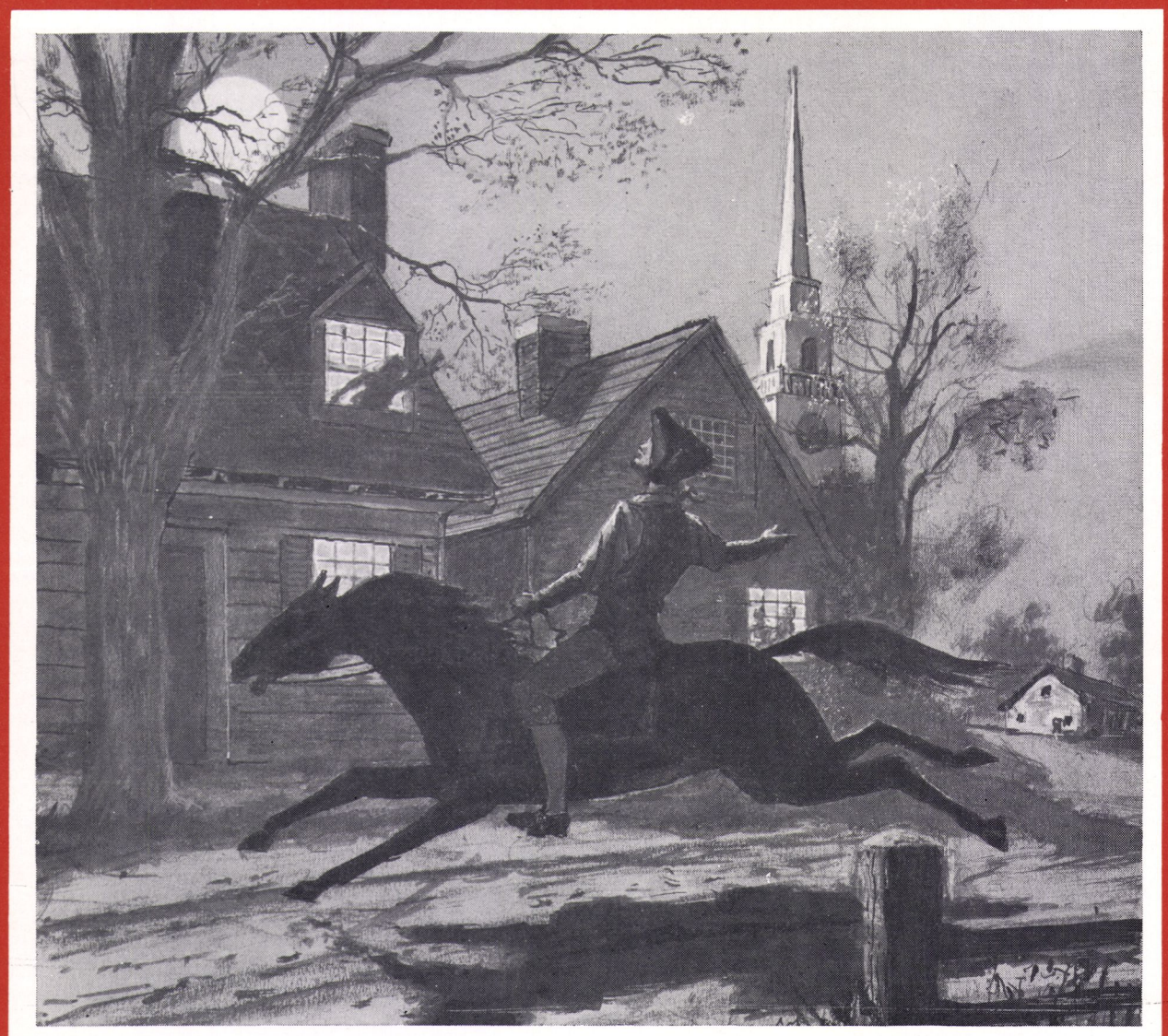
MARITIME REPORTER
AND
ENGINEERING NEWS

National Steel And Shipbuilding Launches Largest Vessel Ever Built On West Coast —The 90,000-Dwt Tanker Golden Dolphin

(SEE PAGE 7)

FEBRUARY 15, 1974



Paul Revere did more than wake people in the middle of the night

He was a printer, engraver, music publisher, dentist and gunpowder manufacturer. He cast bullets and cannons during the war, drew political cartoons and invented a process for rolling sheet copper. He made the state seal which is still used by Massachusetts, was a renowned silversmith of course, and even a shipbuilder.

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10th MTS Conference To Be Held Sept. 23 In Washington, D.C.

The 10th annual Marine Technology Society conference and exposition will be held September 23-25, 1974 in Washington, D.C. The program theme is "National Needs and Ocean Solutions." Deadline for submitting abstracts of proposed papers is March 8.

The conference headquarters will be the Sheraton-Park Hotel. Events planned in addition to the three-day technical program and exposition include a film festival, annual MTS awards and a university-sponsored short course. A possible one-day briefing on the June-to-August law of the sea conference is being discussed for Thursday, September 26.

Wisconsin Barge Seeks CDS For 80 Barges Costing $9.9 Million

Aid is being sought by Wisconsin Barge Line, Inc., Cassville, Wis., to help in the construction of 50 rake-style barges and 30 box-style barges, estimated to cost a total of $9.9 million.

Twenty of the rake-type barges, measuring 195 feet long, with a 35-foot beam, a draft of 9 feet, and a deadweight of 1,500 short tons, will be built by Dravo Corp., Pittsburgh, Pa.

Jeffboat Inc., Jeffersonville, Ind., will build the remaining 30 rake-type barges, which will have the same measurements as those built by Dravo. Jeffboat will also build the thirty 200-foot-long box-style barges, which will have a beam of 35 feet, a draft of 9 feet, and a deadweight of 1,635 short tons.

The barges are to be operated on the Mississippi and Illinois Rivers.

McDermott To Build 4 Oceangoing Tugs For Henjen Corp.

J. Ray McDermott Co., Morgan City, La., plans to build four oceangoing tugs for Henjen Corp., San Francisco, Calif., a subsidiary of GATX Aircraft Corp., at a total cost estimated at $6.8 million.

The vessels will be 126 feet long, weigh 200 gross tons, and have a speed of 14 knots. Each will be equipped with 4,800-horsepower engines. They will be used in offshore oil exploration and production worldwide, and chartered to the Robin Towing Corp.

MARITIME REPORTER AND ENGINEERING NEWS

No. 4 Volume 36

107 EAST 31st STREET
NEW YORK, N. Y. 10016
MUrray Hill 9-3266, 3267, 3268, 3269

ESTABLISHED 1939

Maritime Reporter/Engineering News is published the 1st and 15th of each month by Maritime Activity Reports, Inc. Controlled Circulation postage paid at Hoboken, N.J. 07030.

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

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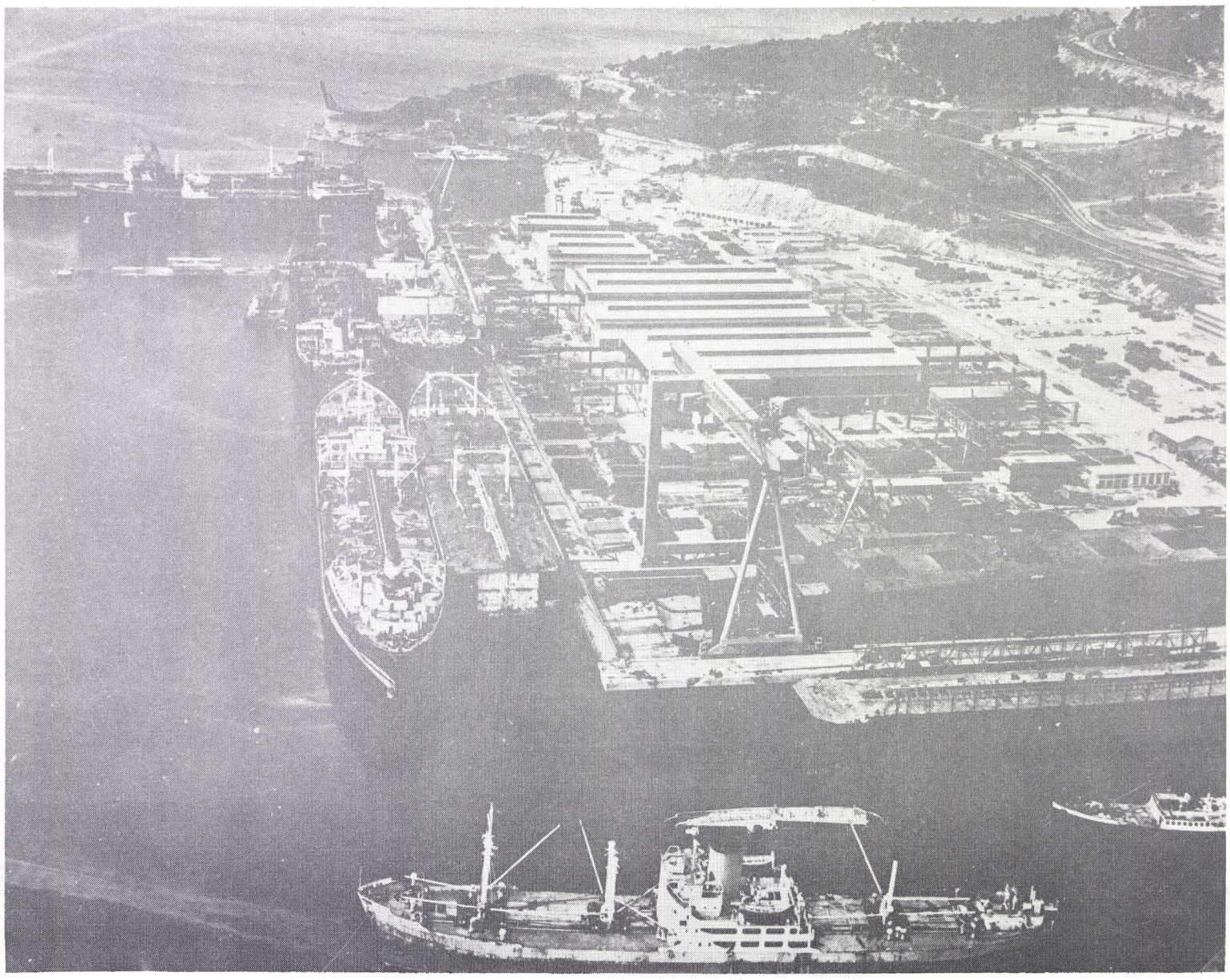

