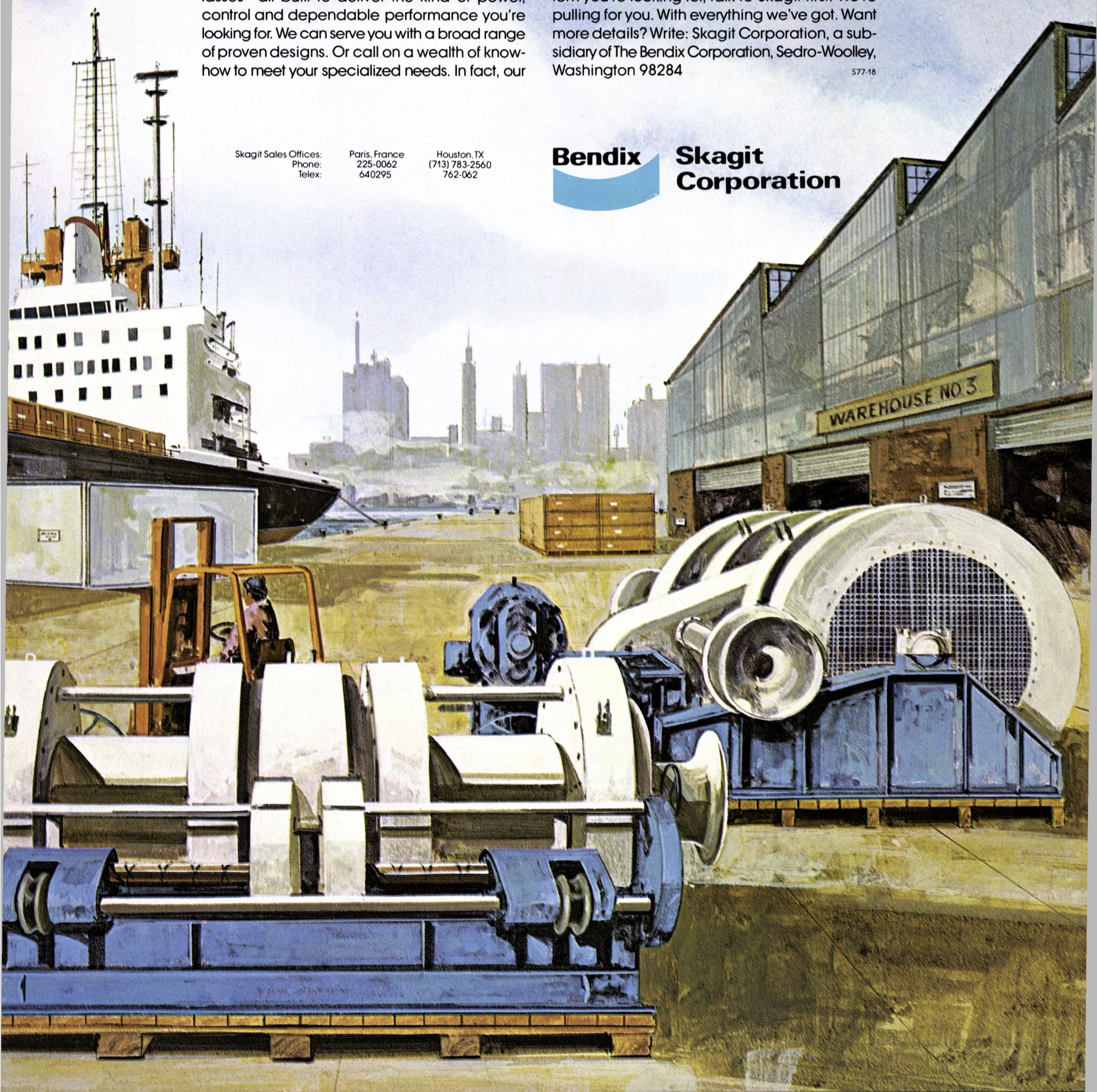
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Corporation**



Alden Introduces FM Facsimile Recorders

Alden Electronic & Impulse Recording Equipment Co., Inc. announces the introduction of a line of FM facsimile recorders designed for use aboard ships or wherever facsimile graphics via FM circuits are desired.

The recorders are available in both 10½-inch and 18-inch-wide

versions. Both versions are provided with shock mounts for mobile or shipboard use.

Both recorders operate from FM transmissions over telephone lines or radio circuits with a built-in frequency shift converter for the international F4 standard (1500 Hz black, 2300 Hz white). The recorders are compatible with all HF general communications receivers and incorporate wink-

ing light monitors to simplify receiver tuning.

The recorders use Alfax electrosensitive recording paper to provide clean, crisp, odorless recordings which are permanent, will not smudge, fade or darken.

A four-page brochure describing the Alden 1100 and 1800 Series of FM Facsimile Recorders is available free by writing to **John P. Carlson**, Alden Electronic

& Impulse Recording Equipment Co., Inc., Alden Research Center, Westborough, Mass. 01581.

Norfolk Ship Names Richardson And Eure To New Positions —Officers Reelected



R.B. Richardson Jr.

At the recent annual board of directors meeting of Norfolk Shipbuilding & Drydock Corporation, the following company officers were reelected:

John L. Roper 2nd, chairman of the board; **John L. Roper 3rd**, president and chief executive officer; **E.L. Pickler Jr.**, vice president; **George W. Roper II**, vice president; **J.G. Price**, vice president of production; **W.D. Payne**, assistant vice president; **P.R. Price Jr.**, assistant vice president; **E.L. Carlyle**, treasurer, and **M.R. Griffin**, secretary.



C.H. Eure Jr.

Also at this board meeting, the following men were elected to the following new positions:

R.B. Richardson Jr., senior vice president and chief financial officer, and **C.H. Eure Jr.**, vice president of plant facilities and operations, assistant secretary and assistant to the president.

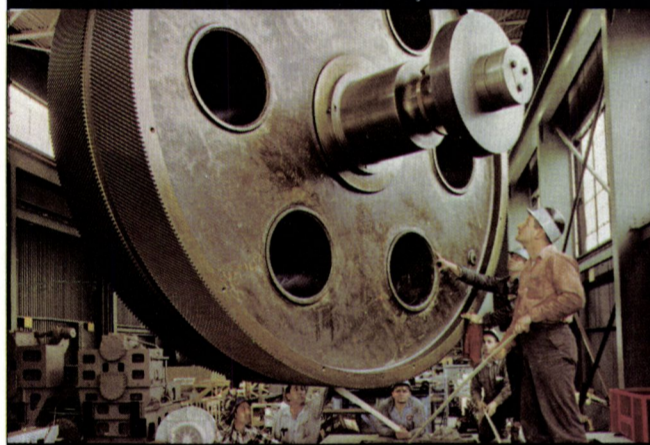
Mr. Richardson has been with Norfolk Ship for 34 years, serving as treasurer and director of finance. Mr. Eure is a graduate of Hampden-Sydney, and George Washington University, and has been with the yard for 16 years.

John L. Roper 3rd, president and chief executive officer, in his annual report listed sales in 1976 at \$54 million, compared to \$52 million in 1975. The sales in 1976 were nearly equally divided between government and commercial sales.

Mr. Roper expressed optimism for 1977, as the current work load was at an all-time high. He further stated that the new expansion of the Berkley (Va.) Plant would greatly increase sales.

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your GE electrical or mechanical equipment. But to minimize the chance of unplanned downtime, we'll contract to maintain your ship's General Electric systems and equipment in top working order, year round.

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 with two brand new mills, the latest
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**Seatrain Int'l Forms
Saudi Container Services
As Joint Venture**

Seatrain International S.A., and General Contracting Corp. have announced the formation of Saudi Container Services.

Seatrain International is a wholly owned subsidiary of Seatrain Lines, and General Con-

tracting is a member of the Olayan Group.

The new organization, according to **John Lamar**, president of Seatrain International, will service operators of containerships and other vessels at Saudi Arabian ports.

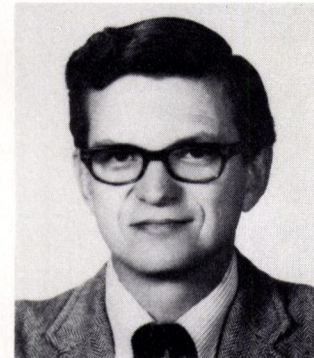
"With the completion of our terminal within the customs area of Dammam, we are in a position to offer shippers fast delivery of

cargo throughout Saudi Arabia. In the months ahead, we intend to establish and operate container terminals at other Saudi ports," Mr. Lamar said.

General Contracting is a major element in the construction equipment and transportation industry in Saudi Arabia.

The jointly owned organization will be managed by the Seatrain affiliate.

**Seabury McGown Named
Uniflite's Manager Of
Contracts Administration**



Seabury C. McGown

Seabury C. McGown has been appointed to the post of manager of contracts administration for Uniflite, Inc., fiberglass boat manufacturer headquartered in Bellingham, Wash., with a second plant in Swansboro, N.C., according to **John L. Thomas**, president.

In his new capacity, he will be responsible for negotiating and administering all Uniflite contract boat manufacturing, including work for the U.S. Navy and the Valiant Yacht Corporation of Seattle.

With Uniflite since 1967, Mr. McGown served until 1975 as chief engineer with responsibility for design of the company's boats. For the past two years, he has been manager of commercial and military sales. Before joining Uniflite, he served for 11 years in the U.S. Navy Bureau of Ships (BuShips).

A native of Cooperstown, N.Y., Mr. McGown is a graduate of the Massachusetts Institute of Technology (M.I.T.). He is a member of The Society of Naval Architects and Marine Engineers, the American Boat and Yacht Council, and a committee of the American Bureau of Shipping currently preparing building and classification rules for fiberglass vessels under 200 feet.

**Kockums To Build
Two LNG Carriers
For Own Account**

Kockums, the last major Swedish shipyard remaining in private hands, is to build a second liquefied natural gas (LNG) carrier of 133,000 cubic meters on its own account, in order to secure production at its Malmo yard until the autumn of 1979. The production cost is expected to be about 500 million kroner. **Nils-Hugo Hallenborg**, the managing director, told the annual meeting that competition in the construction of this type and size of vessel was limited. There was, therefore, a favorable prospect of being able to sell the two carriers at a profit later.

Mr. Hallenborg forecast a decline in group earnings this year from the 32.3 million kroner reached in 1976, but he also anticipated "many positive developments" during the year, which would boost future profits.

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"The world's largest manufacturer of marine coatings" is not a hollow phrase. It means that wherever you are, we are. Specifically, International Marine Coatings has 37 manufacturing plants around the world. We have agents and stock in almost every single major port, insuring on-the-spot delivery and service. Our experience encompasses the broadest possible spectrum of coating systems... for all world cargoes, for all waters, in all climates. Moreover, each of our sales and service representatives is fully experienced in all phases of new ship construction and M&R. We are indeed the most global marine coatings company. And we have almost 100 years of knowledge that we'd like to share with you.

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**The American Club
Elects Thomas J. Smith
As Deputy Chairman**



Thomas J. Smith

Thomas J. Smith, director, president and chief executive officer of Farrell Lines Incorporated, has been elected deputy chairman of the American Steamship Owners Mutual Protection and Indemnity Association, Inc. (The American Club).

The announcement was made at the club's monthly meeting in New York City by Adolph B. Kurz, chairman of The American Club, the only mutual nonprofit P&I club in the United States.

**Ocean Supply, Inc.
Relocates In Houston**

Ocean Supply, Inc., Houston, has relocated from the Ship Channel area to 7444 Calhoun Road, Houston, Texas. Mailing address is P.O. Box 20226, Houston, Texas 77025. The facilities are located on four acres and include 10,000 square feet of air-conditioned warehousing and a 20,000-square-foot steel warehouse building. Ocean Supply sells domestically and internationally mooring system equipment including large anchors and chain, buoys, cordage and large wire ropes and fittings.

**Marine Concrete
Forms Repair Division**

Formation of a new repair division was announced by Marine Concrete Structures, Inc. Operations were scheduled to begin last month, with the facility concentrating on hull repairs and alterations for barges, tugs and workboats.

"As the search for oil and gas intensifies in the Gulf of Mexico, there will be heavy demands for crafts of all types to support this activity," Don Payne, Marine Concrete Structures president, said. "In addition, LASH-type vessels with their many small barges are adding to the strain on maintenance facilities in the area. Already, present yards are overcrowded, creating costly delays in getting boats and barges back into service. We hope by specializing in hull work, we'll be able to get these craft in and out in faster time, saving companies and owners money in downtime," Mr. Payne continued.

The division occupies a site of 85 acres at Port Bienville, Miss., just off the heavily traveled Intracoastal Waterway. Services to be offered are metal fabricating, cutting, welding, sandblasting and painting. Fiberglass capability is also included.

Marine Concrete Structures presently has a construction yard at Port Bienville for constructing concrete gravity structures, platform slabs, walkways, beams and

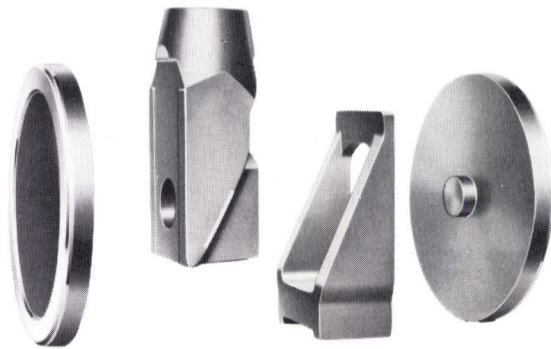
piling for the offshore oil industry, girders for highway overpasses and piling and panels for the building construction industry.

The addition of steel fabricating to its concrete capabilities will enable Marine Concrete Structures to actively participate in the building of steel jacket structures, steel walkways, boat bumpers, wellhead protectors and other products for the oil industry, Mr. Payne added.

The yard is equipped with a 57-foot by 63-foot drydock capable of lifting up to 300 tons. A second drydock is scheduled to be added before the end of the year. Over a mile of water frontage is available for staging, allowing for a large volume of work without overcrowding.

Frank Anastasio Jr., vice president, is in charge of the division, assisted by Val Hamann, supervisor of repairs.

**Revolving discs
vs. solid wedge gate
in marine service**



**American-Darling Revolving
Discs features:**

1. No pockets on discs to collect deposits.
2. Discs contact seats during travel to remove deposits.
3. Discs revolve with a self-cleaning action to prevent fouling on body guides.
4. Wedging action is independent of seating action for easier operation.
5. Internal parts are interchangeable and reversible for easy maintenance.

**Consider these possible
disadvantages of the
solid wedge gate design:**

1. Wedge guides in body are subject to fouling and wear due to line content deposits.
2. Buildup on seat surfaces are trapped at seating position causing leakage.
3. Since wedging and seating occur simultaneously, approximately 50% more operating force is required than for Revolving Discs design.
4. Wedge is not usually interchangeable from valve to valve. Reseating requires fitting of wedge to body seats.

On your next installation, get all the advantages. Specify American-Darling Revolving Discs gate valves. For more information, write for our bulletin.



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Selected Items Listed

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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.

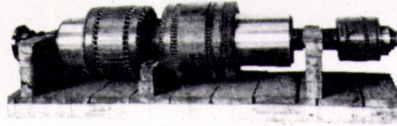
WESTINGHOUSE MAIN PROPULSION STEAM TURBINES

1 unit shrouded—1 unit profile unshrouded
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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 5/16" 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.

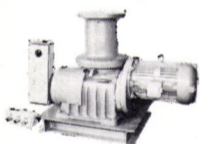
WESTINGHOUSE 538 KW TURBINE ROTORS

MISCELLANEOUS

Rudder 13 1/2" Rudder Stocks
Main Injection 3-Way Valves 125 HP Main Circulating Pump Motor
Main Condensate Pumps • Fuel Oil Service Pumps • Magnablast Breaker
Ingersoll-Rand 6GT Cargo Pumps
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NEW DOCKSIDE OR SHIPBOARD MOORING CAPSTANS—REVERSING

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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

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10 SHOTS—3-3/8" (85 mm), high strength, flash butt welded Stud Link Chain—with Kentner Joining Shackles & one end shackle. Built 1975. Like new condition—with certificate.

Large quantity of practically new U.S.N. 1-1/8" DILOK Chain.

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(2) 11,500 lbs.
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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

- Main Circulating Pumps
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- Bilge Service
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- Salt Water Service

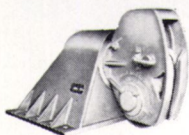
MISCELLANEOUS

- Forced Draft Fan Motors—GE 10/50 HP
- Main Throttle Valves
- 12x14 American Engineering Mooring Winches
- Oldman Fairleads for 1 1/2" Wire
- 6" Lube Oil Strainers

BERGER FAIRLEADS

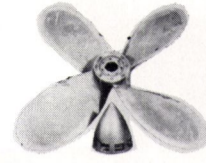
Model 620—1 3/4"—sheave dia. 20"—shank opening 8"—weight 2680 lbs.