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NASSCO Launches Largest Vessel Ever Built On West Coast

Principals at the NASSCO ceremonies included, left to right, **John M. Murphy,** vice president, National Steel and Shipbuilding Company; **John V. Banks,** president, National Steel and Shipbuilding Company; **Leo V. Berger,** president, Aeron Marine Shipping Company; **Arnold Lorbeer,** president, American Ultramar Limited; the Honorable **Bob Wilson,** Representative, 36th District, California; **Ms. Dorothea Calkins,** matron of honor, S/S Golden Dolphin; **Mrs. Peter Constas,** sponsor, Mr. **Constas,** executive vice president, Aeron Marine Shipping Company; the Honorable **Robert J. Blackwell,** Assistant Secretary of Commerce for Maritime Affairs; **John H. Vogel,** president, National Bank of North America, speaker, and **Campbell L. Nelson,** chairman and managing director, Ultramar Company Limited.

The S/S Golden Dolphin, 90,000-dwt San Clemente-class tanker, was launched at National Steel and Shipbuilding Company (NASSCO), of San Diego, Calif., on January 19, 1974. Ceremonies, open to the general public, commenced with music by Buck Wayne and the Buckaroos, followed by a band concert by the U.S. Marine Corps Recruit Depot Band.

Mrs. Peter Constas, wife of the vice president of Aeron Marine Shipping Company, served as the ship's sponsor. Her daughter, **Ms. Dorothea Calkins,** assisted as matron of honor.

Others participating in the colorful ceremonies included the Honorable **Robert J. Blackwell,** Assistant Secretary of Commerce for Maritime Affairs; **John H. Vogel,** president, National Bank of North America; **Arnold Lorbeer,** president, American Ultramar Limited; Capt. **Leo V. Berger,** president, Aeron Marine Shipping Company; the Rev. **Theodore Phillips,** pastor, St. Spyridon Greek Orthodox Church; **John V. Banks,** president, NASSCO, and **John M. Murphy**, vice president, sales, NASSCO.

The S/S Golden Dolphin, the largest ship ever to be built on the West Coast, is the first of three NASSCO-designed tankers for Aeron Marine Shipping Company. Her keel was laid May 22, 1973, and delivery is scheduled for June 24, 1974.

The S/S Golden Dolphin is of the maximum size that can transit the Panama Canal. She is 894 feet in length overall, has a beam of 105 feet 9 inches, a depth of 64 feet 6 inches, and 90,000 deadweight tons. The propulsion is single-screw steam turbine and has a sustained full-load speed of 16.5 knots.

Immediately following the launch of the S/S Golden Dolphin, the keel was laid for a 37,000-ton displacement replenishment oiler for the U.S. Navy. Rear Adm. **Fillmore B. Gilkeson,** USN, Commandant, Eleventh Naval District, officiated at the keel-laying.

Approximately 6,000 spectators were present to view the colorful ceremonies.

Immediately following the launch of the S/S Golden Dolphin, the keel was laid for a 37,000-ton displacement replenishment oiler for the U.S. Navy. Rear Adm. **Fillmore B. Gilkeson,** USN, Commandant, Eleventh Naval District, second from left, officated at the keel-laying. Others present included, from the left, **John V. Banks,** president, NASSCO; **Leslie Mitchell,** welding foreman, NASSCO, and Capt. **William W. McKenzie Jr.,** Commander, Service Group One.

SNAME Los Angeles Section Holds Joint Technical Meeting With ASNE And MTS Sections

Shown above during the January meeting of the Los Angeles Sections of SNAME, ASNE, and MTS, left to right: **John E. Marriner,** past chairman, Los Angeles SNAME, treasurer, ASNE and secretary, MTS; **Marvin M. Wolff,** secretary, ASNE; **Robert D. Karl,** author; **Frank J. Nickels,** chairman, Los Angeles Section SNAME; Comdr. **Richard P. Dunbar,** USN, chairman, Los Angeles Section ASNE.

On January 10, 1974, a combined technical meeting was held by the Los Angeles Sections of The Society of Naval Architects and Marine Engineers, the American Society of Naval Engineers, and the Marine Technology Society. The meeting was held at the Princess Louise Ship Restaurant, located in the Port of Los Angeles. An exceptionally large group attended the technical meeting, which was preceded by a cocktail hour and dinner.

An excellent and timely technical paper was presented by **Robert D. Karl,** vice president (engineering), IMODCO International, Inc., entitled "Consideration and Requirements in the Design of Single Point Moorings." The paper described the single point mooring as a proved and economical solution to the offshore loading and unloading of deep-draft tankers which cannot readily use many of the world's existing ports. Considerations which enter into the design of the multiple anchor leg type of single point mooring system, along with a brief description of the various components which make up the system, were discussed in general. Briefly mentioned were features of the single anchor leg (SALM) type SPM, and the use of the single point mooring system to handle materials other than crude oil.

Worldwide Shipbuilding Attains Highest Figure

Apart from the People's Republic of China, Rumania, and Russia for which information is not available, there were under construction in the world at the end of 1973, according to Lloyd's Register of Shipping, 2,250 merchant ships totaling 28,758,326 gross tons, 1,661,662 tons more than at the end of September, and again the highest figure ever recorded.

The ships which are on order but have not been commenced have also reached record proportions, so that the world orderbook, which includes both ships building and those on order, stands at the figure of 128,899,862 gross tons. This represents an increase over last year of 50 percent.

Of the major shipbuilding countries, all but Denmark added to their orderbooks. Japan extended the volume of its orders in hand to almost 60 million tons, with a phenomenal increase of 9.7 million tons during the quarter.

The United States total orderbook stands at 4,066,859 gross tons, an increase of nearly one-half million tons over last quarter.

Of the ships under construction throughout the world at the end of 1973, 9,255,479 gross tons were being built under the supervision of Surveyors to Lloyd's Register.

Walter Thorsen, Inc. Named Exclusive Rep For Eleusis Shipyards

Walter Thorsen, Inc., New York, has announced its appointment as exclusive United States representative for drydockings and repairs for Eleusis Shipyards, S.A., Greece.

Eleusis Shipyards, S.A., a completely private enterprise established in 1969, is located at Eleusis Bay nine miles from Piraeus Harbor. The firm has a capital investment of $85,367,000, employs more than 2,500 workers, and is recruiting additional men in Greece to be trained at three local shipyard schools.

Prof. **Stratis G. Andreadis** is chairman of the board of directors, and naval engineer **Alexander Str. Andreadis** is managing director.

Eleusis Shipyards, S.A. has delivered two 5,900-dwt multipurpose (bulk / timber / container) vessels, has launched the first of the 43,300-dwt bulk carriers, and is building the fourth 5,900-tonner and a second 43,300-tonner. Eleusis Shipyards is now offering for sale vessels of the 5,900-dwt type.

Eleusis Shipyards, S.A. has three new floating drydocks for repairs of vessels of 20,000, 60,000 and 115,000 deadweight tons. One building berth, 623 feet long by 180 feet wide, is served by a gantry crane of 400 tons capacity. Floating and quay cranes are available with capacities of up to 50 tons. New modern machinery is available for providing fast and efficient repairs and jumboizings.

Further details can be obtained from Eleusis Shipyards representative Walter Thorsen, Inc., One World Trade Center, Suite 1645, New York, N.Y. 10048, telephone (212) 432-1150.

Paceco Appoints Plant Manager At New Gulfport Facility

Joseph Perry

Paceco, a division of Fruehauf Corporation, Alameda, Calif., has appointed **Joseph Perry** plant manager of the firm's new $9-million manufacturing facility in Gulfport, Miss.

Mr. **Perry** has had more than 20 years' experience in steel fabrication, producing heavy equipment similar to that being produced by Paceco, for various industries. His past eight years have been in general management.

Originally from Mobile, Ala., Mr. **Perry** received his B.S. degree in mechanical engineering from Auburn University.

Cal Ship Offers Illustrated Brochure Describing Facilities

A new four-page brochure featuring California Shipbuilding and Dry Dock Company is now available from Ocean Science and Engineering, Inc. Cal Ship is a subsidiary of OSE and is located on the same premises in Long Beach Harbor.