\$1850



FOR LST VESSELS

• PROPELLERS—Port & Starboard

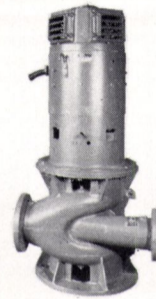


Also for tugs & motor vessels having LST propellers. 7.0' Diameter—4.583' pitch. Weight 1820 lbs. Available: 2 Starboard (reconditioned) 2 port (reconditioned) 1 port (new). Bronze.

• 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.

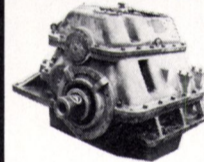
• ANCHOR WINDLASS MOTORS

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

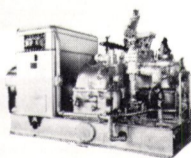
T-2 MAIN MOTOR REVOLVING FIELD COILS

1 full set—mfg. by G.E.—rewound with pole pieces. From T-2 Tanker "Pioneer Valley".

ALSO WESTINGHOUSE

10 sets, without pole pieces.

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.

SPECIAL OFFER T-2 AUXILIARY GENERATOR ROTORS

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

For G.E. 525 KW TURBO GENERATOR SETS

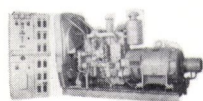


Very little use. In like-new condition. Balanced, and with A.B.S. Certificate.

STATIONARY BLADING AVAILABLE

75 KW CUMMINS EMERGENCY DIESEL GENERATOR SET

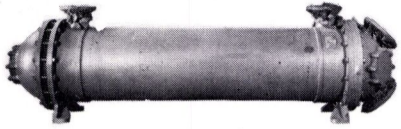
as removed from U.S.N. Ship "Pecos"



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.

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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".

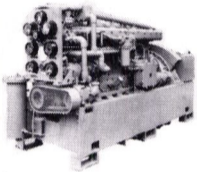
TYPE 1460 — 160 SQ. FT.

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

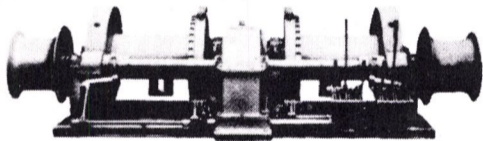
**DOUBLE-DRUM
TOWING-MOORING-UTILITY WINCHES**

DUTY:

30,000 LBS @ 50 FPM

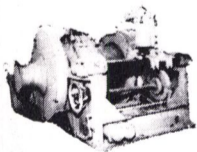
15,000 LBS EACH DRUM

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".

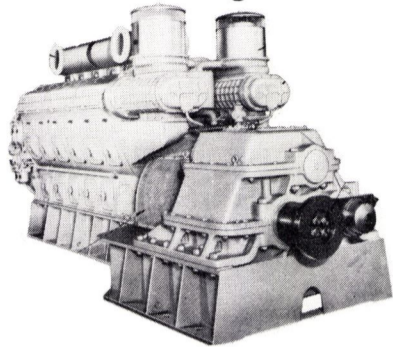
**100,000 lb. Almon Johnson Constant
Tension Mooring Winches**



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.

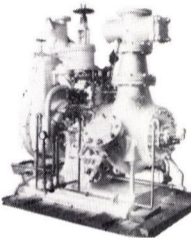
Driven by 50 HP — 230 VDC motors — Westinghouse CK — 575 RPM — 1/2 hour — 75°C rise — stab. shunt — 181 amps — max. RPM 1900. Cutler-Hammer brake — 18" — type NM.

**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**

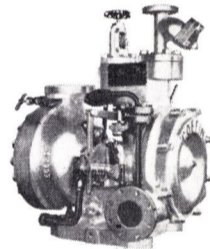


**3 TYPE DE-2
540 GPM 1870' NET HEAD**

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

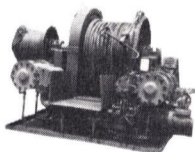


TYPE CG

2 TYPE CG 350 GPM 1880' NET HEAD

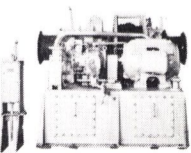
7220 RPM — 311 HP. Steam pressure 580 PSIG — 0°-100° superheat. Exhaust 15 lbs — typical serial #5437-CG-8-8-33

**12X14 AUTOMATIC CONSTANT TENSIONING
STEAM MOORING WINCHES**



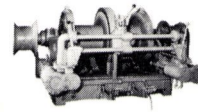
Capacity first layer — 20,000 lbs. @ 100 FPM; 16,000 lbs. @ 150 FPM. Drum will stow 1500 ft. of 1 1/2" wire rope in 9 layers. Gear ratio 5.438:1. 3 1/2" Steam — 4" Exhaust Bore dimensions: 6' x 6' 3/2". Overall: 8' 4 1/4" wide by 9' long.

**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.

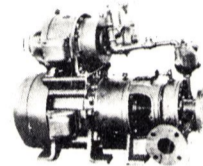
**7 x 10 CLYDE
DOUBLE DRUM WINCH**



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 1/4" 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 1/8" over flanges. Rebuilt by U.S.N. equal to new.

PUMPS

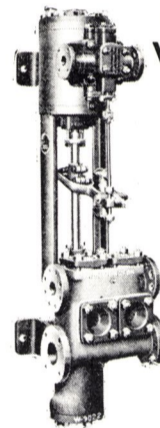
**INGERSOLL-RAND
Self-Priming
FIRE & BILGE PUMP**



\$865

200 GPM — bronze — 224' head — 90/100 lbs. fire service — suction lift 23' — 3500 RPM. MOTOR: 20 HP — 440/3/60/3500 RPM — 28 amps — GE type KF — frame 326 — class B — totally enclosed — Navy Service A — 3 1/2" suction — 3" discharge. PRIMER MOTOR: 1 1/2 HP — 440/3/60/3600 RPM — fan cooled — totally enclosed — 2.2 amps — Nash priming pump complete with priming valve. Reconditioned.

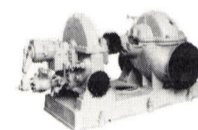
**UNUSED WORTHINGTON
VERTICAL SIMPLEX PUMPS**



\$795

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.

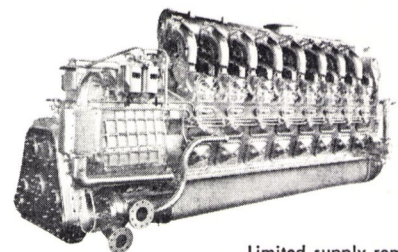
TURBINE-DRIVEN CIRCULATOR



— type B.K.S. Pump manufactured by Lawrence

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 Whiton

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



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

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The Care And Lubrication Of Marine Diesel Engines

New oceangoing ships in the American merchant marine fleet, now almost entirely steam driven, will likely be powered by diesel engines, according to experts at a marine technical symposium sponsored by Mobil Oil Corporation in New York. Shipowners were told of a recent study made for the U.S. government that shows diesels could save \$300,000 to \$600,000 a year per ship, mostly through reduced fuel consumption.

The two-day symposium, on the care and lubrication of marine diesel engines, was held at the St. Regis Hotel for more than 50 shipowners and their technical directors.

Jose Femenia, chairman of the Engineering Department at the State University of New York Maritime College, and guest speaker at the event, told the symposium that diesels are currently more economical for ships in the 10,000 to 25,000-horsepower range—the range in which most new ships are likely to be powered—and possibly up to 40,000 horsepower. The higher ranges depend upon all of a ship's power and performance characteristics.

Mr. **Femenia**, who has completed several studies of marine powerplants for the U.S. Maritime Administration, pointed out that while ship designers for the past 30 years have been putting more power in engine rooms to speed up vessels on the open seas, this trend is not likely to continue. "It's a well-known engineering principle that it takes eight times as much power—and eight times as much fuel—to double speed. When fuel cost about \$2 a barrel, it made sense to put all the horsepower you could in an engine room to get a couple more knots from your propeller. But not now.

"In fact, many ships with large engines have slowed down to save fuel. Reducing power to about 60 percent of capacity in these ships slows the ship only a few knots but saves a great deal of fuel. This reduction in power requirements will bring most new ships down to the 10,000 to 25,000-



Edward K. Arndt (left), program chairman, introduces **Allen E. Murray**, president of Mobil's U.S. Marketing and Refining Division, who opened the symposium with a talk on energy problems.

horsepower range where diesels work best.

"With today's fuel costs and ship operating conditions, diesel engines could provide more economical propulsion for all but the largest and fastest ships. However, total power requirements, including the need to heat oil tanks on a tanker, or for refrigeration on food-carrying vessels, or handling equipment on a containership, could change the fuel economics and make steam the better economic choice," he said.

Burnett J. Schulz, Mobil's marine technical services manager, said the economics of marine powerplants are still changing. "Both turbine-plant designers and diesel engine makers are working hard to develop greater fuel efficiency. The world's energy crisis has made marine powerplant design a very dynamic, fast-changing technology. Diesel designers are increasing engine operating pressures and temperatures. While this increases fuel efficiency substantially, it puts a greater burden on the thin film of oil between moving parts. Better lubricants and more reliable application are needed to match the fuel-saving designs of the engines."

Besides the drive for greater fuel efficiency, a growing disparity between the demand for and cost of light, clean-burning fuels versus heavier fuel oils also put a greater burden on diesel engine lubricants, according to Mobil's fuel oil sales manager **John Johannessen**. "Lighter fuels are in great demand by powerplants and

other users in densely populated areas where a clean burning fuel is essential," he explained. "Heavy fuels, literally from the bottom of the crude oil barrel, sometimes cost less than the crude itself and certainly less than light products. If shipowners can trust the lubricant to handle the undesirable components of heavier fuel—preventing sludge, deposits and wear—they can save a lot of money by burning the heavy stuff. In fact, the heavy residual fuels or "bunker" oil once used only for firing steam boilers is now increasingly used in diesel engines."



Mobil's fuel oil sales manager **John Johannessen** (left) listens to panel member **Jose Femenia** as he answers a question from the floor in a question and answer period during the symposium.

Edward K. Arndt, manager of Mobil's U.S. marine sales and chairman of the meeting, said the company has sponsored similar symposiums in a dozen countries with large diesel-powered merchant fleets—including Greece, Norway, and the Soviet Union. This is the first such symposium to be held in the United States. The program included technical presentations by Mobil engineers and researchers on the care and testing of lubricants in use, analyses of samples of used oil to detect engine problems, trends in marine fuels, and a run-down of the lubrication requirements of various types of diesel engines.

Mobil is the world's leading supplier of lubricants for marine diesel engines. The company has facilities around the world for serving ships of all countries in most ports of call.

Europort '77 Marine Exhibition And Congress Set For Nov. 15-19, 1977

The Europort '77 marine exhibition and associated conference will be presented in the RAI Halls, Amsterdam, the Netherlands, from November 15 to 19, 1977. Over 1,500 companies from 50 countries will display their products and services, many of which have never been on show before.

Exhibits include all types of ships' gear, diesel engines and turbines, equipment and services for repair and maintenance, shipyards, dredging and port equipment, and many other items directly connected with the industry.

National stands will again feature the specialized equipment of many countries.

The Europort Congress will cover propulsion machinery—selection, operation, economics, and maintenance.

Full information may be obtained by contacting **W.H. Bakker**, Director, Europort Tentoonstellingen B.V., Waalhaven Z.Z. 44, Rotterdam 3022, Holland.

Setenave Appoints Antonio Costa Leal



Antonio Costa Leal

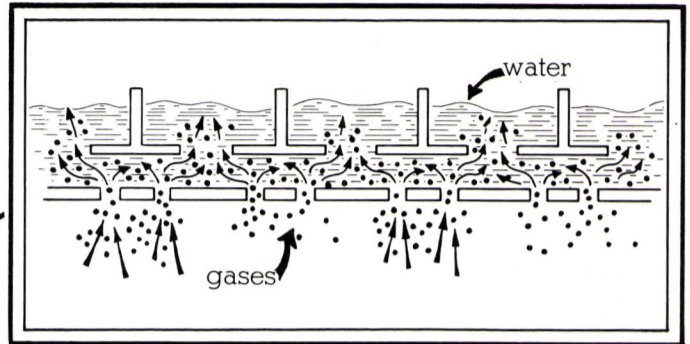
Antonio de Seixas da Costa Leal has been appointed chairman of Setenave.

At the same time, he was appointed as a member of the board of directors of Lisnave. These appointments for both companies strengthen the cooperation agreement held by Lisnave and Setenave in order to coordinate the activity in both shipyards.

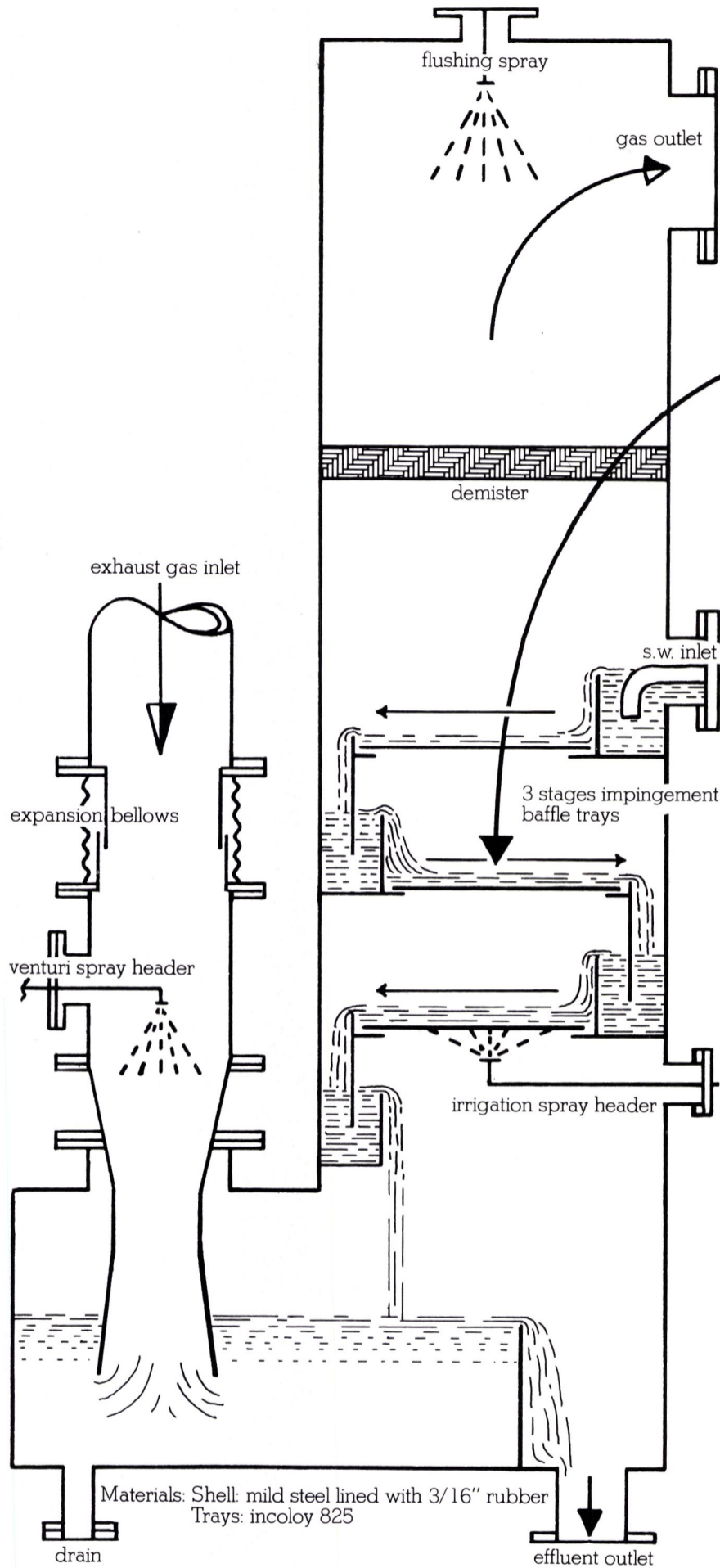
Mr. **Costa Leal**, a graduate in economic and financial sciences, attended a course on Statistics of National Income in the Department of Commerce in Washington, D.C., and attended a course on Economic Planning and National Accounting in the Institute of Social Studies in The Hague, Holland.

He served as financial manager at Lisnave, a member of the board of directors of Setenave, E.N.I., Parry, and the shipyards of Viana do Castelo. In 1974-75, he was Secretary of State for the Budget in the 1st, 2nd, 3rd and 4th Provisional Governments and in 1975-77, he was vice-governor of the Bank of Portugal.

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.

1901 Julia Street
New Orleans, La. 70113 U.S.A.
(504) 525-9042 TWX-810-951-5168

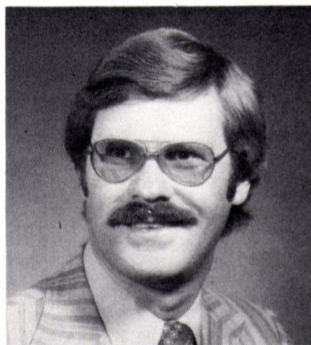
St. Louis Ship Names Cumming And Storck

St. Louis Ship Division of Pott Industries Inc. recently appointed **William R. Cumming** as sales manager, Gulf Division, and promoted **Donald G. Storck** to sales manager, Inland Division, according to an announcement by **Anthony G. Tobin**, executive vice president-marketing.



William R. Cumming

Mr. Cumming will headquarter in New Orleans, La., and will be responsible for the marketing and sales of towboats, tugs, barges, supply vessels and FAST marine sewage systems in the Southern and Gulf areas. Mr. Cumming has over 10 years' marine experience and was formerly with Dravo Corp., located in Pittsburgh, Pa., and New Orleans. He is a graduate of Louisiana State University and has a B.S. degree in engineering.



Donald G. Storck

Mr. Storck joined St. Louis Ship as sales engineer, FAST Division, in 1975. In his new position, he will be responsible for the marketing and sales of all marine products manufactured by St. Louis Ship for the Inland Division and will remain headquartered in St. Louis. Mr. Storck is a graduate of the U.S. Naval Academy and has a B.S. degree in naval science and marine engineering.

Pott Industries are currently operating four shipyards. Three of the yards are inland shipyards located in St. Louis and Caruthersville, Mo., and Paducah, Ky. These yards are principally engaged in the construction and repair of towboats and all type barges used in inland water transportation. Portable dredges and marine sewage systems are also designed and manufactured in St. Louis. The fourth yard, located in Houma, La., specializes in design and construction of ocean tugboats and supply boats used in servicing the offshore petroleum and gas industries.

Farboil Co. Appoints Maritime Supply For Southern Florida

The appointment of Maritime Supply Co., Inc. of Miami, Fla., as distributor for the complete line of Farboil marine paints and coatings was announced by **David Baird**, general manager of Farboil Company. Maritime Supply

will service the southern Florida marine industry and specifically the Port of Miami, a rapidly growing center for shipping activity.

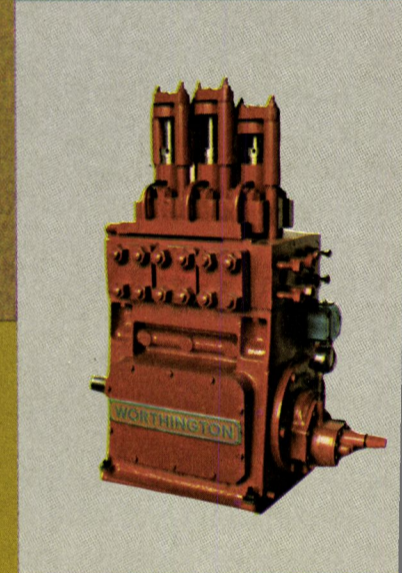
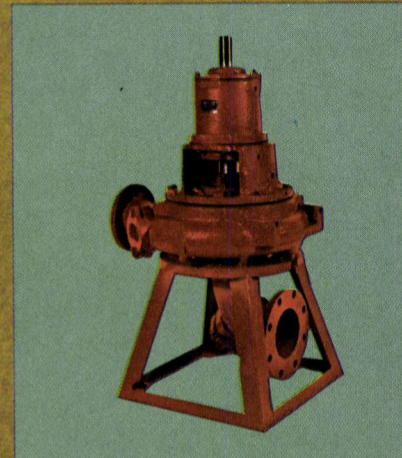
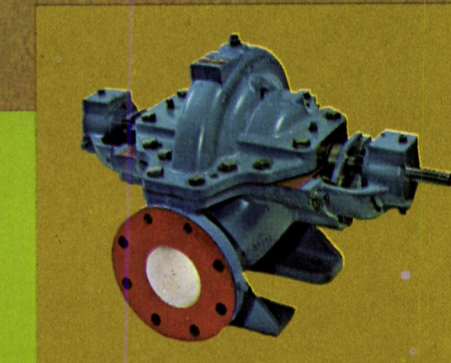
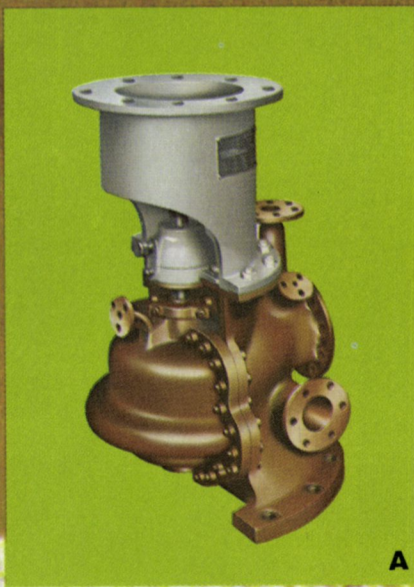
Farboil Company, a Beatrice Chemical Company, division of Beatrice Foods Co., is headquartered in Baltimore, Md. It produces and markets worldwide a complete range of conventional and high-performance protective

coatings and paints for new ship construction, and maintenance of seagoing vessels, offshore and shoreside drilling rigs and similar installations. The company also produces and markets coatings for vessels active on the inland waterways.

Maritime Supply Co., under the management of **R. Yamuni**, is located at 52 N.W. 9th Street, Miami, Fla. 33316.

Moving more fluids for the marine industry

with a broad line of pumps for cargo handling, circulating, ballasting, drydock dewatering, main feed, and engine room auxiliaries.



Line Fast Announces Improved Container Securing Twist Lock

Currently, the Lever Operated Twist Lock is universally used for securing containers on deck.

Line Fast Corporation of Long Island, N.Y., one of the most progressive firms in the container securing industry, has developed

an improved version of this popular device.

The Line Fast Fastloc®, as its name states, is a fast locking container securing twist lock. "The Fastloc has an anti-jamming feature for free lever operation which eliminates one of the major problems commonly encountered," a spokesman for the company said.

In the case of one and two high stows, it eliminates lashing. On

three or four high stows, the new bottom locking device allows the longshoreman to install the Fastloc on the pier before lifting the container into place. This eliminates climbing, because the Fastloc can be activated by the use of a pole.

Since the lever handle is not protruding beyond the corner casting, the Fastloc can also be used to secure two containers to-

gether before placing them into the cells. There is no obstruction with the cell guide.

Another important feature is what Line Fast calls the "Dog Bone." This allows side-by-side bridging. The rated strength of each Fastloc provides an ultimate of 70,000 pounds for uplift, 110,000 pounds for shear and 140,000 pounds for compression.

The standard unit weighs only 13.6 pounds.

For more information, write to **John DiMartino**, Line Fast Corporation, 805 Grundy Avenue, Holbrook, N.Y. 11741.

Columbus Line Names Two Assistant VPs



Marco T. Pacella

Two promotions to assistant vice president have been announced by the executive board of Columbus Line, One World Trade Center, New York, N.Y. 10048.

Marco T. Pacella, formerly general manager, marketing and sales, has been named assistant vice president in charge of marketing and sales. **Rudolph Ramm**, formerly general manager of traffic, has been promoted to assistant vice president in charge of management information services.



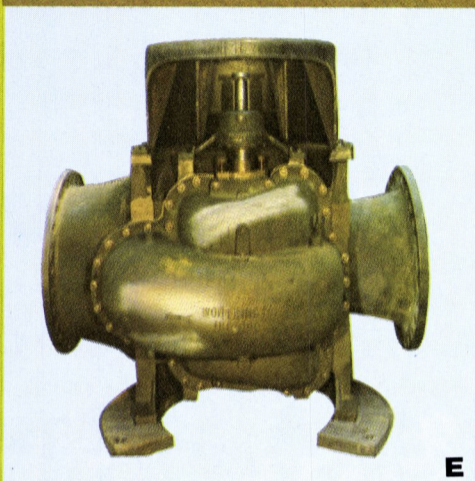
Rudolph Ramm

Mr. Pacella has been with Columbus Line since 1968, after 18 years of experience with the Pennsylvania Railroad. He holds a B.S. degree in marketing from Rutgers University, and is a qualified I.C.C. practitioner before the Bar of the Interstate Commerce Commission. He has served as general manager of marketing and sales since March 1973.

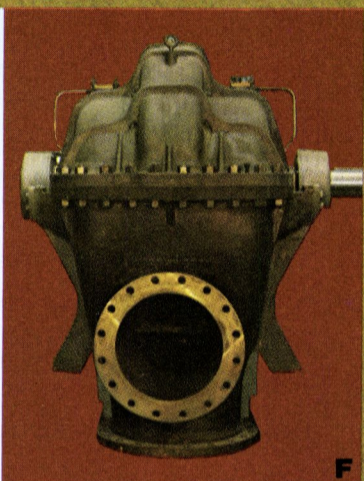
Mr. Ramm has been with Columbus Line since the company's first year, and has worked his way through various positions in the accounting, operations and traffic departments. He was named general manager of traffic in February 1976.



D



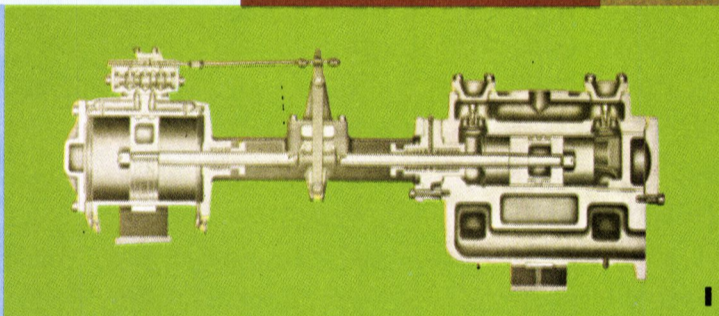
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F



H



I

(A) Two-stage vertical centrifugal pumps for condensate service, to 800 gpm and heads to 520 feet. (B) Type L split-case pumps to 200,000 gpm and heads to 750 feet. (C) Sewage pumps, capacities to 200,000 gpm, heads to 225 feet. (D) Vertical turbine pumps to 16,000 gpm. (E) Single-stage vertical centrifugal circulating pumps, double suction, to 24,000 gpm and heads to 375 feet. (F) Single-stage centrifugal cargo oil pumps, double suction, to 35,000 gpm and heads to 500 feet. (G) Plunger pumps for high pressures up to 30,000 psi and capacities to 3000 gpm. (H) End suction pumps, open or closed impellers, to 5000 gpm and heads to over 600 feet (also available in self-priming model). (I) Reciprocating steam pumps to 2000 gpm, heads to 10,000 feet.

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For more information on the Worthington line of premium marine products, write: Worthington Pump Inc., Dept. 21-67, 270 Sheffield Street, Mountainside, NJ 07092.

WORTHINGTON PUMP





NAVIGATIONAL AIDS AND COMMUNICATIONS equipment manufacturers displayed their latest wares at the First Port of New York Conference and Exhibit on those subjects. Representatives of the exhibitors are shown above. The exhibitors were: Alden Electronic & Impulse Recording Equipment Co. Inc.; Automated Marine International; Communications Associates, Inc.; COMSAT General Corporation; Digital Marine Electronics Corporation; IBM General Systems Division; ITT Decca Marine; Iotron Corporation; Kelvin Hughes, a Division of Smiths Industries Inc.; Konel Corporation; Magnavox; Navidyne Corporation; Raytheon Marine Company; RCA; Simrad Inc.; Smiths Industries Inc.; Sperry Marine Systems; Tracor, Inc., and the United States Coast Guard.

First New York Port Navigational Aid & Communications Conference Is A Success

More than 16 of the world's most renowned manufacturers of navigational aids and communications equipment recently displayed their wares at the first such Conference and Exhibit ever to be held in downtown Manhattan, New York City. The three-day exhibit, and the all-day seminars on those subjects conducted by panelists expert in their fields, was held in the Seamen's Church Institute and was sponsored by the Maritime Association of the Port of New York.

The two principal speakers at luncheons during what is planned to be an annual event, were: Adm. **Sidney Wallace**, USCG,

marine transportation advisor to Transportation Secretary **Brock Adams**, who spoke on the need for more stringent adherence by vessels of over 15,000 tons to federal rules and regulations governing their operations in American navigable waters.

Charles Fisher, chief, Rules and Legal Branch, FCC, who spoke of his department's work in revamping many of the rules and regulations now in effect and its progress on formulating many new ones in the field of communications to promote safety at sea.

The panels covered the following subjects: Omega Navigation; Satellite Navigation; Collision

Avoidance: Loran C System; Shipping Fairways; Single Sideband Communications; RTCM (Radio Technical Commission for Marine Service); Marine Facsimile for Marine Services, and National Vessel Traffic System. Questions from the floor were answered by the panelists and resulting discussions served to expand coverage of every facet of communications and navigation at sea.

Exhibitors at the event were: Alden Electronic & Impulse Re-

ording Co., Inc.; Automated Marine International, Inc.; Communications Associates Inc.; COMSAT General Corporation; Digital Marine Electronics Corp.; IBM General Systems Division; ITT Decca Marine Inc.; Iotron Corporation; Kelvin Hughes, Smiths Industries, Inc.; Konel Corporation; Magnavox; Navidyne Corporation; Raytheon Company; RCA, Simrad Inc.; Smiths Industries, Inc.; Sperry Marine Systems; Tracor, Inc., and the United States Coast Guard.



DISTINGUISHED GUESTS at the Conference were, left to right: Ray Yturraaspe, Griffith Marine Navigation, Inc.; Adm. **Sidney Wallace**, USCG; Adm. **William F. Rea III**, USCG, Commander Atlantic Area, Third USCG District, and Maritime Association president **Eric Guy de Spirlet**, president of the Belgian Line, Inc.



**Basil Rusovich
Elected President
Int'l Trade Mart**



Basil J. Rusovich Jr.

Basil J. Rusovich Jr. has been elected president of the International Trade Mart of New Orleans, La.

Mr. Rusovich, who is president and chief executive officer of Transoceanic Shipping Co., Inc. and its subsidiary, International Export Packers of Louisiana (INTERPACK), was formerly first vice president of ITM.

The new president is co-chairman of the Mayor's Committee on International Trade and Relations, and has spoken widely on international trade.

He succeeds **Capt. J.W. Clark**, president of Delta Steamship Lines, Inc., as ITM president.

International Trade Mart is a nonprofit world trade center located in a 33-story building at Canal Street and the Mississippi River, overlooking the Port of New Orleans.

The Mart houses some 25 consulates and numerous shipping, banking, insurance, freight forwarding and other firms and agencies dealing with world trade.

ITM has an extensive program of seminars, exhibitions and workshops designed to foster international commerce. It was founded in 1946.

Other 1977-78 officers are **James J. Coleman**, first vice president; **C. Alvin Bertel**, second vice president; **Frank S. Normann**, third vice president; **Martin C. Miler**, treasurer; **Harvey C. Koch**, secretary and fourth vice president; **Goldie N. Moore**, assistant secretary; **Dr. Herbert E. Longenecker**, managing director; **J.A. Trentin**, assistant managing director, and **Richard B. Jurisich**, legal counsel.

**Wall Rope Works
Offers New Literature
On Eye-Splicing**

Wall Rope Works, Beverly, N.J., has published Technical Bulletin 806 which gives complete eye-splicing information for marine 8-braid (plaited) rope. Two-color step-by-step drawings and descriptions make what could be a difficult splicing operation relatively easy.

For a copy of the Bulletin, write to **Robert Snyder**, Wall-New Bedford Rope, Beverly, N.J. 08010.

**New Dravo SteelShip
Descriptive Brochures
Now Available**

Dravo SteelShip Corporation announces three new brochures available. Fresh off the press is a four-color descriptive brochure of the SteelShip 50, a four-color brochure of the general line of AlumaShip vessels built by Dravo SteelShip Corporation, and a com-

pletely revised edition of Dravo SteelShip's Catalog of Standard Designs, containing over 100 pages of planning illustrations for pushboats, tugs, dredge tenders, general cargo vessels, supply boats, line handling boats, harbor launches, fireboats, patrol boats, crewboats, fishing vessels, and general service utility launches.

Many of the standard designs are part of Dravo SteelShip's

"stock boat" program, where vessels are built ahead of order in order to facilitate 30 to 90-day delivery required by today's customers.

Copies of these new brochures are available to naval architects and any other interested parties upon request. Write **Edward D. Fry**, Dravo SteelShip Corporation, Route 4, Box 167, Pine Bluff, Ark. 71602.

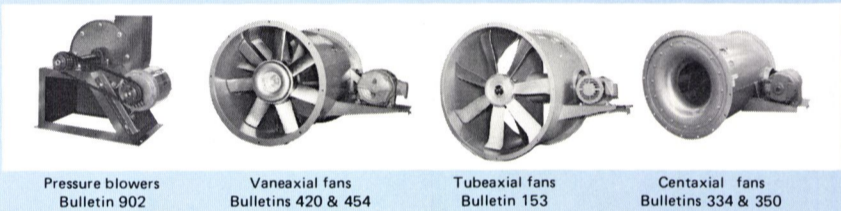
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The Education Of Engineers For The Ocean Industry Is Subject Of SNAME Meeting

The New England Section of The Society of Naval Architects and Marine Engineers met in March at the faculty club of the Massachusetts Institute of Technology. Following a social hour and dinner, the 100 attending members were greeted by a special guest for the evening, Robert G. Mende, secretary of SNAME.



Shown at the New England Section, SNAME, meeting are, left to right: Dr. Ira Dyer, speaker; Dr. T. Francis Ogilvie, speaker; Alfred Keil; and Rear Adm. C.N. Payne, USN (ret.), speaker.