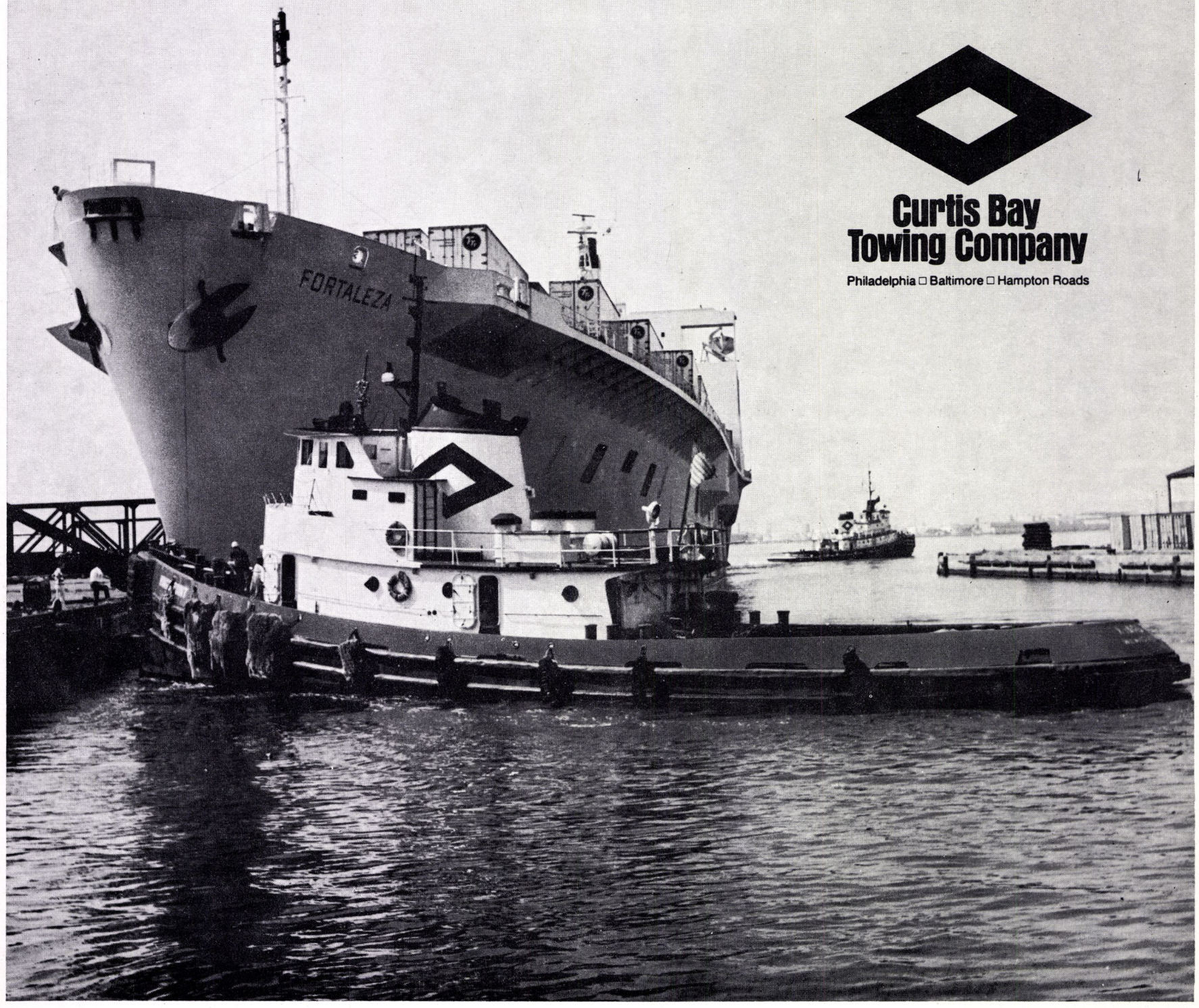
The illustrated brochure describes Cal Ship's facilities and capabilities. Copies are available by writing Marketing Department, Ocean Science and Engineering, Inc., 1601 Water Street, Long Beach, Calif. 90802.

Interlake Steamship Plans To Build Two $42.4-Million Vessels

Although no contract has been awarded, negotiations are in progress with American Ship Building Co. to build two self-unloading 59,000-dwt bulk cargo vessels for a subsidiary of Moore McCormack Corp.—Interlake Steamship Co., 1100 Superior Avenue, Cleveland, Ohio. The vessels, estimated to cost $42.4 million each, would be used in domestic commerce on the Great Lakes.

THERE IS A DIFFERENCE IN TUGBOAT COMPANIES.

Equipment and personnel make that difference. The best of both are required by the FORTALEZA, shown sailing from Baltimore. Both are provided by Curtis Bay. In the photograph, the new tug CAPE HENLOPEN exerts her 3300 horsepower on the stern of the ship. The 2400 horsepower tug KINGS POINT controls the bow. Curtis Bay Towing Company, 63 years of superior service.



Curtis Bay Towing Company

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Zapata Western And Waterman Carriers Seek Subsidy For 4 OBOs

Two New York City maritime companies — Zapata Western Shipholdings, Inc., and Waterman Carriers, Inc.—have filed requests with the Maritime Subsidy Board for subsidies to operate four, as yet unbuilt, ore/bulk/oil vessels.

In their applications, the companies said the vessels, at 80,000-dwt each, are not under firm charter, but ostensibly would be used in carrying coal from Vancouver, Canada, to Japan; crude or petroleum products from Indonesia; or bauxite or aluminum from Australia to U.S. West Coast ports.

Another company owned jointly by Zapata and Waterman, the Western Bulk Ship Associates, filed an application in December for construction subsidy to build the four OBO vessels.

Oceans International Announces Merger And Expansion Plans

The merger of Oceans International Corporation, and Shipping Services, Inc., New Orleans, La., steamship agencies serving vessels, owners and operators in Gulf of Mexico ports was announced by **Burnell J. Russell,** president of Oceans International Corporation.

To be known as Oceans International Corporation, the firm is the result of expansion by both agencies and will continue to serve the shipping industry in the U.S. Gulf ports. The firm also established an office in New York City.

Burnell J. Russell

According to Mr. **Russell,** the merger will afford broader coverage in the Gulf ports, as well as expanded service by the firm for the steamship cargo market. Future expansion plans include opening of a West Coast office.

No changes in management of the two primary offices are foreseen, with the New Orleans operations continuing under **Charles J. Barbot,** executive vice president of Oceans International Corporation.

Oceans International Corporation will represent Cook Transportation Systems, Inc., Figueiredo Line, and will act as U.S. general agents for Sidarma Line with the U.S. Gulf agency for Transamerican Steamship Corporation and Transamerican Ocean Corporation.

The firm's offshore and petroleum industry department will represent American Offshore, Inc., Jackson Marine Corporation and Petrol Marine, Inc.

The New Orleans office will maintain its present address at Suite 204, 442 Canal Street. The Houston office will continue at Suite 1112, 1314 Texas Avenue, with the New York office at 17 Battery Place, and the Galveston representation at the Cotton Exchange Building.

Valmet Oy Appoints Rauno Ilves Director

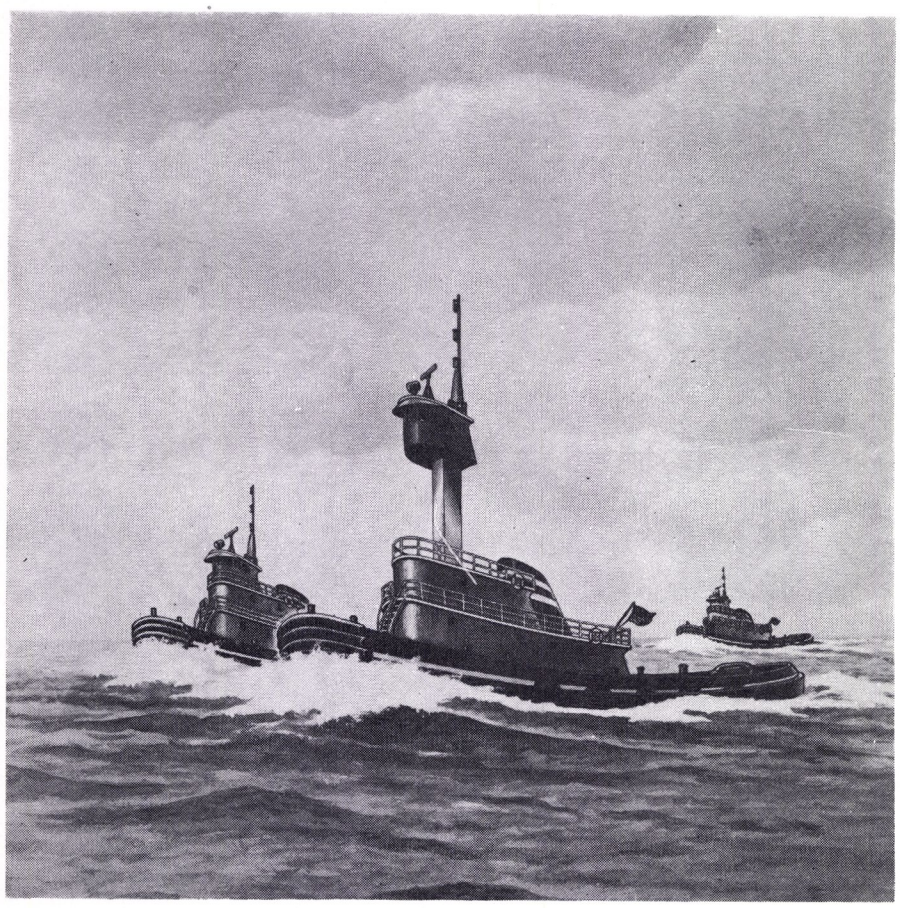
Rauno Ilves, general manager of the company's Helsinki Shipyard, has been appointed director of the shipbuilding group and simultaneously a member of the managing group of Valmet Oy.