The three speakers for the evening in turn gave their views on the "Education of Engineers for the Ocean Industry." The speakers were, in order of presentation: Dr. T. Francis Ogilvie, University of Michigan, Dr. Ira Dyer, Massachusetts Institute of Technology, and Rear Adm. C.N. Payne, USN (ret.), Webb Institute of Naval Architecture.

The papers ranged widely, from addressing the specific needs of the industry, to discussing the philosophy of ocean engineering education. A common emphasis was on the importance of teaching sound engineering fundamentals, in way of preparing the

student for the broad range of problems he or she is likely to face in industrial practice. Representatives of educational institutions from Maine to Connecticut were eager to ply the speakers with questions as well as offer views of their own.

The three papers are bound in a single volume, and are available from the Section editor, Lt. Comdr. James A. Sanial, USCG, Department of Engineering, U.S. Coast Guard Academy, New London, Conn. 06370.

Equitable Shipyards Launches Ferryboat Virginia Dare For State Of North Carolina

The ferryboat Virginia Dare, being built by Equitable Shipyards, Inc. in its Madisonville (La.) Shipyard, for the State of North Carolina Board of Transportation, was recently launched. The Virginia Dare will be delivered to Cedar Island Terminal Facility (Pamlico Sound), Cedar Island, N.C.

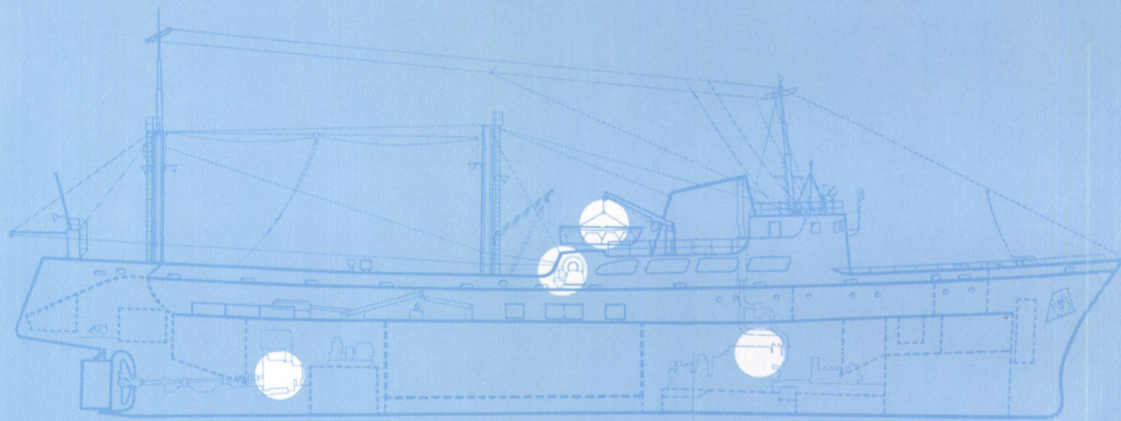
The principal characteristics of the new ferryboat are: length overall—161 feet; beam, molded—48 feet; depth, molded—14 feet 2½ inches, and draft, maximum—7 feet.



The ferryboat Virginia Dare is shown being launched at Equitable Shipyards' Madisonville, La., yard.

The Virginia Dare is of all-welded steel construction with a capacity for 35 cars, and can accommodate 300 passengers. The vessel has an air-conditioned lounge. The vessel is powered by two Caterpillar Type D-398 TA diesel engines, each with continuous output of 850 horsepower at 1,225 revolutions per minute. The Virginia Dare meets all U.S. Coast Guard rules and regulations for passenger vessels. Steering is electrohydraulic, with instrumentation and controls mounted on a console in an air-conditioned pilothouse.

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



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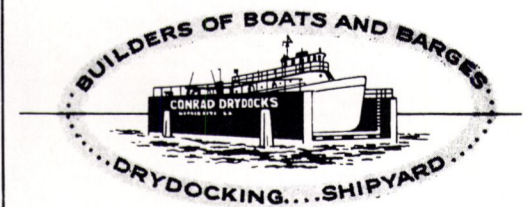
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PADD LAUNCHES NEW YARD TUG: A new 57-foot welded steel tugboat, built by Perth Amboy Dry Dock Co., was recently put into service at their Hoboken, N.J., headquarters. The twin-screw vessel, powered by 250-hp diesels, weighs almost 32 long tons and has a fuel oil capacity of approximately 4,500 gallons. Named Josephine B, in honor of the wife of **Alfred C. Bruggemann**, president of PADD, it carries the green and white colors of the company and their emblem of a bright green bullfrog on a lily pad. In 1887, when Perth Amboy Dry Dock Co. was founded, they were servicing three-masted schooners. Now, their piers can handle vessels up to 800 feet long with a beam of 130 feet and a 32-foot draft at low water.

Tampa To Relocate Its Shrimp Docks To Make Room For American Ship's Expansion

The Tampa Port Authority has selected Watson and Company, P.O. Box 18405, Tampa, Fla. 33679, architects-engineers of Tampa and Orlando, to plan and design the relocation of the Port of Tampa's shrimp docks.

The move is needed to make room for an expansion of the facilities of Tampa Ship Repair & Dry Dock Co., Inc., a division of The American Ship Building Company.

The existing shrimp docks are in the Hookers-Point area of the port. The new docks will be near the 22nd Street Causeway, a major traffic route leading eastward out of the port area.

About 75 shrimp boats operate out of Tampa. To furnish new berthing accommodations for the fleet, it is estimated that a pier about 1,400 feet long will be built, plus three more loading/unloading piers. A number of ancillary buildings will also be part of the project.

Watson and Company has assigned **Fred B. Eastman** as its project manager.

New Literature Available From Henschel Corporation On New Digital Shaft RPM Indicators

Precise digital presentation of shaft speed and direction of rotation is provided by these new digital shaft RPM indicators by Henschel.

Two models are available: one for shaft speeds of 0 to 199 rpm, the other from 0 to 999 rpm. Forward motion is displayed in big, easy-to-read LED figures. Astern rotation is indicated by a blinking minus sign immediately preceding the digits. A dimmer control is provided for dark-adaptation convenience.

Enclosed in a drip-proof cast-aluminum case, these units are designed for panel, console or bulkhead mounting.

Driven by a standard shaft speed trans-

mitter and powered by 115 VAC-60Hz, these digital shaft speed indicators can be used alone, with other similar remote reading unit, or in a system containing voltmeter (dial) type units with no degradation of the system's plus/minus 1-rpm accuracy. Standard scale factor is 7.2 VDC per 100 rpm. Other scaling factors can be provided. The operating range is 0 degrees to 50 degrees centigrade.

For a copy of the new literature, write **John G. Landers**, Henschel Corporation, 14 Cedar Street, Amesbury, Mass. 01913.

SNAME Philadelphia Section Hears Presentation On 'Ocean Thermal Energy Conversion'

The Philadelphia Section of The Society of Naval Architects and Marine Engineers held its March meeting at the Engineers' Club in Center City. Seventy members and guests were on hand for the presentation of a paper entitled "Ocean Thermal Energy Conversion (OTEC)—a General Review," by **Robert M. Eisert**.

Following the social hour and dinner, coordinator **J.M. Ballinger** called on **E. Schorsch**, vice president of science and technology at Sun Shipbuilding and Dry Dock Co., to open the technical session and introduce the author. Mr. Schorsch outlined the work done in recent years by Sun, in support of the OTEC Concept proposed by the Applied Physics Laboratory (A.P.L.) of the Johns Hopkins University.



Principals of the Philadelphia Section meeting, left to right: **Capt. J.M. Ballinger**, USN (ret.), Sun Shipbuilding & Dry Dock Co., coordinator; **A.C. Brown**, chairman of the Section; **F.W. Beltz**, Section vice chairman, and **R.M. Eisert**, Sun Shipbuilding, author.

Mr. Eisert is manager of machinery sciences at Sun, and has been directly involved in that company's support of the A.P.L. work in this field.

"Ocean Thermal Energy Conversion is a concept by which power is generated in a cycle operating with ocean surface water as a heat source, and deep-ocean water as heat sink. It requires large volume flows per unit power output, but consumes no fuel and produces no environmentally negative by-products."

The OTEC concept is not new. It is discussed in papers dated 1881, and an open cycle plant was built and operated by Georges Claude in 1930. In light of the current energy awareness, the idea has received much more attention in recent years, and the paper reviews those plants which are now the subjects of serious study.

The paper was well received, and the author was presented with a certificate of appreciation by **A.C. Brown**, chairman of the Philadelphia Section.

Halter Delivery To Tidewater Completes Eighty-Six Vessel Fleet Expansion Program

Tidewater Marine Service, Inc. of New Orleans, La., has accepted delivery of the **Sellers Tide**, a new towing-supply vessel built by Halter Marine Services, Inc. at their Lockport, La., shipyard.

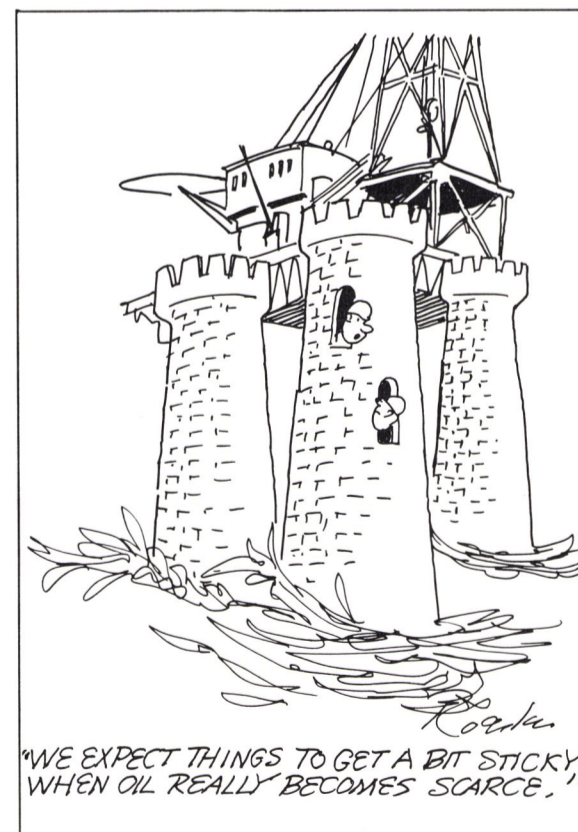
The 194-foot by 40-foot by 17-foot offshore service vessel is powered by two EMD diesel engines rated at 5,750 continuous horsepower. Named in honor of **Ronald G. Sellers**, a long-time employee of Tidewater, the vessel is equipped with bow thruster, built-in "P" tanks for carrying bulk cargoes, and a Smateco double-drum winch providing 300,000 pounds of single line pull.



The 194-foot **Sellers Tide** completes Tidewater's fleet expansion plan extending over a period of 42 months at a cost exceeding \$130 million.

The **Sellers Tide** is the last of 13 U.S.-flag vessels, two 180-foot towing-supply vessels, three oceangoing tugs, six 194-foot towing-supply vessels and two 218-foot towing-supply vessels, which were constructed and delivered during this current fiscal year ending March 31, 1977 at a cost of approximately \$41.7 million. This completes a fleet expansion program extending over a period of 42 months, during which Tidewater has added 86 vessels by new construction and acquisition at a cost exceeding \$130,000,000. Plans are now being finalized for additional marine capital expansion.

Tidewater is the world's largest owner and operator of offshore marine support service vessels. Its fleet of approximately 385 vessels operates in all major offshore oil and gas areas of the world.



EDO Corporation Names John Devine To Head International Division

EDO Corporation, pioneer producer of aviation, oceanographic and electronic equipment, has announced that it has named **John H. Devine Jr.** as president of the company's International Division, which is headquartered at College

Point, N.Y. 11356. Mr. Devine succeeds **Dewey A. Canessa**, who has resigned.

Mr. Devine, who joined EDO International in 1970 as general manager and assistant to the division president, brings a wealth of marketing and technical experience to his new post. He had previously served as an engineer in the development of radar and sonar systems at EDO — from

1955 to 1958 — before he joined the Sperry Gyroscope Division of Sperry Rand, where as a senior research section head his activities were devoted almost entirely to sonar development, a good part of his time being spent at sea on experimental programs.

Mr. Devine, a native of Brooklyn, N.Y., holds bachelor's (1951) and master's (1957) degrees in electrical engineering from City

College of New York. Prior to gaining his master's degree, he worked in the Material Laboratory of the New York (Brooklyn) Naval Shipyard as an electrical engineer for four years. He is a member of The Institute of Electrical and Electronics Engineers, Inc.



John H. Devine Jr.

Founded in College Point in 1925 by **Earl D. Osborn**, to manufacture seaplanes and seaplane floats, EDO (Amex) is one of the world's leading producers of floats and sonar equipment. The company now has divisions and subsidiaries in Connecticut, New Jersey, Kansas, Texas, Utah and California, and sales representatives in many foreign countries.

Newport News Appoints John H. McMullen Jr.



John H. McMullen Jr.

John H. McMullen Jr. has been appointed manager of manufacturing engineering for Newport News Shipbuilding.

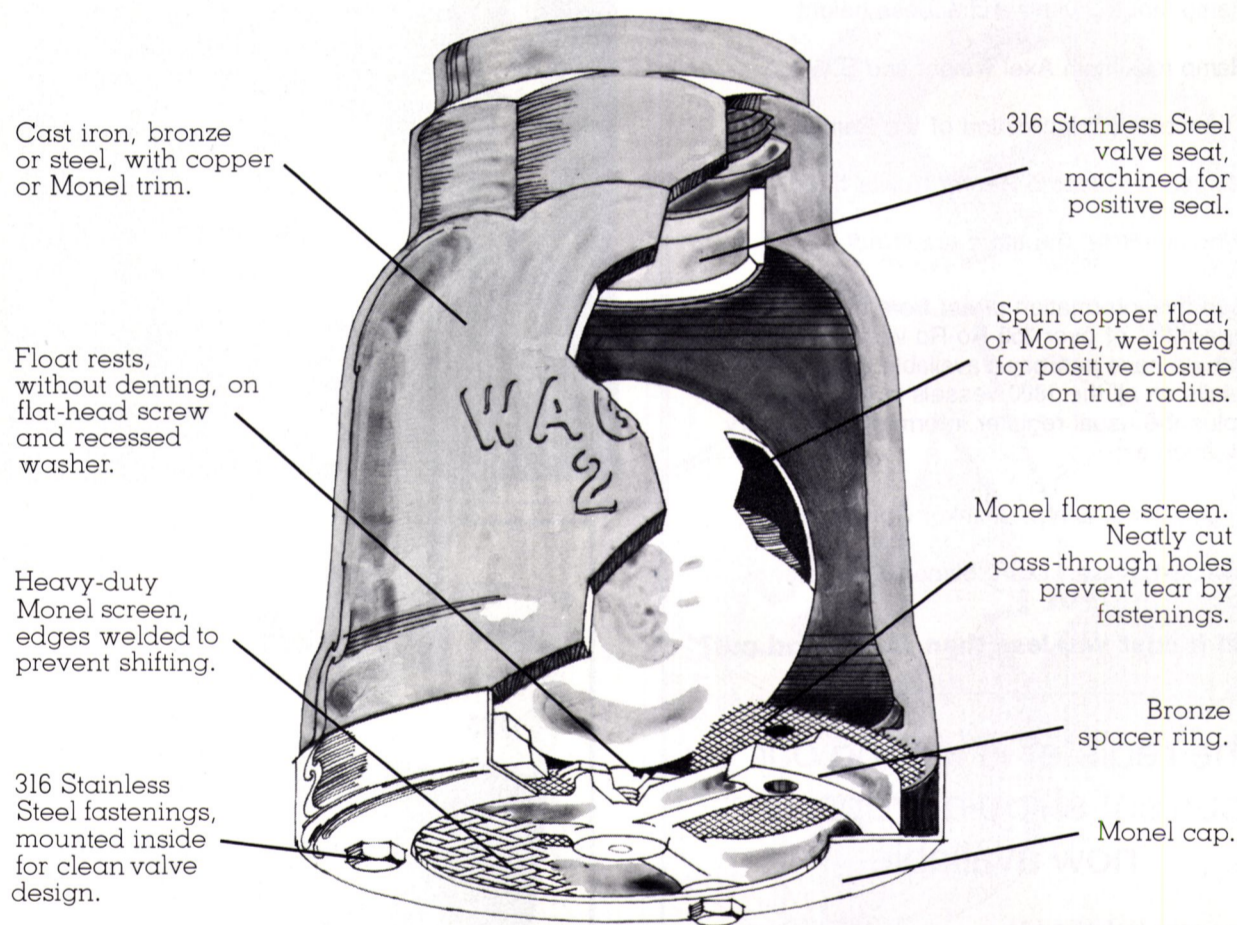
Mr. McMullen will be responsible for production engineering, process engineering, capital justifications, space allocations, plant equipment, and office equipment planning and acquisitions.

A native of Philadelphia, Pa., Mr. McMullen is a 1969 graduate of Tuskegee Institute in Alabama, with a Bachelor of Science degree in mathematics.