Mr. **Ilves** graduated from the Helsinki University of Technology in 1955 with a degree in shipbuilding. Since 1956, he was worked for Valmet Oy's Helsinki Shipyard. In 1965, he was appointed works manager and in 1969, general manager.

Service Machine Announces Completion Of New Drydock

Service Machine & Shipbuilding Corp. of Morgan City, La., has announced the addition of a new 1,000-ton-capacity drydock to their marine repair department. This drydock, built at Service Machine's yard, joins a drydock of 1,500-ton capacity which has been operating for several years.

McAllister Orders Three 4,290-Hp Tugs



Elevating pilothouses is feature of three new 4,290-hp McAllister tugs being built by Main Iron Works, Houma, La., as seen in artist's rendering in both extended and seagoing positions. Giving height-of-eye of 45 feet when elevated, the house will offer greater visibility when tug is handling new superbarges in and around harbors.

McAllister Brothers, Inc., 17 Battery Place, New York, N.Y., has placed an order with Main Iron Works, Inc. of Houma, La., for the construction of three 4,290-hp tugboats at a cost of $4 million. **James P. McAllister,** president, in announcing the contract award, said: "The addition of these new tugs to our fleet of 50 vessels is in direct response to the ever-increasing requirements for more power in all aspects of marine transport on the East Coast of the U.S., which we see as continuing in its importance as the location of major world ports."

Among the most powerful and maneuverable docking tugs ever to operate in New York Harbor, the three new additions to the McAllister fleet achieve their power through twin diesel engines with Kort nozzles, which develop a thrust of 140,000 pounds of bollard pull. Maneuverability is gained through the combination of twin screws, the Kort nozzles, and two main rudders aft, and four flanking rudders forward of the nozzles.

"The principle of a fixed Kort nozzle operating in conjunction with two flanking and one main rudder results in the optimum steering system for a docking tug, according to naval architectural opinion voiced at the First North American Tugboat Conference in Vancouver, B.C.," Mr. **McAllister** pointed out.

This unique steering and propulsion system was originated in Europe with the development of the nozzle by Dr. **Ludwig Kort.** First use in the United States was on Mississippi River towboats. McAllister's newer tugs have utilized this unique application since 1961, and the company will have 10 of its fleet so equipped with the delivery of the new 4,290-hp vessels.

The tugs, which will be used in New York Harbor and coastal work, join the 109-year-old towing company's fleet, which also operates in Philadelphia, Norfolk, Puerto Rico, the Great Lakes, and St. Lawrence waters.

The new tugs are 111 feet 6 inches long, with a beam of 30 feet and a draft at midships of 14 feet 9 inches, and are fully automated.

The elevating pilothouses give a height-of-eye of 45 feet for greater visibility when handling the new superbarges.

A new application of hydraulic pumps and motors is being designed by McAllister for installation on the towing winches. The system will enable the tug to vary the speed of her winches without reducing their torque, for more efficient handling of tows.

Main propulsion is provided by twin General Motors EMD 16-645-E-2 diesels with Falk reduction gears and Airflex clutches.

Alternating current is furnished by two GM Model 671 Delco 94-KVA generators. Hydraulic steering systems have been built by Steering Systems, Inc. of New Orleans, La.

Lawrence Mazerac Jr. is president of the 26-year-old Main Iron Works, one of the major builders of tugboats in the United States.

American Trading Files CDS To Build Four 89,000-Dwt Tankers

A construction differential subsidy request has been filed with the Maritime Administration to assist in the construction of four 89,000-dwt tankers by the American Trading Transportation Co., Inc., 555 Fifth Avenue, New York, N.Y. No specific shipyard has been selected. The approximate cost of these vessels will be $34 million each.

A.C. Hoyle Co. Appoints Aries Marine

A.C. Hoyle Company, Iron Mountain, Mich., manufacturers of marine deck equipment, has announced the appointment of Aries Marine & Industrial Sales Corporation, 4000 Haring Road, Metairie, La. 70002, as their Gulf Coast sales representative for Louisiana and Mississippi.

George A. Christensen, president, has been active in the Gulf area marine field for 33 years. He has been a manufacturers' representative since 1966 and prior to that, was area sales manager of marine sales for the Mobil Oil Company. He is a member and past president of The Propeller Club-Port of New Orleans, member and past commander of American Legion Maritime Post 247, and an associate member of The Society of Naval Architects and Marine Engineers.

Dravo Appoints William R. Cumming III Marine Sales Manager

William R. Cumming III

William R. Cumming III has been appointed manager of marine sales for Dravo Corporation, Pittsburgh, Pa.

Mr. **Cumming** joined Dravo in 1966 as manager of southern marine sales. His previous employment included Lane Wells Co., New Orleans Public Service, and W.H. Curtin and Co., all Louisiana-based firms.

He is a graduate of Louisiana State University with a B.S. degree in petroleum engineering.

Mr. **Cumming** is a member of the American Institute of Chemical Engineers, International House, The Propeller Club, and the Plimsoll Club.

Dravo Corporation builds a variety of marine equipment, including towboats, barges and tugboats.

SNAME Great Lakes/Rivers Section Hears Three Technical Papers At Winter Meeting

Pictured above during the meeting at the Aqua-Marine Lodge on Avon Lake, Ohio, left to right: **Frank Giaquinto, Ossie Archer, L.A. Dommin, Arthur Chomistek, Bruce Nehrling,** authors; **Trevor White,** Section chairman, and **Peter M. Swift,** author.

The winter meeting of the Great Lakes and Great Rivers Section of The Society of Naval Architects and Marine Engineers was held on January 17, 1974, at the Aqua-Marine Lodge on Avon Lake, Ohio. The morning business and technical sessions were attended by 125 members and guests.

Following lunch and a showing of the film "Song of Chicago," promoting the Section's hosting of the National Spring Meeting of the Society at the Palmer House in Chicago, Ill., May 22-24, 1974, the group toured the Lorain, Ohio, yard of the American Ship Building Company.

There were three papers presented during the technical session: "Standard Great Lakes Self-Unloader-River Service Type," by **O. R. Archer, Frank Giaquinto,** and **L. A. Dommin**; "The Need for Multiple Barge Towing Capability on the Great Lakes," by **A.J. Chomistek,** and "Sixty-Four-Foot Side Wheel Excursion Boat for Lake Michigan," by **Peter M. Swift** and **Bruce C. Nehrling.**

The next Section meeting will be the National Spring Meeting at the Palmer House in Chicago, May 22-24, 1974. A busy and excellent program has been planned and attendance is expected to be large.

Bethlehem Begins Construction On 265,000-Dwt Tanker —Largest Vessel Built In The United States

Representatives of firms concerned in the building of the largest vessel under construction in a United States shipyard gather just before the first keel section is laid at Bethlehem Steel's Sparrows Point shipyard. Left to right: **Charles Hanley,** J.J. Henry Co., Inc.; **Charles Zeien,** executive vice president, J.J. Henry Co.; **William C. Brigham,** assistant vice president, shipbuilding, Bethlehem Steel Corporation; **H. Struve Hensel,** president, General Maritime Corporation; **Hollingshead deLuce,** manager, ship development and sales, Bethlehem Steel; **John H. Chafee,** chairman, General Maritime Corporation; **Charles J. Kittredge,** senior vice president, First National Bank of Boston; **Mrs. Donald L. Miller; William H. Collins,** general manager of the yard; **Mrs. Collins;** Capt. **Warren G. Leback,** Interstate Oil Transport Co., and Mr. **Miller,** executive vice president, First National Bank of Boston.

Construction of the largest ship ever built in the United States started on January 23 as Bethlehem Steel's Sparrows Point Shipyard laid the first keel plate for a 265,000-dwt supertanker.

The vessel, the first of five under contract at the yard, is scheduled for delivery to Boston-VLCC Tankers, Inc., II, in 1975. All five ships are being constructed under the U.S. Maritime Administration's tanker construction subsidy program arising out of the 1970 Merchant Marine Act.

Boston-VLCC Tankers, Inc., II, IV and VI, subsidiaries of First National Boston Corporation, have contracted for the first three of the huge vessels and, upon completion of their construction, they will be placed on long-term charter. First National Boston Corporation is a registered multi-bank holding company whose principal subsidiary is the First National Bank of Boston.

This class of ships, the 10th standard design offered by Bethlehem since World War II, will be 1,100 feet overall, with a breadth of 178 feet, and a summer freeboard draft of 67 feet 1 inch.

Principal Characteristics and Capacities

Length overall	1,100'-0"
Length between perpendiculars	1,060'-0"
Breadth	178'-0"
Depth	86'-0"
Draft, summer freeboard, keel	67'-1"
Deadweight, summer freeboard draft	265,000 tons
Shaft horsepower, maximum continuous	35,000
Speed on trial at maximum continuous SHP at summer freeboard draft	15¼ knots
Fuel capacity	12,450 tons
Fuel consumption at 90% max. continuous SHP (excluding cargo services)	165 tons/day
	1,100 bbls/day
Cruising radius (based on max. cont. SHP).	20,000 miles
Cargo Cubic Capacity—100%	2,035,000 bbls
Estimated Tonnage (U.S.)—Gross	125,000
—Net	110,000

The keel was laid in the yard's new 1,200-foot graving dock, in which a 120,000-dwt tanker is already under construction.

The huge new tanker, capable of carrying 2,035,000 barrels of oil, is designed to exceed the largest safety and antipollution requirements.

The arrangement of the vessel has been specifically designed to meet the 1973 international Convention for the Prevention of Pollution from Ships, concerning cargo tank size and maximum outflow. This results in 21 tanks (two of which are for clean ballast), as compared with the smaller number of tanks in the usual VLCC of today.

The vessel will be fitted with an inert gas system, which maintains a nonexplosive atmosphere within the cargo tanks at all times.

A modern improved load-on-top (LOT) system for handling tank cleaning slops, including fixed tank cleaning in all center cargo tanks, is also provided.

The single-screw vessel will have a single deck with forecastle, a cylindrical bow and a transom stern. The hull will be about 80 percent mild steel and 20 percent higher strength steel.

The aft superstructure incorporates all living and messing spaces, appropriate utility spaces and the navigation and control spaces. The layout of accommodations is based on a complement of 28. All staterooms are single occupancy with semiprivate toilets and showers for the crew, private toilets and showers for officers. All living spaces are air-conditioned.

Lifeboats have been located for embarkation from a platform one deck height above the upper deck.

Deck machinery will include 12 mooring winches of a unique type that have been developed to Bethlehem's specifications for tanker service. When the hydraulic system is in operation, they are automatic pull-in/pay-out type with selective dual ratings of line pull of 30,000 pounds or 60,000 pounds. When the hydraulic system is not in operation, they will automatically pay out at a prescribed predetermined maximum line pull.

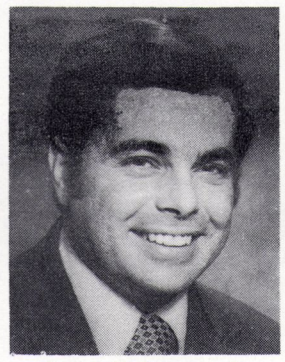
Propulsion is provided by a cross compound, single flow steam turbine, driving the propeller shaft through a double reduction gear. An astern element is incorporated in the low pressure turbine casing. The maximum continuous ahead rating is 35,000 shaft horsepower at 85 rpm.

Cargo is handled by means of four large 20,000-gpm turbine-driven horizontal single-stage centrifugal pumps with added self-priming features. Steam requirement for the cargo pumps is virtually the same as for propelling the ship at maximum power. Each pump normally handles its own group of tanks but may be cross-connected to other groups. A steam reciprocating pump is provided for stripping purposes, together with a deck stripping main. Nominal pump-out time is about 18 hours.

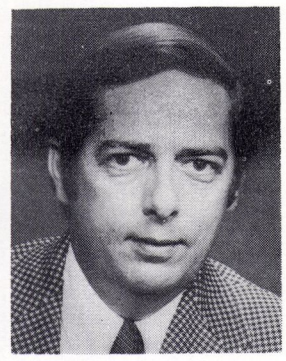
A clean ballast pump of 10,000-gpm capacity is provided to handle the No. 4 wing tanks and the after deep tanks through a segregated system.

The J.J. Henry Co., Inc. was designated by the owners to act in their behalf in dealing with Bethlehem in all matters concerning design, approvals, changes and inspections.

Arthur Levy Boat Service Announces New Appointments For Thomas And LeBlanc



Ogden U. Thomas Jr.



Charles E. LeBlanc

Arthur Levy Boat Service, the Petrolane subsidiary based in Morgan City, La., has announced the appointment of **Ogden U. Thomas Jr.** as vice president, and the appointment of **Charles E. LeBlanc** as manager of North Sea operations.

Mr. **Thomas** will have administrative responsibility for contracts connected with workboat service and for conducting contract negotiations. Currently, Levy has 62 vessels in its "Seahorse" fleet, providing support services for petroleum drilling activities in the Gulf of Mexico and 14 foreign countries.

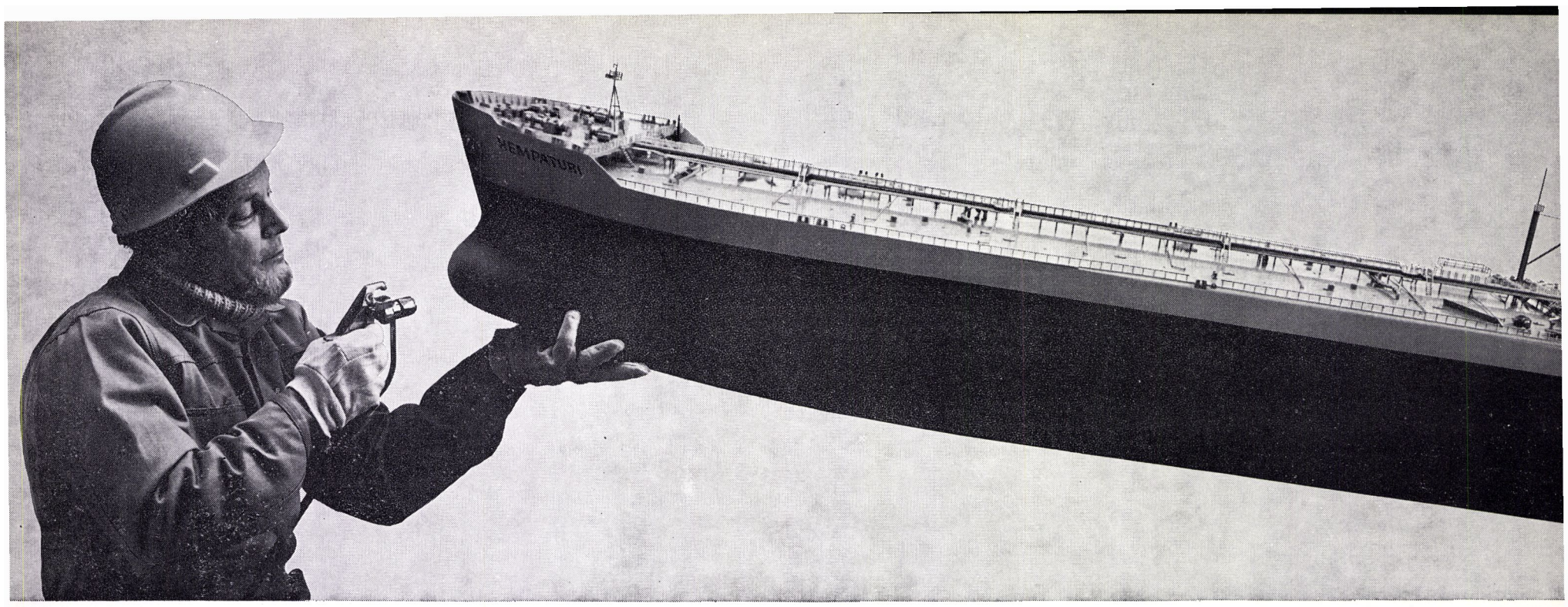
A graduate of Nicholls State University with a bachelor's degree in business management, he joined Levy in 1969 as controller and held that position until 1972, when he became administrative coordinator. In May 1973, he was named general manager of operations in Brazil. A member of the American Petroleum Institute, he assumed his present duties in October as an executive in Levy's top echelon.

Mr. **LeBlanc** will be based in Aberdeen, Scotland, and supervise workboat activities connected with offshore petroleum exploration taking place in the North Sea. Currently, two ice-class combination tug/supply boats are under contract to Texaco North Sea, U.K. Company, for activities near the Shetland Islands. Two other Levy vessels will be assigned to the North Sea at a future date.

Mr. **LeBlanc** brings extensive workboat experience to the job. He recently joined Levy after serving nearly five years as area manager of Zapata Marine Service Ltd., in South America and Europe. Previous to that, he worked three years for Caspary-Wendell, Inc., rising to the position of vice president.

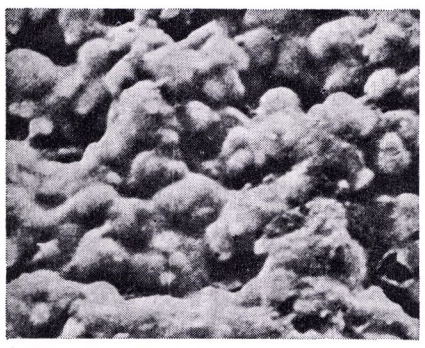
He received training in accounting and business management at Del Mar Junior College and Texas A & I University.

Arthur Levy Boat Service is part of Petrolane's Petroleum Industry Services Division, which also includes Eastman-Whipstock, a major directional drilling company with operations worldwide; P.T. Indonesia Air Transport, a helicopter and air taxi service for petroleum, mining and logging companies in Southeast Asia; and Fishing Tools, a remedial well and downhole recovery service based in Louisiana.