Prior to joining Newport News Shipbuilding, Mr. McMullen held the positions of industrial engineer trainee, industrial engineer and industrial engineering supervisor with Lukens Steel in Coatesville, Pa. He also had served as assistant program planner of Ingalls Shipbuilding.

Mr. McMullen is a member of the American Society for Metals, the Association of Iron and Steel Engineers, the American Institute of Industrial Engineers, Alpha Phi Alpha Fraternity, Odd Fellows, Masons, and Shriners.

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Chesapeake Section Of SNAME Hears Papers On Propeller Cavitation And Unsteady Forces



Principals shown above at the SNAME Chesapeake Section meeting are, left to right: P. Van Oossanen, author; Dr. William Morgan, moderator; Robert F. Roddy Jr., author; Frank Sellars, Section chairman; Dr. Marinus Oosterveld, NSMB; Phillip Eisenberg, past president of SNAME, and Dr. John P. Breslin, discussor.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers held its fifth meeting of the 1976-77 season at the Officers Club of the Washington Navy Yard in Washington, D.C. The meeting included the presentation of two papers on unsteady propeller hydrodynamics.

The presentation of the papers followed a social hour and dinner attended by about 70 members. The technical session was moderated by Dr. William Morgan of the David Taylor Naval Ship Research Development Center. The first paper, entitled "A New Procedure for the Calculation of Unsteady Forces on a Marine Propeller," was presented by Robert F. Roddy Jr. of DTNSRDC. The paper described a relatively straightforward calculation procedure for the unsteady forces acting on a propeller operating in a nonuniform wake. The actual velocity distributions in the wake are used in the calculation of forces on the propeller blade at incremental positions around the propeller disk. Simplifications are made in the calculation of the instantaneous forces acting on the propeller blade. The author presented comparisons with experimental data which showed agreement which was comparable with that obtained using other calculation procedures. Dr. John Breslin of the Davidson Laboratory discussed the paper.

The second paper, entitled "Theoretical Prediction of Cavitation on Propellers," was presented by P. Van Oossanen of the Netherlands Ship Model Basin. In this paper, a method was described for the assessment of cavitation inception and for the calculation of the type and extent of cavitation on marine propellers. The adopted theory is suitable for application to nonuniform flows such as exist behind ships. Some primary effects associated with viscosity are also included, in particular the problem of Reynolds number scaling such as occurs when testing models in cavitation

test facilities at speeds lower than at full-scale.

It was shown that the described theory leads to reasonable correlations with actual cavitation patterns for lightly—and moderately—loaded propellers. For heavily loaded propellers, such as those of tankers, tugs, etc., the calculated results were less satisfactory. The argument was made that this is due to the lack of knowledge regarding the change in the wake flow into the propeller due to the propeller load.

For minimizing the occurrence of cavitation in subcavitating propeller design, a long-standing experience in both the design and testing of propellers in cavitation test facilities is normally required. With the use of the described theory, however, it is possible, by systematically varying design parameters, to arrive at a successful

design in a straightforward manner. In the paper, this was demonstrated by showing some results of parametric studies.

An extensive discussion period followed the presentation of the paper. The discussors included D. Burke, R. Cummings, B. Cox, T. Brockett, and T. Huang of the David Taylor Naval Ship Research Development Center, and O. Scherer of Hydronautics.

Alfred Conhagen Issues New Catalog

Alfred Conhagen, Inc., a leading supplier of pump, turbine and compressor parts, has issued a new brochure covering their capabilities and products.

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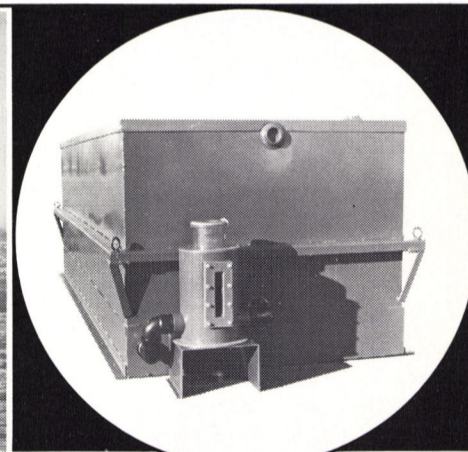
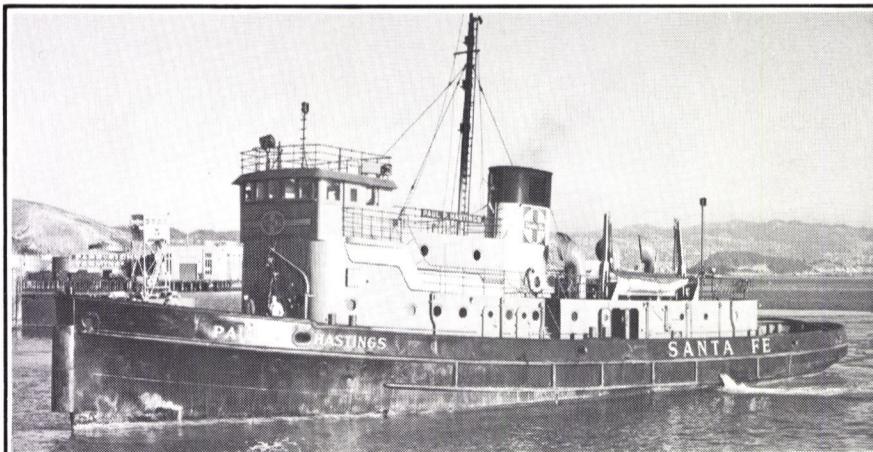
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Tidd Named Manager Naval Ship Marketing For Newport News Ship



Sidney M. Tidd

Sidney M. Tidd has been appointed manager of Naval ship marketing and sales for Newport News Shipbuilding, Newport News, Va.

Mr. Tidd will be responsible for identifying and developing Naval ship markets and for coordinating and directing overall marketing and sales activities for the com-

pany's Naval shipbuilding product line. He will serve as the company's primary interface with the Navy for sales activity for new construction, overhaul and refueling, and design/engineering services.

He joined Newport News Shipbuilding as an electrician's helper in 1942 and subsequently graduated from the shipyard's Apprentice School in hull design in 1951.

In his 35 years with the shipyard, he has held a variety of increasingly responsible positions, including senior designer, junior design supervisor, senior design supervisor, program manager for nuclear cruisers, senior program manager for cruisers, senior liaison manager for cruisers and design manager.

A native of Hot Springs, Va., Mr. Tidd is a member of the Navy League, National Security Industrial Association, serving on the Surface Ships Subcommittee, and The Propeller Club.

Gulf's Oil Recovery Vessel For Bantry Bay, Ireland Built In Rhode Island By Blount Marine



With its bow secured, the 100-ton Bay Skimmer cruises at better than 9 knots on Narragansett Bay. It carries a crane amidships to pick debris from its oil collection tank and to allow it to double as a general supply and patrol craft in Bantry Bay, Ireland.

Gulf Oil Corporation has acquired a newly developed oil recovery vessel for its deepwater oil terminal in Bantry Bay, Ireland. Besides requiring a highly effective oil recovery unit, Gulf also required a ship to patrol the waters near Whiddy Island, where the terminal is located, and periodically to patrol the full length of Bantry Bay, a round trip of about 50 miles.

The vessel, christened the Bay Skimmer, is a fully equipped, 68-foot, 100-ton ship designed to patrol at speeds up to 9 knots and to recover oil up to 3 knots. The vessel, custom built for Gulf Oil use, is the prototype of a deepwater class of oil cleanup vessels that use a skimmer principal developed by JBF Scientific Corporation in Wilmington, Mass.

Built by Blount Marine Corporation, Warren, R.I., the Bay Skimmer was designed by Ralph A. Bianchi, president of JBF Scientific Corporation. Mr. Bianchi has designs for skimmer vessels up to 160 feet in length, and he believes that a skimmer that large could effectively clean up an Argo Merchant spill.

Because there are no drydock- ing or heavy-lift facilities within a convenient distance of the ter-

minal, the hull of the vessel was designed so that it may be beached in the event that repair or maintenance work must be done below the waterline.

The Bay Skimmer utilizes the Dynamic Inclined Plane (DIP) Recovery System, collecting oil by forcing it under the surface of the water. Oil follows the surface of the moving inclined plane to a collection well underneath the unit. Buoyant forces cause the oil to naturally separate in the well, where it forms a deep oil pocket. Water-free oil is pumped from the top of the well to storage.

A double-chined displacement hull, powered with a twin propulsion system, provides high cruising speeds and excellent seakeeping characteristics. The bow is arranged to be opened during oil recovery operations and closed while transiting or operating as a workboat and supply vessel. The first of this class vessel was launched in January of 1977.

For literature completely describing the JBF DIP OIL Recovery Systems, write to Mr. Bianchi at JBF Scientific Corporation, 2 Jewel Drive, Wilmington, Mass. 01887.

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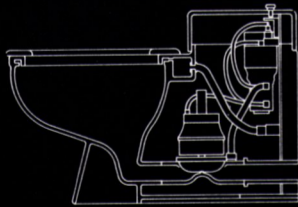
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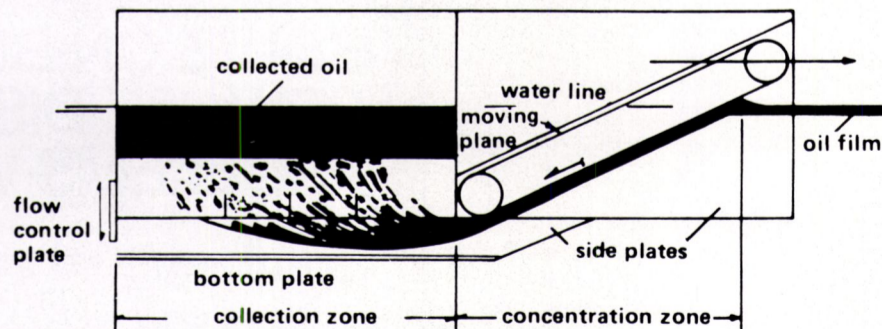
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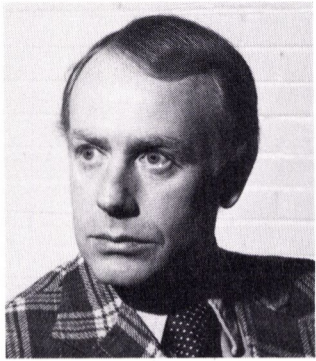
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The heart of the skimmer system is this dynamic inclined plane. Oil is pushed beneath the conveyor belt and back into a collection hold, where it separates from water. The belt moves faster than the forward speed of the vessel to prevent oil from backing up at the bow.

**Sun Shipbuilding
Names Edwin McDevitt**



Edwin L. McDevitt

Sun Shipbuilding & Dry Dock Co., Chester, Pa. 19013, has named **Edwin L. McDevitt** as manager, professional employment. In this post, Mr. McDevitt is responsible for recruiting all professional, technical, managerial and clerical personnel. He reports to **Robert E. Barnhart**, director of industrial relations.

Mr. McDevitt came to Sun from The Korman Corporation in Jenkintown, Pa., where he was manager, personnel administration.

**COMSAT General Elects
McLucas President—
Johnson Named Chairman**

Dr. **John L. McLucas**, former administrator of the Federal Aviation Administration, has been elected president of COMSAT General Corporation, and **John A. Johnson**, president of COMSAT General for the past four years, has been elected chairman of the board and chief executive officer.

Dr. McLucas was also elected to the board of directors of COMSAT General.

The actions were announced by Dr. **Joseph V. Charyk**, president of Communications Satellite Corporation (COMSAT), of which COMSAT General is a wholly owned subsidiary. Dr. Charyk, who has been serving as chairman of the board of directors of COMSAT General, said that with the election of Mr. Johnson and Dr. McLucas, he will now serve as chairman of COMSAT General board's executive committee.

Dr. Charyk said that both he and Mr. Johnson are "delighted that COMSAT General will have the benefit of Dr. McLucas's long and distinguished career as an administrator, engineer and scientist."

Dr. McLucas was nominated as FAA Administrator by President Ford in 1975, and served in that capacity until April of this year. Earlier, he was Secretary of the Air Force (1973 to 1975) and Under Secretary of the Air Force (1969 to 1973). Before that, he served as Assistant Secretary General for Scientific Affairs of the North Atlantic Treaty Organization, and as president of The Mitre Corporation.

Dr. McLucas is a native of Fayetteville, N.C., and holds a B.S. degree from Davidson College, an M.S. degree from Tulane Univer-

sity, and a Ph.D. degree in physics and electrical engineering from Pennsylvania State University.

Mr. Johnson has been president of COMSAT General since the subsidiary was established in February 1973. Before that, he served as vice president, international, of COMSAT, which he joined in 1963, and as senior vice president. He was chairman of the Interim Communication Satellite Committee, the governing

body of the International Telecommunications Satellite Organization (INTELSAT) during its formative years, and served as the first United States governor on the INTELSAT board of governors. Mr. Johnson, a lawyer, is a native of Milwaukee, Wis., and holds an A.B. degree from DePauw University, a J.D. degree from the University of Chicago Law School and an LL.M. degree from the Harvard Law School.

COMSAT General Corporation, 950 L'Enfant Plaza, S.W., Washington, D.C. 20024, is engaged in a number of major programs, including maritime satellite communications (MARISAT), and domestic satellite communications (COMSTAR), and is a partner in Satellite Business Systems (SBS), along with IBM and The Aetna Casualty and Surety Company, which is planning a U.S. domestic satellite communications system.

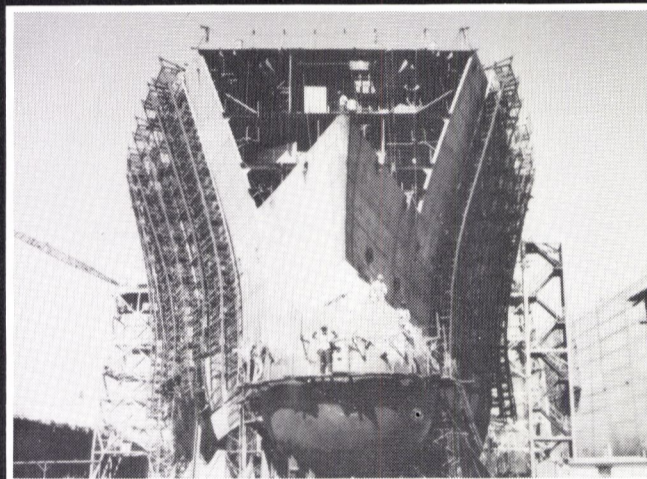
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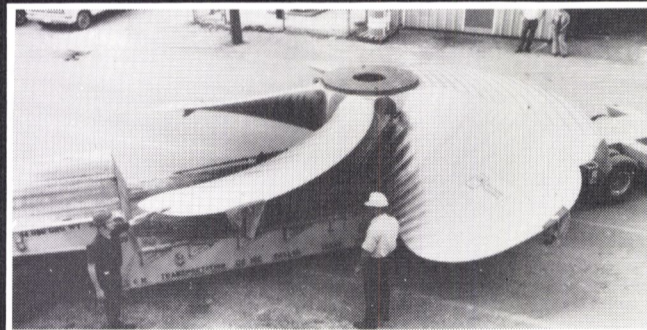
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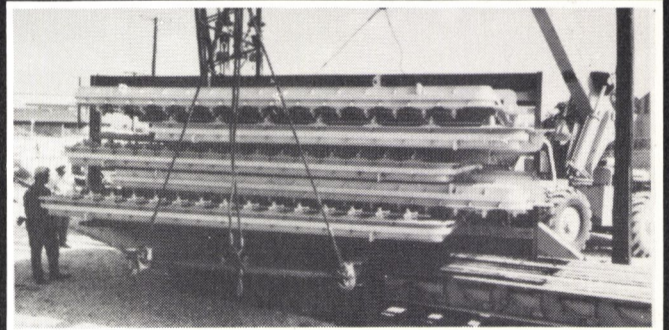
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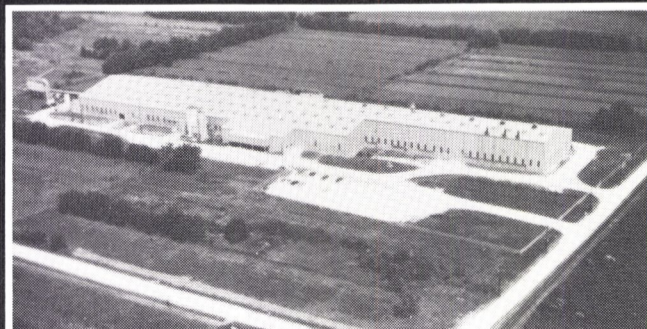
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**W.B. Arnold Co., Inc.
Opens West Coast Office**

W.B. Arnold Co., Inc. announces the opening of its branch office at 439 Bryant Street, San Francisco, Calif. 94107.

James A. Stasek has been appointed vice president and regional manager. A 1945 engineering graduate of the U.S. Merchant Marine Academy, Mr.

Stasek brings a broad background of technical sales and management experience. He will continue as a director of Kings Point Machinery, Inc.

The company serves the marine and offshore industries with a wide variety of specialized products and services. The main office is located at 1140 Bloomfield Avenue, West Caldwell, N.J., and the Gulf regional office in Houston, Texas.