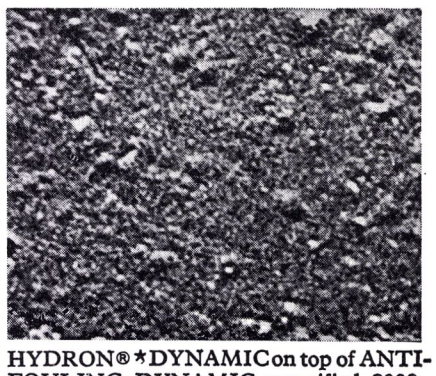
Nobody has yet solved your fouling problems

but Hempel now offers two ways of reducing them



ANTIFOULING DYNAMIC magnified 8000 times by Scanning Electron Microscope.
By permission of The Danish Technological Institute, Copenhagen.

Antifouling Dynamic: Long life in one application.
Antifouling Dynamic is a smooth high-build vinyl antifouling, applicable in 100 microns dry film thickness in only *one coat*. That means reduced time in dry dock.
But even the smoothest antifouling still creates a friction problem.
That's where Hydron® Dynamic comes in.



HYDRON® * DYNAMIC on top of ANTIFOULING DYNAMIC magnified 8000 times by Scanning Electron Microscope.
By permission of The Danish Technological Institute, Copenhagen.

Hydron® * Dynamic reduces friction and prolongs the antifouling effect.
Hydron® Dynamic is a top coat that has the ability to carry with it a laminar layer of water, and water against water creates much less friction than water against any solid material - after all, 80 % of your vessel's resistance is skin friction.
Hydron® Dynamic means reduced friction, i.e. higher speed or less fuel.
Hydron® Dynamic also controls the leaching in a "programmed" way.
There are so many aspects to the Dynamic system: Fuel consumption, ecology, extended dry dockings, economy!
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N. Y. 10004

Todd President Sees U.S. Shipbuilders Improving Competitive Position

John T. Gilbride, president and chief executive officer of Todd Shipyards Corporation, in a speech on January 23 at The Propeller Club, Port of New York, provided his audience with an "inside" viewpoint of the recent findings of the Commission on American Shipbuilding.

John T. Gilbride

As a member of the Commission, he was intimately involved in the three-year study and therefore able not only to amplify some of the findings, but also to bring them up to date in light of the rapidly changing world situation.

Mr. **Gilbride** stressed the diversity of the committee membership and how it was selected to achieve maximum objectivity. In describing the Commission's search for facts, he noted that the group visited and surveyed people at 49 shipyards throughout the 12 major shipbuilding countries of the world, and more than 20 additional maritime organizations, government agencies, and consultants.

He praised the Japanese competitive success in the world market and the reasons for it, also pointing out the current problems facing the Japanese which may serve to lessen their competitive advantage. As an example, because of spiraling inflation in Japan, a Japanese ship costs twice today what it did five years ago.

Mr. **Gilbride** dealt point by point with the reasons cited by the Commission report for Japan's strong competitive position, and showed how the situation is changing to bring U.S. shipyards into a better competitive balance. The reasons given are: highly developed technology, excellent labor relations, modern construction methods, fixed prices, unequivocal Government support, and inter-industry and Government cooperation. In several of these areas, the U.S. shipbuilding industry position is improving, and in others, recommendations have been made by the Commission to rectify the problems.

Mr. **Gilbride** concluded by urging his audience to read the report for supporting documentation of his conclusions. He observed that, since the enactment of the Merchant Marine Act of 1970, the U.S. shipbuilding industry has proved what can be done, given a start toward a stable market and the opportunity to build ships in series; that it has, in fact, met the challenge inherent in the Act by meeting or bettering the declining subsidy scale in every contract award since its enactment.

It is Mr. **Gilbride's** personal conviction that our country will not be self-sufficient in meeting its energy needs in the near future, if at all, and that we will have to depend on imported crude oil to sustain our economy well into the 1980s. He indicated that, as evidence of the private American shipbuilding industry's will to adjust to the changing market, that $500 million have been put into shipbuilding facilities in the last three to four years, and that $300 million of capital improvements are in the advanced engineering stage.

Dixie Dredge Corp. Appoints M.J. Forster

Melvin J. Forster

Melvin J. Forster has been appointed sales manager for the Dixie Dredge Corporation, St. Louis, Mo., according to an announcement by **Jack T. Dunn,** president

Mr. **Forster** was formerly with Sun Shipbuilding and Dry Dock Co., Chester, Pa., for 10 years, in the marketing and estimating groups. Prior to that, he spent 12 years in the dredge manufacturing field with the Ellicott Machine Corporation, in the engineering and estimating capacity. He is a member of The Society of Naval Architects and Marine Engineers.

Dixie Dredge is a leading designer and builder of portable dredges, with manufacturing plants in St. Louis, Mo., and Miami, Fla., and is a subsidiary of Pott Industries Inc., St. Louis Ship Division.

Mr. **Forster** is a Penn State University business management graduate and an alumnus of Johns Hopkins University School of Engineering, where he majored in industrial and mechanical engineering.

Society Of Marine Port Engineers N.Y. Discuss Care Of Turbine And Hydraulic Oil Systems

Shown at the meeting of the Society of Marine Port Engineers New York, N.Y., Inc., held at the Downtown Athletic Club, New York City, are: (seated, left to right) **John Antonetz,** sponsor; **Irving L. Cigliano,** author; **Philip A. Donahue,** full member, board of directors; **Vincent Maxwell,** author; (standing, left to right) **Edward English,** chairman, program committee; **John C. Fox Jr.,** full member, board of directors; **Thomas Jones Jr.,** second vice president, and **H.H. Hunt,** secretary, N.Y. Port Engineers.

The Society of Marine Port Engineers New York, N.Y., Inc. met recently at the Downtown Athletic Club in New York City.

At the technical session, which was preceded by a dinner, a paper was read entitled "Care and Maintenance of Turbine and Hydraulic Oil Systems," by **Irving L. Cigliano** and **Vincent Maxwell** of Marine Moisture Control Co., Inc. The sponsor was **John Antonetz,** Texaco Inc.

In the paper, the authors state that "In the United States approximately 2½ billion gallons of lubricating oils are sold annually for industrial use. Half of this is consumed during its use, and the remaining 1¼ billion gallons are drained periodically to be replaced with new oils."

Without proper maintenance, all lubricating fluids deteriorate as a function of time.

Unless the deterioration process is prevented by proper maintenance, oil quickly becomes unfit for further service and must be replaced. The machinery being lubricated is adversely affected by the deteriorated lubricants, leading to breakdowns and costly voyage repairs.

The paper describes the coalescing method of purification, and the authors contend that the increasing cost of lubricants and supply shortages of new oil dictate the need for proper conditioning of oil and should be of prime importance to all engaged in the marine field.

At this meeting, the annual election was held and the following officers and directors were chosen.

Officers: president, **Joseph Thelgie,** Marine Transport Lines, Inc.; 1st vice president, **William P. Towner,** American Bureau of Shipping, and 2nd vice president, **Thomas Jones Jr.,** American Export Lines.

Full Members—Board of Directors: **James D. Bergstrom,** Texaco Inc.; **Louis V. Minett,** American Bureau of Shipping; **John C. Fox Jr.,** Exxon International Co.; **Edward G. Hannon Jr.,** Maritime Overseas Corp., and **Philip A. Donahue,** Maritime Overseas Corp.

Associate Members — Board of Directors: **John Antonetz,** Texaco Inc., and **William H. Porter,** Jayval Marine Corp.

New Small Craft Design Facility Opened In Maine

Fair Wind Enterprises, Inc. announces the opening of a small craft design office in West Boothbay Harbor, Maine 04575. This firm will specialize in the design of small commercial craft and cruising yachts.

Russell M. Woodin, president of the new firm, has had many years' experience in the design of custom yachts and commercial vessels. He has been associated with such well-known firms as John G. Alden, Dwight S. Simpson Associates, and John W. Gilbert Associates, Inc., as well as several years in large ship design with the Quincy Shipbuilding Division of General Dynamics Corp.

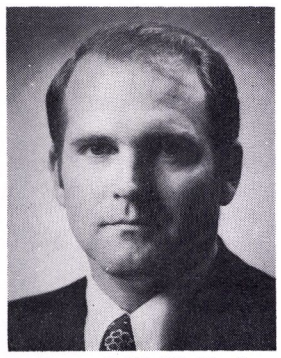
The new firm has equal capability for traditional or contempory type vessels and for wood, steel, aluminum or fiberglass construction. Consulting services on existing vessels and marine surveys are also offered.

Kennecott To Head Ocean Mining Project For Int'l Consortium

An international consortium of major metals producers led by the Kennecott Copper Corporation has announced a five-year research and development program to determine the feasibility of mining manganese nodules from the deep sea.

Kennecott's partners in the $50-million venture, which will be developed in the east-central Pacific north of the Equator, are the Rio Tinto-Zinc Corporation of London; Consolidated Gold Fields, Ltd., also of London; The Mitsubishi Corporation of Tokyo, and Noranda Mines, Ltd. of Toronto. Kennecott, which will manage operations for the group, has a 50 percent interest in the program, Rio Tinto 20 percent, and the other companies 10 percent each.

K.W. Waldorf Named To New Zapata Post



Kenneth W. Waldorf

Kenneth W. Waldorf has been named vice president of Zapata Corporation's Technical Services Group, with responsibility for new construction of offshore drilling rigs, marine service and fishing vessels, and fish processing plants.

This represents a concentration of these construction activities in one group in keeping with the rapid growth of Zapata's marine-related businesses. Five drilling rigs, 13 marine service vessels and two fishing vessels are presently being built under Zapata's aggressive expansion program.

Mr. **Waldorf** joined Zapata last year as manager of planning and financial analysis. Previously, he was associated for four years with Exxon Company, U.S.A., in various marine planning and operations activities, most recently as engineering manager. In that capacity, he directed the group responsible for design and construction of both tankers and inland marine equipment. Earlier, he served as a submarine officer in the U.S. Navy.

Mr. **Waldorf** has a bachelor of science degree from the U.S. Naval Academy and a master's degree in business administration from the University of California at Berkeley.

New Miniature Satellite Navigation System

At the recent SOCCO Symposium held at the American Hotel New York City, Electro-Nav, Inc. introduced the new miniature Magnavox MX-750 Satellite Navigation System. Also featured was the new Magnavox Doppler Speed Log MX-770 and the Docking Approach System MX-880.

The complete Ericsson Radio Station, Type EB 1500, was also set up for display. The EB 1500 Transmitter is now available for the retrofit market and is an ideal transmitter for shipowners who wish to communicate by voice to their vessels anywhere in the world.

Robert E. Negron, president of Electro-Nav, Inc., stated that this equipment is a welcome addition to the company's excellent line of communications, namely single side band, VHF, and navigation instruments such as lorans, ADFs, and depth sounders.

Electro-Nav, Inc. is located at 501 Fifth Avenue, New York, N.Y. 10017.

Harwich Tonnage, Inc. Formed In California

Harwich Tonnage, Inc. was recently formed to provide consulting and management services to the marine transportation industry, with offices at 17835 Ventura Boulevard, Encino, Calif. 91316. The president of the new firm is **C.R. Andrews,** formerly assistant vice president with Navios Corporation, Nassau, vice president with Jones Bardelmeier and Clements, Nassau, and manager of construction and engineering with Kaiser's United International Shipping Corporation. **S.I. Lee**, vice president, was formerly ship superintendent with Hemisphere Transportation Corporation (a subsidiary of Getty Oil), superintendent engineer of United International Corporation, and most recently assistant manager of engineering with Hendy International Co.

Harwich Tonnage, Inc. will assist a prospective or existing shipowner with a full range of services ranging from initial contract negotiation, through contract administration and construction supervision, to the crewing, material supply and other steps that are required to bring vessels into operation, and can undertake responsibility for full vessel or fleet operation under a variety of contractual means.

DELAVAL TURBINES

DELAVAL STEAM TURBINES AND GEARS POWER WORLD'S LARGEST LASH/ CONTAINER VESSEL.

A 32,000 horsepower main propulsion unit from DELAVAL powers the S.S. DELTA MAR — the largest LASH/container vessel ever built in the United States. Delivered by Avondale Shipyards to Delta Steamship Lines, the 893 foot long DELTA MAR joins a long line of distinctive vessels driven by DELAVAL main propulsion turbine and gear systems.

DELAVAL's main propulsion units are products of over seven decades of research, development and commitment to the marine industry.

Electric power is generated in DELTA MAR by DELAVAL's new line of 2000 kw ship service turbine generators.

But that's not all—DELAVAL designs and builds condensers for surface vessels and submarines; quiet IMO® rotary pumps for fuel oil service, fuel oil transfer, lube oil service and hydraulic systems — (above or below deck); and the renowned DELAVAL Enterprise diesel engine delivering up to 12,500 bhp to ships of all types.

For information on how you can take advantage of DELAVAL's experience in the marine industry contact: DELAVAL Turbine Inc., Turbine Division, Trenton, N. J. 08602. (609) 587-5000.

DELAVAL

Bigger, Bigger . . . Bigger

Edwin M. Hood*

Edwin M. Hood

The world today is filled with contradictions. In the context of this timely Super Ocean Carrier Conference, many of those paradoxes have a particular relevance.

Instead of peace and tranquility, there is turmoil and confusion. Instead of confidence in traditional procedures, there is doubt. Instead of certainty as to energy sources, there is uncertainty as to future energy availabilities. No two forecasts of supply and demand for fuels agree, and no two sets of pertinent statistics coincide. Public statements are frequently contradictory. Moreover, not all analysts agree as to the short and long-term impact of present energy problems.

There are, of course, many other contradictions which affect the life style of people everywhere. But this much can be said with confidence: the availability and transport of crude oil and petroleum products will profoundly influence all of mankind until the millenium, which, in Biblical terms, is defined as a period of great happiness, good government and freedom from wickedness.

In the sense that we gather here this afternoon, great happiness might be interpreted to include sufficient energy to provide all of the comforts and sustenances of life. Good government might be interpreted to include the ability of nations to perceive and counter situations such as the Arab oil embargo. And, wickedness might be interpreted to include price manipulations which could undermine economic stability in all parts of the globe.

Again, in the sense that we meet here, pursuit of the millenium introduces another contradiction. While energy conservation programs have prompted a far-ranging attitude of thinking smaller and smaller, particularly with respect to automobiles, the opposite prevails with respect to tankers. The trend toward bigger, and still bigger, ocean carriers is expected to continue. The economics of ocean transportation and the increasing and continuing, almost universal, demand for energy supplies are shaping and propelling this trend.

This upward thrust started in the 1950s with the placement of orders for 100,000-dwt tankers. Tankers of 200,000 dwt and larger followed in the late 1960s, and last year the first tankers of over 475,000 dwt were delivered. In 1980, the largest super ocean carrier afloat could well approximate 1,000,000 dwt, and by that time nearly half the world tanker fleet could well be composed of vessels larger than 250,000 dwt.

As of November 1, 1973, the world shipbuilding order book included 549 tankers over 150,000 dwt. Twenty-three were under 200,000 dwt, 473 were in the 200,000/399,000-dwt category, and 53 were over 400,000 dwt. This last group included six tankers of 500,000/550,000 dwt and one of 706,000 dwt.

To date, the consequences of the Yom Kippur war have not dampened this trend toward bigger and bigger carriers. Shipyard contracts for additional super ocean carriers were placed in November and December of last year, and others are about to be awarded here and abroad. Assuming an early and satisfactory resolution of Arab/Israeli differences—a goal earnestly sought by the United States—the demand for very large (VLCC) and ultra large (ULCC) tankers could be accentuated.

These supertanker potentials are not being ignored by American shipbuilders. Construction of 225,000-dwt and 265,000-dwt vessels are now under way, and the U.S. shipbuilding industry will shortly have the capability to produce super ocean carriers up to 600,000 dwt. There are indications that a series of 380,000-dwt VLCCs will be ordered from an American yard in the near future. Total U.S. tanker building capacity is also expected to more than double by 1978.

Interestingly, the Congressionally-mandated Presidentially-appointed Commission on American Shipbuilding in October of last year concluded that "where the U.S. shipbuilding industry has the opportunity to build ships in series and has a reasonable stability in its order book, it is fully capable of equaling the productive efficiency in any foreign shipbuilding industry for the construction of similar ships." The Commission, in addition, focused attention on the U.S. ship financing package which, it was noted, "is substantially better than any alternative financing available for the construction and acquisition of foreign-built ships.

Plainly, American shipbuilders are thinking bigger and bigger—as are their counterparts abroad. By reason of improved techniques, expanded production facilities and attention to cost reduction opportunities, the gap between U.S. and foreign ship construction prices is narrowing. As the gap closes, as productivity quickens, as the pattern of relative inflation changes, the price disadvantage of U.S. yards, reflecting the higher wages and the higher standard of living of the American economy becomes less crucial, and the American shipbuilding industry should not be counted out as a factor in furnishing tomorrow's requirements for super ocean carriers. There is good reason to believe that its competitive posture will improve as time goes on.

To a substantial degree, that competitive posture will be further influenced by governmental actions in the domestic, geopolitical and economic arenas.

Domestically, the energy problem has already initiated a mandatory fuel allocation system, and more controls are anticipated. The energy crisis and related problems have triggered shortages of steel, aluminum, copper and other basic materials, as well as shortages of castings, forgings, and other components essential to ship construction. Material purchase lead times are extending, some potential suppliers have been forced to curtail production, and prices are rising substantially. The economics and output of American shipbuilding are sensitively involved, and the role of Government in assuring that national interests are properly served will no doubt be heavy.

Also, domestically, the Middle East situation has given added impetus to, and prompted added support for, a national policy to assure that up to 30 percent of U.S. oil imports will be brought to U.S. refineries in U.S.-flag, U.S.-built tankers. In a world beset with recurring crises, the rationale is that the United States must become more self reliant and independent without reverting to isolationism.

The Congress is expected to act on this matter during the current year, and the prospects for enactment of enabling legislation are considered good. No other nation could reasonably object. A minimum of 70 percent of U.S. oil imports would still be available to ships flying other than the American flag, and as imports increase, in keeping with most long-term forecasts, the tonnage available for movement will increase substantially for both the U.S. tanker fleet as well as the fleets of other countries.

The United States has no desire to reserve transport of all of its waterborne commerce for its own shipping fleet—vessels of other nations shared substantially in recent American grain movements to Russia. On the other hand, the ramifications of the present oil embargo dramatically demonstrate the wisdom of assured supplies in adequate quantities and the logic of assured control of transportation resources in adequate numbers.