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**Return On Tankship Investment
Subject Of N.Y. SNAME Meeting**



Pictured above during the New York Metropolitan Section meeting are, left to right: David O'Neil, secretary-treasurer; Arnold Stein, chairman; Robert Walsh Jr., author; Nicola Pergola, vice chairman, and Walter Maclean, executive committee.

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers held its April meeting at the Seamen's Church Institute in New York City.

After a social hour and dinner, the technical session was held, and a paper entitled "Estimated Return-On-Investment of Oil Tank Ships" was presented by Robert G. Walsh Jr., Exxon International Company.

A model to estimate return on investment of oil tank ships is developed to assess the historical returns of various types of tanker ownership. Looking back in time may offer some guidance for the

future and also expose pitfalls of this investment area. Study results are that the return on investment for oil tank ships has historically ranged from, at best, break-even, to about 30 percent for early '50s, and 20 percent for the late '60s and '70s.

To perform numerical computations, specific vessel sizes, periods of operation and trade routes are selected. Sizes selected are the typical tanker, the largest Suez Canal tanker, and the largest tanker at the beginning of a particular period. Also, three time periods are selected: 1950-70, 1959-76, and 1969-76. Instead of forecasting future costs and revenues, the model is truncated in 1976 using resale or scrap values. Because of the high volume of long-distance crude movement, the Gulf (Ras Tanura) to Northern Europe (Rotterdam) trade route is selected.

U.S. Lines Names

**Capt. Vincent Moscatello
Manager Howland Hook**

Capt. Vincent A. Moscatello, who joined United States Lines in 1943, has been appointed terminal manager of the Howland Hook Marine Terminal on Staten Island, N.Y., it was announced by William J. Klauberg, vice president, Eastern Division, U.S. Lines.

In his new post, Captain Moscatello will work toward the administration of an efficient and effective low-cost terminal operation. Captain Moscatello, who is 54 years old, is a graduate of the Kings Point Maritime Academy.

United States Lines, which just recently expanded their services to include Indonesia, operates a fleet of 38 modern vessels, including 16 high-speed, high-capacity container ships in its 15,000-mile Tri-Continent Service between Europe, the East and West Coasts of the United States, Panama, Hawaii, Guam and Far East and Southeast Asian ports.



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**Sun Ship Names
Schmitt Naval Architect
Administrative Division**



Richard Schmitt

Sun Shipbuilding and Dry Dock Co., Chester, Pa., has appointed **Richard Schmitt** as naval architect, Shipbuilding Administrative Division. Mr. Schmitt's responsibilities include the review and updating of ship repair cost estimating techniques and the development of special marketing programs. He reports to **Everett C. Hunt**, director of the Shipbuilding Administrative Division.

Mr. Schmitt comes to Sun from Exxon International, Tanker Department, in Florham Park, N.J., where he worked from 1966 to 1977. While with Exxon, he had a variety of assignments, including design of specialty gas carriers, pollution control, tanker planning and acquisition economics, and the design of a computerized shipbuilding data and retrieval system. His last post with Exxon International was senior project engineer.

From 1962 to 1966, Mr. Schmitt worked for J.J. Henry Co., Inc., naval architects and marine engineers in New York City.

Mr. Schmitt is a graduate of the Webb Institute of Naval Architecture and Marine Engineering and holds an MBA degree in international business management from New York University.

**128 Plant Facilities
Located On Waterways
In Fourth Quarter '76**

James R. Smith, president of The American Waterways Operators, Inc., Washington, D.C., has announced that 128 plant facilities were located along the waterways of the United States in the fourth quarter of 1976, creating nearly 25,000 permanent employment opportunities.

Of the 128 plant facilities, 101 reported capital investments totaling \$1,819,700,000, an average \$18-million investment per plant-site. A total of 23,730 new jobs will be created by 39 of these plant locations, resulting in an average 608 employees per plant, the highest average ever recorded by AWO.

AWO records show that 40 of the plants were chemical and petroleum refining facilities, 33 were

metal-producing plants, 10 were paper and wood-producing plants, five were terminals, docks and wharves, and the remainder consisted of general manufacturing and miscellaneous installations.

The Mississippi River led with 28 facilities, followed by the Gulf intracoastal Waterway with 12, the Atlantic Intracoastal Waterway with 11, the Tennessee River with 10, and the Houston Ship Channel with eight. The total

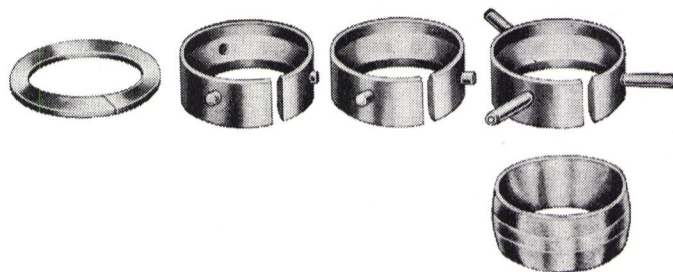
number of plant locations and expansions recorded by AWO has reached 10,205 since AWO began compiling statistics in 1952.

One of the major plantsite decisions of the fourth quarter was the headquarters of Monoflex International, which will be located in Emmett, Idaho, near the Snake River. The complex will include approximately 10 plants to be constructed over the next 18 months. The plants will be used

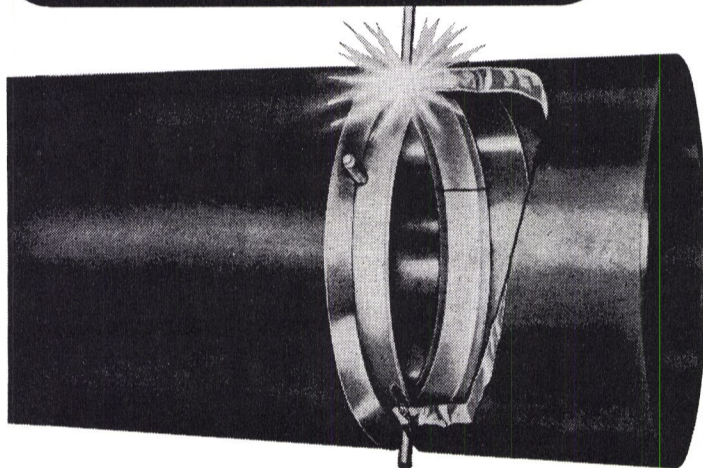
in the manufacture of fireproof and weather proof insulating coating for walls and roofs. Employment at the facilities will reach 10,000 persons.

AWO president **Smith** stated that while all of the facilities recorded do not necessarily utilize water transportation, the availability of barge service results in a general reduction of the freight rate structure, an important factor in plant location decisions.

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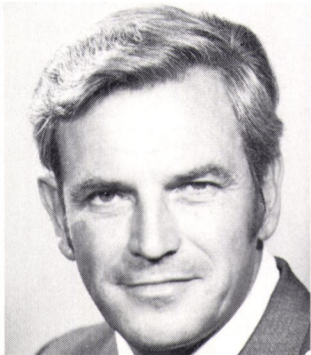
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NASSCO Elects Evans Vice Pres.-Engineering



Kenneth Evans

At its recent board of directors meeting, National Steel and Shipbuilding Company, San Diego, Calif., elected **Kenneth Evans** as vice president-engineering. This promotion reflects his increased responsibilities as head of the growing engineering capability.

A native of Sunderland, England, Mr. Evans graduated from Sunderland Technical College, majoring in naval architecture, and

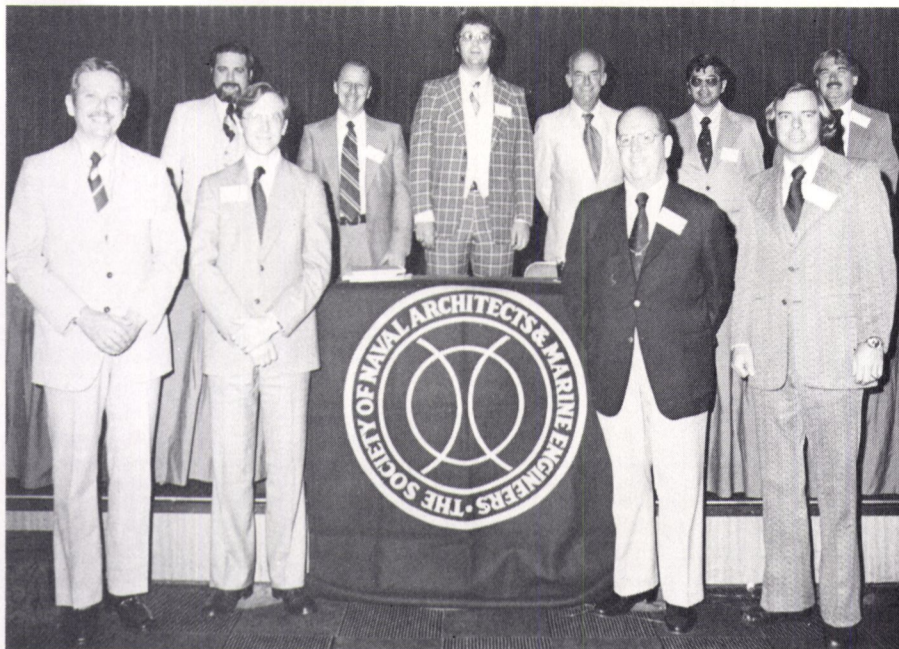
subsequently served a five-year apprenticeship as ship draftsman at Bartram and Sons, Ltd.

Prior to his employment at NASSCO in 1961, Mr. Evans was a design engineer and estimator for Furness Shipbuilding (Hoverton Hill, England), and then supervisor of the naval architects department of Davie Shipbuilding (Quebec, Canada).

Since joining NASSCO, Mr. Evans has served as assistant naval architect, where he was responsible for all hull design calculations and associated drawings for both commercial and naval vessels. In 1973, he was appointed chief naval architect, responsible for the Hull Scientific, Hull Drafting, and Steel Control groups.

Mr. Evans has co-authored three technical papers which were presented to the San Diego Section of The Society of Naval Architects and Marine Engineers. He is a member of the Society, as well as a member of the Royal Institution of Naval Architects, England.

Gulf Section SNAME Holds Annual Spring Meeting



Technical papers contributors at the Annual Spring Meeting of the SNAME Gulf Section included (front, left to right) Jack Irick, Robert H. Nichols, William H. Johnston, Harry W. O'Brien, (back) Sal Guarino, Jack Brandau, Gary Rook, G. Rogers Smith, S.M. Sangiri, and Ralph Martin.

Members of the Gulf Section of The Society of Naval Architects and Marine Engineers recently met at the Fairmont Hotel in New Orleans, La., for their Annual Spring Meeting.

Rear Adm. **William H. Livingston**, USN (ret.), president of the Louisiana Shipbuilding and Repair Association, gave the keynote address at the luncheon meeting.

Throughout the day, technical papers were presented by authors from the Gulf Section, which includes Texas, Louisiana, Mississippi, and Alabama.

"We were delighted these papers were so enthusiastically received," said Papers chairman **Ralph Martin** of the American Bureau of Shipping in New Orleans.

Contributors included **Harry W. O'Brien Jr.**, "SCR Controlled Propulsion"; **Robert H. Nichols** and **William H. Johnston**, "State of the Art of Shipboard Drives — Past, Present, and Future"; **Jack Irick**, "Design and Construction of the Hondo Platform in 850 Feet of Water in the Santa Barbara Channel"; **G. Rogers Smith** and **S.M. Sangiri**, "Selection of Semi-Submersible Drilling Vessels Based on Topside Live Loading Capabilities"; **Jack Brandau**, "The Ship Model Basin — A Valuable Tool to the Naval Architect"; and **Gary Rook**, "Bayou Boat Building as it Relates to Modern Tug Design."

A dinner-dance at the Fairmont Hotel for the 450 guests culminated the day's activities. Louisiana Lt. Gov. **James Fitzmorris** was the special guest at the evening social.

General chairman of the Gulf Section is **Fred Shumaker** of El Paso LNG Co. He will be succeeded in 1977 by **William W. Hamilton** of Friede & Goldman, Inc.



Rear Adm. William H. Livingston keynoted the noon luncheon.



Vice chairman, Central, **Sal Guarino** (left) welcomes Louisiana Lt. Gov. **James Fitzmorris**.



Gulf Section chairman **Fred Shumaker** (left) and vice chairman, East, **Carlie Baxter Jr.**

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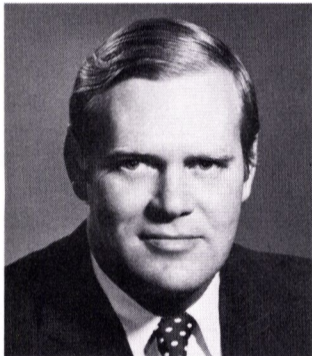
Two senior executives of Matson Navigation Company and its subsidiaries, Matson Terminals, Inc., and Matson Agencies, Inc., have traded jobs and each has assumed additional duties, **R.J. Pfeiffer**, Matson president, announced.



James P. Gray

James P. Gray, president of Matson Terminals, Inc., and **Robert T. Colson**, president of Matson Agencies, Inc., switched responsibilities as follows:

Mr. Gray, a senior vice president of Matson Navigation, assumed responsibility for Matson's freight division, including freight operations, marketing, sales and pricing. He also became chairman of the board of Matson Terminals, Inc., and president of Matson Agencies, Inc.



Robert T. Colson

Mr. Colson, also a senior vice president of Matson Navigation Company, became president of Matson Terminals, Inc., and also became chairman of the board of Matson Agencies, Inc.

Mr. Pfeiffer said the transfer was made to "broaden their management perspectives and enable each to provide fresh insights to the two companies, so closely linked in Matson's intermodal transportation services."

16-Page Booklet On Omega Navigation Available From Tracor

Tracor Instruments has produced a 16-page booklet on Omega Navigation. Titled "Omega, Most of Everything You Always Wanted to Know, but Were Afraid to Ask," the booklet contains concise text and informative illustrations that answer the most often asked questions about transmitting stations, application and operating procedure for Omega. For your free copy, write **Harry L. Thomas**, Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721.

May 15, 1977

Paceco Holds Third International Conference

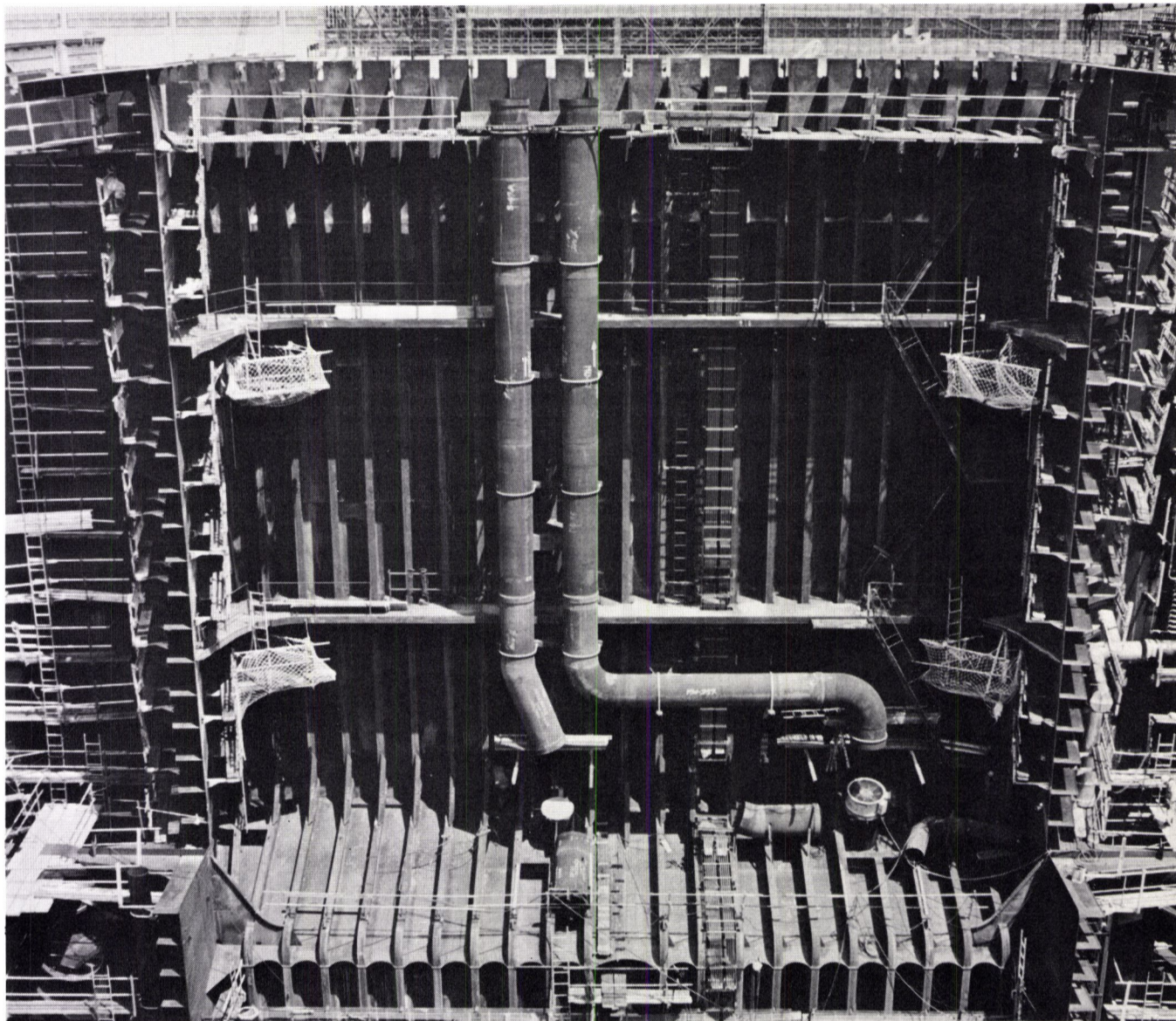
Paceco, Inc., a subsidiary of Fruehauf Corporation, recently held its Third International Conference at the St. Francis Hotel in San Francisco, Calif. The conference was prepared for Paceco licensees from around the globe, and included both business and social events. The first international meetings were held in

Tokyo in 1968, and the second conference was held in Oakland, Calif., in 1972.

The San Francisco conference consisted of papers presented by the licensee participants and the Paceco personnel on the newest engineering and the most recent developments in container-handling equipment. Progress made with additional automation components for the Paceco MACH (Modular Automated Container

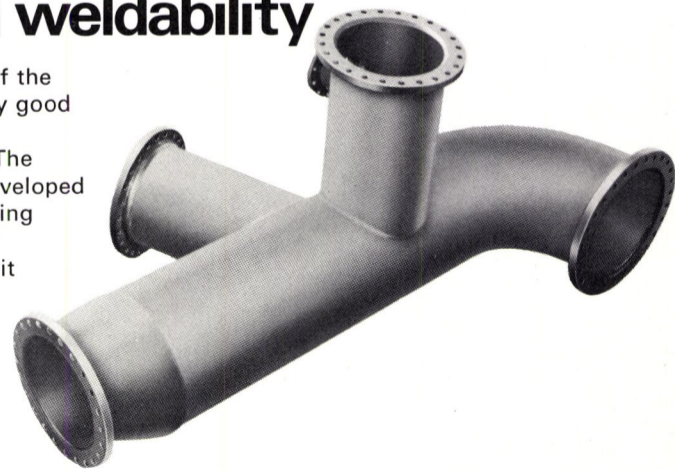
Handling) cranes was also discussed.

Licensees were taken on tours of the Bay area container terminals and those in the Ports of Long Beach and Los Angeles. Another tour in the Bay area provided for the visitors a demonstration of Paceco's completely automated crane model. Separate tours were provided for the wives, one of which was a trip through the California Napa Valley wine country.



Secrets behind superior corrosion resistance and weldability

Fifteen years of use without replacement is ample proof of the superiority of this pipe. Naturally, there must be some pretty good reasons for it, and there are. The materials and methods of manufacture of this cargo oil pipe are unique in the world. The material is KCP-3L, a chrome manganese steel especially developed by Kubota. It is made by Kubota's exclusive centrifugal casting techniques, widely acknowledged to be of the highest technological level. The highest degree of weldability gives it the greatest facility of use. That is why a full 95% of all Japanese tankers use Kubota cargo oil pipe. And why shipbuilders and repair docks around the world keep it on hand for installation and replacement. Write today for full information on how to raise the efficiency of your tanker operations.



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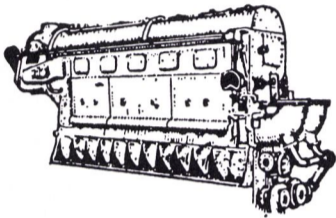
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MARINE DIESEL ENGINES



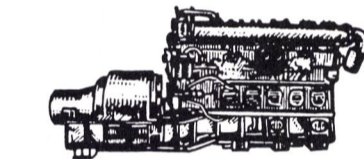
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3—GENERAL MOTORS, Model 3-268A, Marine, 150 HP, 1200 RPM, 3 cylinders, with Allis-Chalmers Generators, 100 KW, 120/240 DC.

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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.

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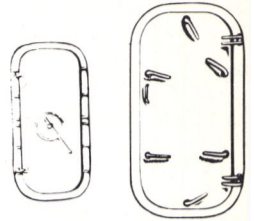
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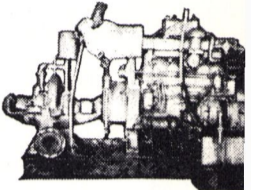
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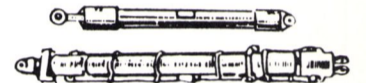
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Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
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2"	8"	1 1/2"	20"	double
2.5"	15"	1.12"	25 1/2"	double
3"	8"	1.37"	15 1/2"	double
6"	8"	4"	144"	double



AIR COMPRESSORS

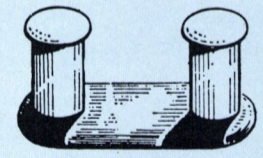
1—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5 3/4 x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

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

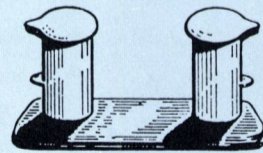
1—INGERSOLL - RAND, Model 40B, 155 CFM, 110 PSI, 870 RPM, with 40 HP Motor, 230 DC.

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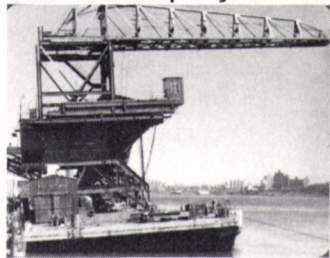


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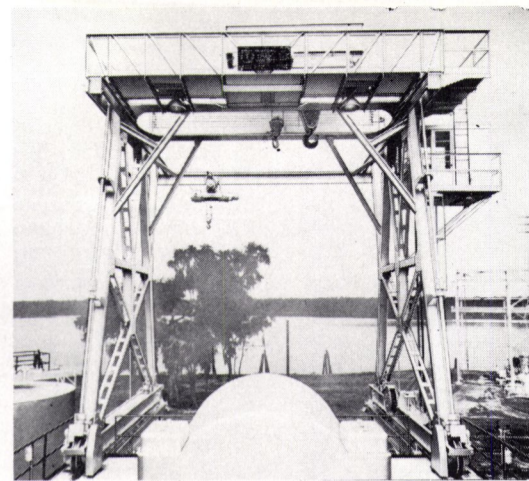
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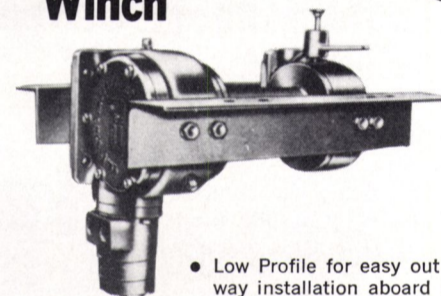


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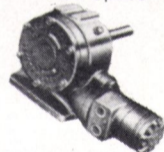
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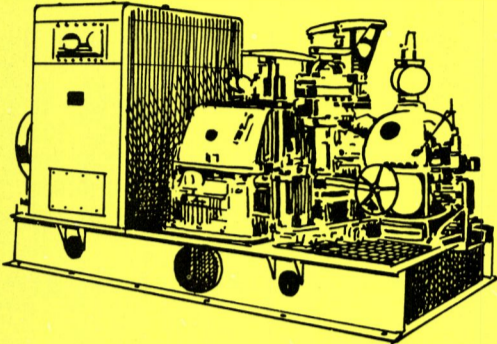
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750 KW GENERAL ELECTRIC TURBO GENERATOR UNIT

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 VDC, 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 1/4 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.

525 KW GENERAL ELECTRIC AUXILIARY TURBO GENERATOR UNIT

Complete with L.O. Cooler. **Turbine:** General Electric 525 KW, Type DORV-325M, 5645 RPM. **Reduction Gear:** General Electric Type S-162-D, 5645/1200 RPM, single helical. **Generators:** General Electric. (1) Type ABT, 3 phase, 400 KW, 450 VAC, 1200 RPM. (2) Type MPC, 75 KW, 110 VDC, 1200 RPM, Exciter. (3) Type MPLI, 55 KW, 120 VDC, 1200 RPM, Generator. (4) Auxiliary DC generators.

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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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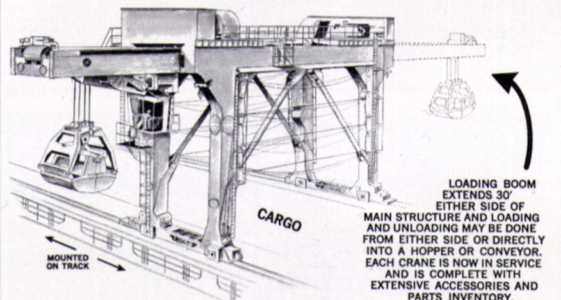
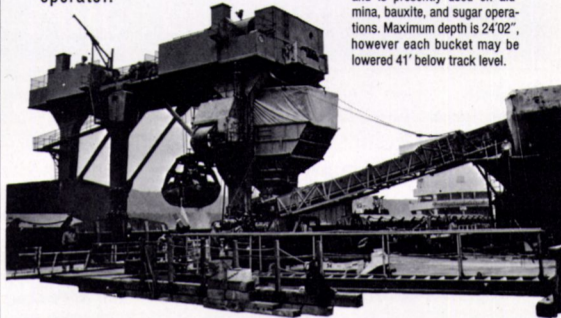
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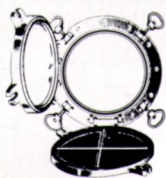
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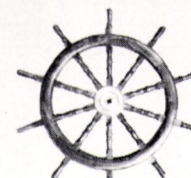
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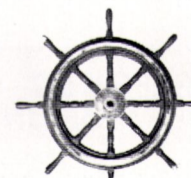
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Alpha Engineers, 7215 N.E. 13th Ave., Vancouver, Wash. 98665

American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004

Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015

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

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

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

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

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

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

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

C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd., Jacksonville, Florida 32211

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

Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517

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

Francis B. Crocco, Inc., Box 1411, San Juan, Puerto Rico

C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048

Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119

Designers & Planners, Inc., 114 Fifth Ave., New York, N.Y. 10011

M. Mack Earle, 103 Meilor Ave., Baltimore, Md. 21228

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

Christopher J. Foster, Inc., 14 Vanderverter Ave., Port Washington, N.Y. 11050

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

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

John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110

Morris Guralnick Associates, Inc., 550 Kearny Street, San Francisco, Calif. 94108

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

Hydranautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810

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

Littleton Research and Engr. Corp., 95 Russell St., Littleton, Mass. 01460

Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567

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

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

Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106

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

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

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

Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742

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

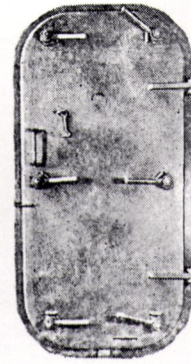
BUYERS DIRECTORY (continued)

Colt Industries, Water & Waste Management Operation, Beloit, Wisc. 53511
 Demco, Inc., P.O. Box 94700, Oklahoma City, OK 73109
 Engelhard Industries, Chloropac Systems, 2655 U.S. Rt. 22, Union, N.J. 07083
 Eureka Chemical Co., P.O. Box 2205, So. San Francisco, CA 94080
 Mapco, 1437 So. Boulder Ave., Tulsa, Okla. 74119
 Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
 Marland Environmental Systems, Inc., P.O. Box 9, Walworth, WI 53184
 Microphor, Inc., P.O. Box 490, Willits, CA 95490
 Red Fox Industries, P.O. Drawer 640, New Iberia, La. 70560
PROPELLERS: NEW AND RECONDITIONED—SYSTEMS
 Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
 J.W. Berg, S-430 Ockerö, Gothenburg, Sweden
 Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
 Coalidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102
 Escher Wyss GmbH, P.O. Box 798, Ravensburg, Germany
 Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich. 49502
 Propulsion Systems Inc., 21213 76th Ave. South, Kent, Wash. 98031
 Voith Schneider—U.S. Agent: Krupp International, Inc., 550 Mamaroneck Ave., Harrison, N.Y. 10528
PUMPS—Repairs—Drives
 Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
 Delaval Turbine Inc., IMO Pump Division, P.O. Box 321, Trenton, N.J. 08602
 FMC Corporation, Pump Division, 326 So. Dean Street, Englewood, N.J. 07631
 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
RATCHETS
 CM American, Division Columbus McKinnon Corp., P.O. Box 74, McKees Rocks, Pa. 15136
REFRIGERATION—Refrigerant Valves
 Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
 Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014
 Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 19523
RIGGING & BLOCKS
 Crosby Group, P.O. Box 3128, Tulsa, Okla. 74101
 D. Van Beest En Zn B.V., P.O. Box 57, Merwestraat 1-5, Slidrecht, The Netherlands
 Superior Switchboard & Devices, Division of Union Metal Manufacturing Company, P.O. Box 590, Canton, Ohio 44701
ROPE—Manila—Nylon—Hawser—Fibers
 American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
 Jackson Rope Corporation, Ninth & Oley Streets, Reading, Pa. 19604
 Samsom Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
 The Cordage Group, Columbian Drive, Auburn, N.Y. 13021
 Wall Rope Works, Inc., Beverly, N.J. 08010
RUDDER ANGLE INDICATORS
 Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
 Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
 Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
SCAFFOLDING EQUIPMENT
 Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707
SCALERS
 Chicago Monarch, Box 9751, Cleveland, Ohio 44140
 The Dalen Co., Wooster, Ohio 44691
SHAFTS, SHAFT REVOLUTION INDICATOR EQUIP.
 Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
 Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
SHIPBREAKING—Salvage
 American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
 The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
 General Metals of Tacoma, Inc., 1902 Marine View Dr., Tacoma, Washington 98422
 National Metal & Steel Corp., 691 New Dock St., Terminal Island, Cal. 90731
 Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201
SHIP BROKERS
 Agemar, P.O. Box 1465, Maracaibo, Venezuela
 Capt. Astad Company, Inc., 231 Carondelet St., New Orleans, La. 70112
 Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
 Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006
 Vensport, Apartado Postal No. 1201, Maracaibo, Venezuela
SHIP MODELS
 Jas Foley & Son, 506 Seventh Street, Santa Monica, Calif. 90402
SHIPBUILDING STEEL
 Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004
SHIPBUILDING—Repairs, Maintenance, Drydocking
 Arab Shipbuilding & Repair Yard Co., P.O. Box 5110, Bab-Al-Bahrain Building, Bahrain, Arabian Gulf
 Astilleros Espanoles, S.A., 17, Padilla, Madrid 6, Spain
 Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
 Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
 Bludworth Shipyard, Inc., (Subsidiary of Elpac, Inc.), 8502 Cypress St., Houston, Texas 77012
 Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
 Conrad Industries, P.O. Box 790, Morgan City, La. 70380
 Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles
 Dravo Corporation, One Oliver Plaza, Pittsburgh, Pa. 15222
 Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
 Economic Development Industrial Corp. of Boston, 60 Congress St., Boston, Mass. 02109
 Equipment Systems Division, AMCA International Corporation, Suite 200/Stockton Building/University Office Plaza, Newark, Delaware 19702
 Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122
 General Dynamics, Quincy Division, Quincy, Mass. 02169
 Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
 Harland & Wolff Shipbuilding & Engineering, Queens Island, Belfast, Northern Ireland
 Havre de Grace, Havre de Grace, Md.
 Hillman Barge & Construction Co., P.O. Box 510, Brownsville, Pa. 15417
 Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edoberi 1-Chome, Nishi-Ku, Osaka, Japan
 Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong
 Hyundai Mipo Dockyard Co., Ltd., 456 Cheonha-dong, Ulsan, Korea
 Hyundai Shipbuilding & Heavy Industries Co., Ltd., 5 World Trade Center, Suite 679, New York, N.Y. 10048
 Jeffboat, Inc., Jeffersonville, Ind. 47130
 Kawasaki Heavy Industries, Ltd., Kawasaki Kisen Kaisha, Ltd., 8 Kaigan-dori, Kura-ku, Kobe, Japan
 Keppel Shipyard Ltd., P.O. Box 2169, Singapore
 Kockums Shipyard, S-201, 10 Malmo I, Sweden
 Lantana Boatyard, Inc., 808 N. Dixie Hwy., Lantana, Fla. 33460
 Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
 Malaysia Shipyard and Engineering Sdn. Bhd., First floor, Bangunan Aziza, Jalan Wong Ah Fook, Johore Baru, Malaysia
 Marathon Manufacturing Company
 Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002

Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520
 Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
 Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
 Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
 Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Dunbartonshire, G81-1YB, Scotland
 Marinette Marine, Ely Street, Marinette, WI 54143
 Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
 Mercantile Marine Engineering & Graving Docks Co., N.V., Antwerp, Belgium
 Misener Industries, Inc., 5353 Tyson Avenue, P. O. Box 13625, Tampa, Fla. 33681
 Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
 Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
 Murray & Stewart (Marine) (PTY) Ltd., Ocean Road-Table Bay Harbour, P.O. Box 1909, Cape Town 8000, South Africa
 National Steel & Shipbuilding Corp., San Diego, Calif. 92112
 Neorion Shipyards Syros, Ltd., Syros, Greece
 Newport Ship Yard Inc., 379 Thames St., Newport, R.I. 02840
 Northwest Marine Iron Works, P. O. Box 3109, Portland, Oregon 97208
 O.A.R.N. (Officine Allestimento-Riparazioni Navi), P.O. Box 1395, Genoa, Italy 16100
 Paccoci, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
 Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
 Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
 Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
 St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
 Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
 Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
 Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
 Service Machine & Shipbuilding Corp., Box 2664, Morgan City, La. 70380
 Sumitomo Heavy Industries Ltd., 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
 Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
 Terrin Shipyards, Societe Provencale des Ateliers Terrin, 287, Chemin DeLa Madrague, 13345 Marseille—Cedex 3, France
 Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
 Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
 Uniflute Inc., P.O. Box 1095, Bellingham, Wash. 98225
 Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
 Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada
 Wiley Manufacturing, a unit of Equipment Systems Division, AMCA International Corporation, Suite 200/Stockton Building/University Office Plaza, Newark, Delaware 19702
SHIP STABILIZERS
 Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
SHOCK CORDS
 Wm. B. Bliss Inc., 381 Park Ave. So., New York, N.Y. 10016
SMOKE INDICATORS
 Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
STUFFING BOXES
 Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
TANK CLEANING
 Butterworth Systems Inc., P.O. Box 9, Bayonne, N.J. 07002
 Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
TANK LEVELING INDICATORS
 Gems Sensors Div., Delaval Turbine Inc., Spring Lane, Farmington, Conn. 06032
 GPE Controls, Inc., 6511 Oakton Street, Morton Grove, Illinois 60053
TOWING—Vessel Chartering, Lighterage, Salvage, etc.
 Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
 Chotin Transportation, Inc., 1414 One Shell Square, New Orleans, La. 70139
 Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
 Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
 Gulf Mississippi Marine Corp., 225 Baronne St., New Orleans, La. 70112
 James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
 McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
 McDonough Marine Service, P.O. Box 26206, New Orleans, La.
 Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
 Smit International (Americas) Inc., 17 Battery Place, New York, N.Y. 10004
 Suderman & Young Towing Co., Inc., 918 World Trade Building, Houston, Texas 77002
 Turecama Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305
 N.V. Bureau Wijsmuller, Postbus 510, IJmuiden, Holland
TURBINES
 Camar Corp., 186 Prescott St., Worcester, Mass. 01605
 Nicolai Jaffe Corp., P.O. Box 2445, South San Francisco, CA 94080
 Terry Corporation, P.O. Box 1200, Windsor, CT 06101
UNDERWATER SERVICES
 Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
VACUUM LIFT SYSTEMS
 Myers-Sherman Company, Grainvayor Division, So. Illinois Street, Sreator, Illinois 61364
VALVES AND FITTINGS—Hydraulic—Safety Flanges
 American-Darling Valve, Div. of American Cast Iron Pipe Co., P.O. Box 2727, Birmingham, Ala. 35202
 Flexitall Gasket Co., 5 Linden Street, Camden, N.J. 08102
 Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
 Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027
 Stow Manufacturing Co., 86 Bump Road, Binghamton, N.Y. 13902
 Valve Services Corp., 266 54th St., Brooklyn, N.Y. 11220
 Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
 Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
VIDEO EQUIPMENT
 Marine Video International, Inc., One Dupont Street, Plainview, N.Y. 11803
WEATHER FORECASTS
 Fleetweather, Orbit Lane, Hopewell Junction, N.Y. 12533
WINCHES
 Coast Marine & Industrial Supply, 398 Jefferson St., San Francisco, Calif. 94133
 Gearmatic Co., Ltd., 7400 132nd St., Surrey, B.C., Canada
 Skagit Corporation, a subsidiary of The Bendix Corporation, Sedro-Woolley, Washington 98284
WINDOWS
 Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550
WIRE AND CABLE
 Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076
 Elkan Electric Cable Co., 248 Third St., Elizabeth, N.J. 07206
WIRE ROPE—Slings
 Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
 Bethlehem Steel Corp., Bethlehem, Pa. 18016
 Lowery Brothers, Inc., P.O. Box 650, Marrero, La. 70072
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ZINC
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NEW WATERTIGHT DOORS



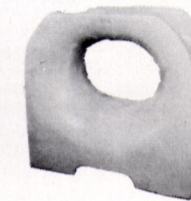
6-Dog right and left hand hinged steel doors—with frames. Built and tested to A.B.S. specifications.

SIZE

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

EACH DOOR

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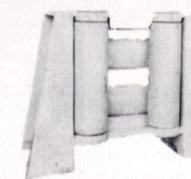


NEW 7" RADIUS PANAMA CHOCKS

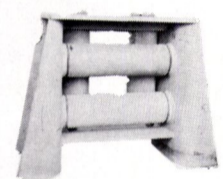
(MEET PANAMA REGULATIONS)

With extended legs for welding to deck. IMMEDIATE DELIVERY FROM STOCK.

NEW — UNUSED SHIPBOARD TYPE UNIVERSAL FAIRLEADS BUILT IN U.S.A. — 4-ROLLER TYPE



OUTBOARD VIEW

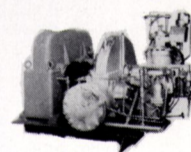


INBOARD VIEW

Opening between vertical rollers 10" — opening between horizontal rollers 4". Roller size 7 1/2" — pin size 2 1/2". Rollers 24" long. Six are 28" high — 12 are 34" high (Extended legs for welding to deck.) All are 18 1/4" x 33 1/2" at top angled to 44" x 46 1/2" at bottom. Steel 7/8" thick, coated with rust preventative. Rollers have grease fittings. Plans available on request. SUITABLE FOR VESSELS UP TO 200,000 TONS. WIRE SIZE UP TO 5" CIRCUMFERENCE OR 95 TONS. NORMAL BREAKING STRENGTH. MAXIMUM LEAD 80°.

700 HP CARGO PUMP TURBINE AND GEARS

with oil operated hydraulic governor

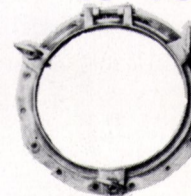


TURBINE: Mfg by GE—type DP—700 HP—5000 RPM—inlet pressure 560 PSIG—exhaust pressure 2 PSIG—temp. 490°—steam inlet 6" — outlet 10". Pump rotation is clockwise when standing at pump end and facing turbine & gear. Turbine is single stage with 2-row bucket wheel—pressure lubricated bearings—carbon shaft packing. Speed is regulated by oil-relayed governor system. REDUCTION GEAR: 5000 RPM to 1425 RPM output. Typical turbine serial #126910/911. G.E.I. Book 27200B.

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16" PORTLIGHT SPECIAL



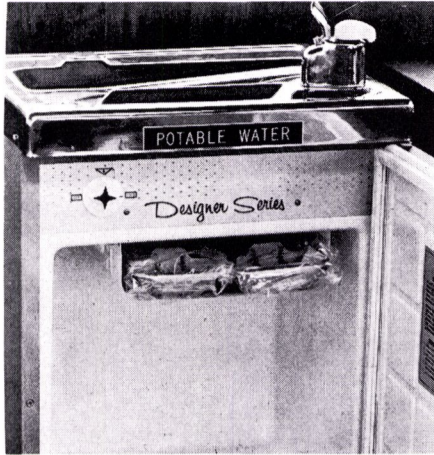
These fine 16" heavy bronze portlights, with 3 dogs, were recently removed from cargo ships and represent the finest workmanship of its kind. Whether for actual or ornamental use, why buy replicas when you can buy the real thing. Complete with 3/4" glass.

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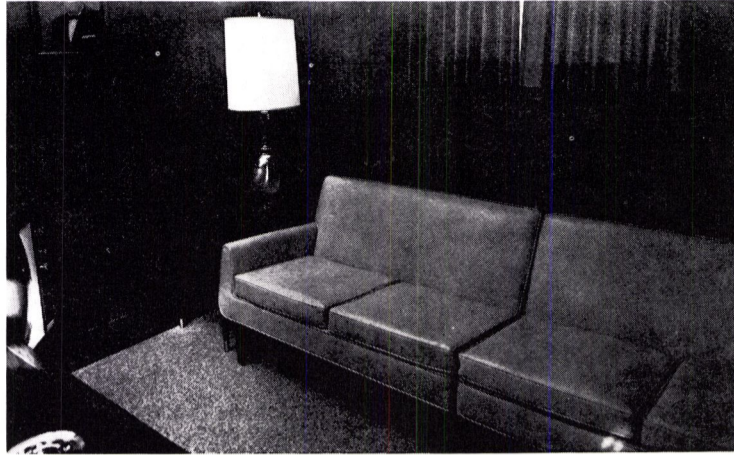
QUANTITY DISCOUNTS AVAILABLE

THE BOSTON METALS COMPANY

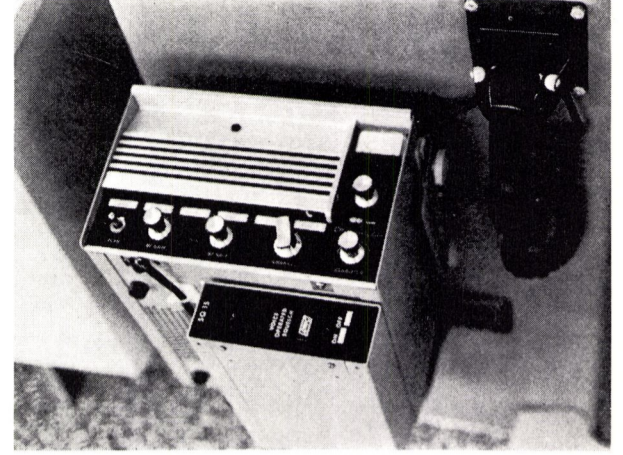
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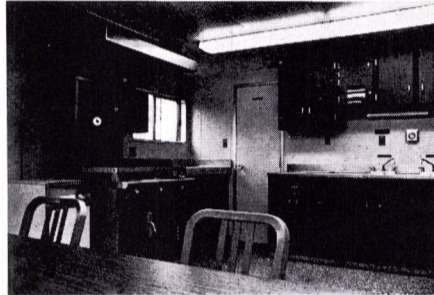
cool-box in control room



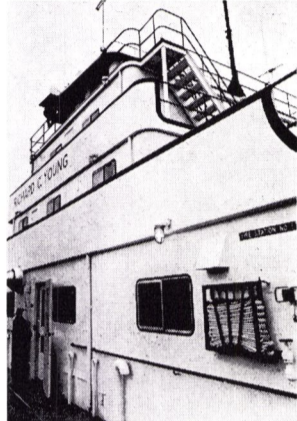
officers' lounge



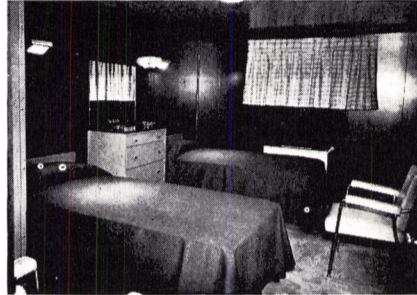
complete communications system



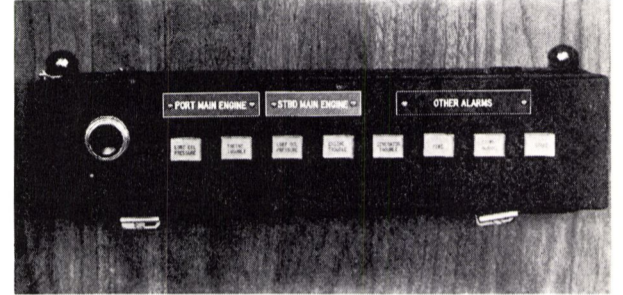
spacious galley



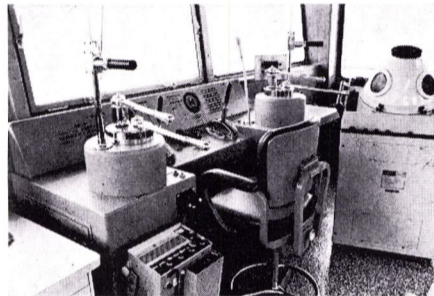
solid Jeffboat construction



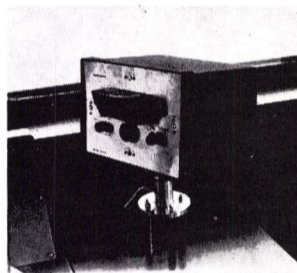
semi-private room



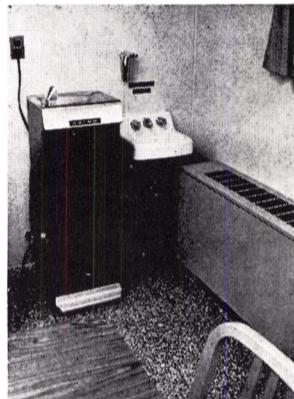
computerized warning system



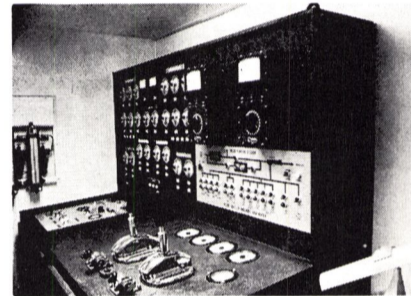
step-saving panel



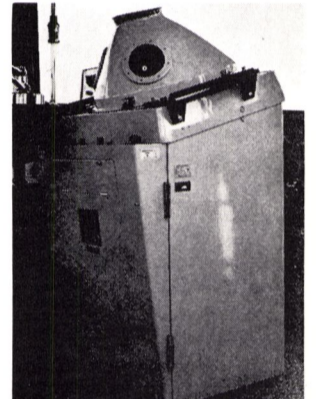
depthfinder



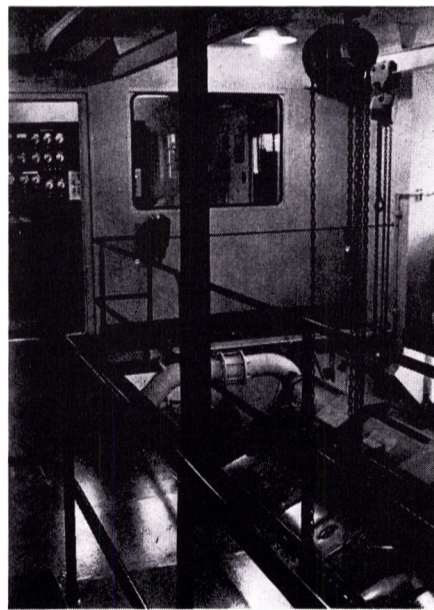
air conditioning throughout



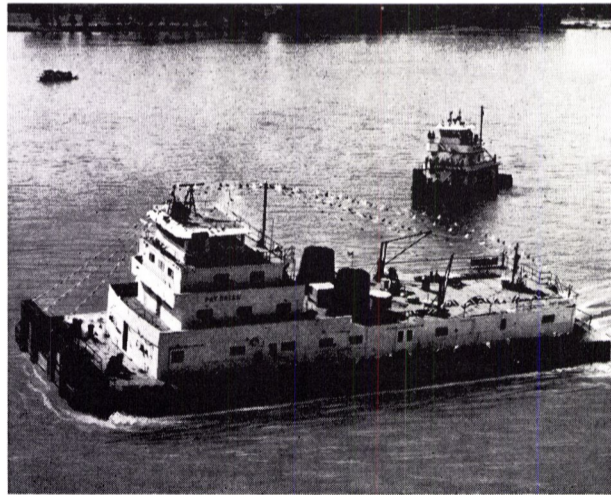
auxiliary controls



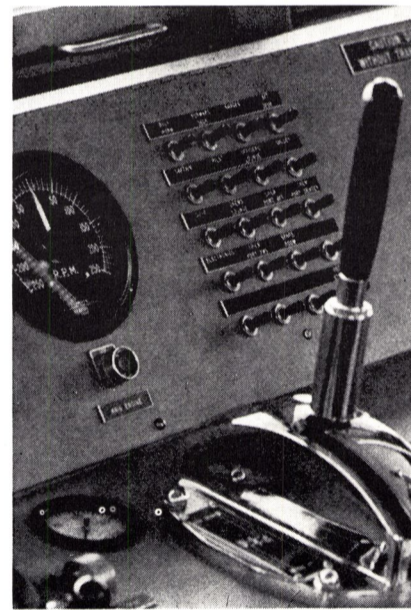
Sperry Mark 16 radar



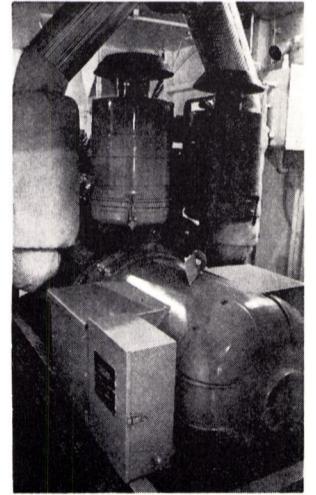
5,600 horse power



work-horse design



main control panel



generator

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The most sophisticated navigational equipment to the plushiest living quarters. All designed into a towboat that's evolved from nearly

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