Even in these days of detente, the Soviet Union's manifested awareness of the strategic importance of the Arab oil states is not to be treated casually. One can never be sure of the Kremlin's purposes. But, United States Senator **Henry Jackson,** who is hardly a neophyte in discerning Russian motivations or in appraising the consequences of the present energy crunch, has warned: "I regard the Soviet Union as an opportunistic hotel burglar who walks down the corridors trying all the door handles to see which door is open."

Through well-intentioned leadership and "shuttle" diplomacy, the United States is striving to energize an effective compromise between the Arabs and the Israelis to restore some modicum of stability in the Middle East. Secretary of State **Henry Kissinger's** latest travels are directed toward this objective. But, more than that, the countervailing force of U.S. Naval units in the Mediterranean area must be strengthened and modernized if the threat of the oil jugular by Russian power is to be continuously neutralized.

Turning to another point, the implications of recent oil price increases are so staggering that, in the judgment of some analysts, they threaten the economic and monetary stability of the world. Price, not embargo, it is said, is the key issue. These same authorities contend that restoration of Middle East oil production cuts (which Japan, Europe and lesser developed countries desperately need) and abandonment of the oil embargo (which the United States earnestly seeks) could lead to widespread crisis. The 400-percent increase set in December by the oil-producing nations could shift the financial resources of the oil-consuming nations, it is explained, to the extent that worldwide economic upheaval and depression, accompanied by more political and social unrest, could follow. This grave threat argues forcefully for some kind of cooperative action, such as President **Nixon** and Secretary **Kissinger** have proposed, among producing and consuming nations to prevent global chaos. For the sake of equilibrium, the price of oil should be negotiated by both parties in a way that will preserve the stability of each, as well as the stability of the balance of the world.

Clearly, the energy problem transcends national boundaries, and all governments must think bigger and bigger in terms of appropriate solutions. Transportation of crude oil and petroleum products will be important to these solutions. It is of course technologically possible to build and operate bigger and bigger tankers and, should the sources and the price of oil be stabilized, as they must be, the optimum operational economics of these super ocean carriers will be increasingly attractive.

*Mr. **Hood,** president and board chairman of the Shipbuilders Council of America, delivered this keynote speech before the Super Ocean Carrier Conference at the Americana Hotel, New York City, on January 16, 1974.

USMMA At Kings Point To Admit Women

The Maritime Administration has stolen a march on the Army, Navy, Coast Guard, and Air Force and will open the ranks to women this fall at its Academy at Kings Point, N.Y., it was recently announced.

While it has opened the doors to women, some traditions will remain masculine:

— It will continue to be "midshipmen" and not "midship-person."

— And in regulations providing for application for admission, the rules will continue to refer to candidates as "he," "his" and "him."

The Maritime Administration also disclosed that it already has its first nominee for Commerce Secretary **Frederick Dent** to consider for the autumn class of some 200. She is **Debrah Robb** of Denver, Colo. She was nominated by Representative **Patricia Schroeder** (D.-Colo.).

More than one state maritime academy, notably California's, began admitting women for the first time last September.

Appointments are made on the basis of vacancies allocated among the 50 states and Puerto Rico by their representation in Congress. Aspirants from Guam, American Samoa, Virgin Islands, Canal Zone, and District of Columbia are handled under special provisions of the law. The working of the law prevents female Canal Zone residents from seeking entry, but the Maritime Administration said it would seek amendment of the law to remedy that.

Atlantic Coast Names Jeffrey M. Driesen Senior Vice President

Jeffrey M. Driesen

Jon C. Pendleton, president, Atlantic Coast Agencies, Inc., has announced the appointment of **Jeffrey M. Driesen** as senior vice president of Atlantic Coast Agencies.

Atlantic Coast Agencies are steamship general agents and operators representing New England Express Line to the Continent and L. Figueiredo Navegacoa to the Caribbean and South America. Atlantic Coast Agencies is also sales representative for Crusader Line Services from the West Coast of the United States to New Zealand.

Mr. **Driesen's** responsibilities include all facets of corporation development, administration and management.

He brings to Atlantic Coast Agencies a diversified background in the container industry, having held positions of senior vice president, Zim Container Service; vice president, marketing and sales, Dart Container Line, and various other positions with Grace Line and Belgium Line. In addition to his various shipping activities, Mr. **Driesen** is also a lieutenant commander in the United States Navy.

CTI Appoints Gutterson VP, Pacific Region

CTI-Container Transport International, Inc., has appointed **Frederick Gutterson** to the newly created post of vice president, Pacific region.

Mr. **Gutterson** has served most recently as CTI's North Pacific area director, based in Japan. Previously, Mr. **Gutterson** established the company's Tokyo office in 1971, negotiated the first long-term container lease with the Soviet Union in 1972, and opened the CTI Hong Kong office in 1973.

Mr. **Gutterson,** a graduate of Fordham University in New York City (B.S. degree in economics), is now responsible for CTI's diverse operations throughout the Pacific. He will oversee the company's operations in Tokyo, Hong Kong, Singapore, Malaysia and Australia.

Storm Awards Contract To Bethlehem Beaumont Shipyard For Offshore Drilling Rig

Bethlehem Steel Corporation's Beaumont, Texas, shipyard has received a contract from Storm Drilling Company of Houston for an offshore drilling rig.

This mat-supported jackup unit will have a drilling capacity of 25,000 feet and will be able to operate in water depths up to 250 feet. Delivery is scheduled for fall, 1975.

The rig that will be built for Storm Drilling Company is a hydraulic, self-elevating mobile platform. The platform will be 166 feet long, 132 feet wide and 16 feet deep, with a 50-foot-square drilling slot.

The mat will be 210 feet by 170 feet by 10 feet, and its drilling slot will be 90 feet by 87 feet. Each of the three cylindrical columns will be 312 feet long and 12 feet OD.

The Storm Drilling Company rig will have capacity to store 6,150 cubic feet of bulk mud and cement, 3,000 sacks, 1,500 barrels of active mud, 4,324 barrels of drilling water storage, 402 barrels of potable water, 1,796 barrels of fuel oil and 4,047 barrels of salt water.

Other drilling units under construction by Bethlehem at Beaumont include five semisubmersibles: Ugland Shipping Company A/S—Zapata Offshore Company, Storm Drilling Company, The Western Company of North America, Marlin Drilling Company, Field International Drilling Company—K/S Viking Offshore A/S; three jackup mobile drilling platforms: Marine Drilling Company, Transworld Drilling Company and Walker-Huthnance Offshore Workover Company, and the conversion of a drillship for Storm.

NASSCO Expanding Facilities To Build 150,000-Ton Tankers

National Steel and Shipbuilding Company (NASSCO) has announced expansion of its shipbuilding facilities at San Diego, Calif. NASSCO is owned 50 percent each by Kaiser Industries Corporation and by Morrison-Knudsen Company and is under the management direction of Kaiser Industries Corporation.

The expansion will add a construction graving dock of 160 feet by 1,000 feet, which will permit construction of vessels of 146 feet in beam and 956 feet in length—the equivalent of a 150,000-ton tanker or a 125,000-cubic-meter LNG vessel. Expected addition of 16 acres of leased land will permit construction of steel fabricating facilities to support fully construction in the new dock, as well as on the three existing sliding ways.

Cost of expansion, scheduled for completion in March, 1975, will be about $20 million. Normal operations will continue during expansion.

NASSCO is currently designing a 150,000-ton tanker which it believes will be an optimum design for the Alaskan oil trade. It expects to enter the market with the new design in mid-1974 for deliveries by early 1978, when the Alaskan pipeline is expected to be completed. NASSCO has no current plans for LNG vessel construction.

At December 31, 1973, the shipyard had on order thirteen 89,000-ton tankers, five 38,000-ton tankers, an 80,500-ton ore/bulk/oil carrier, and one 37,000-ton Navy Oiler, representing a new construction backlog of approximately $500 million.

Delivery commitments on all current backlog contracts are based on existing facilities. Delivery of six of the vessels currently in the backlog will be accelerated from four to ten months by constructing several of the 89,000-ton tankers in the new graving dock.

SNAME N.Y. Metropolitan Section Hears Technical Paper On 'New Approach To The Ship Hull Characteristics Problem'

Shown above during the New York Metropolitan Section meeting at the Seamen's Church Institute, left to right: **Monroe D. Macpherson; Donald B. Carpenter,** Section chairman; **Robert G. Mende,** SNAME national secretary; **J. Horton; T. Zielinski,** author; **Lester Rosenblatt; Phillip Eisenberg,** Society president; **Patricia M. McGovern; D. Hoffman,** author; **Thomas J. Sartor Jr.,** Section vice chairman, and Dr. **Walter M. Maclean.**

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers met on January 15, 1974, at the Seamen's Church Institute in New York City.

After a social hour and dinner, the technical session was held at which a paper was presented entitled "A New Approach to the Ship Hull Characteristics Problem," by **D. Hoffman** and **T. Zielinski** of the Webb Institute of Naval Architecture.

In the paper, conformal mapping techniques are used as a mathematical means of presenting the two-dimensional ship section by means of an array of approximately 10 elements.

The geometric properties of any transverse section are determined in an explicit form rather than by numerical approximation.

These arbitrarily spaced transverse sections are integrated longitudinally to give specific values for tanks or damaged compartments, as well as the general ship characteristics for the case of level, trim or any other mathematically defined waterline profile such as a sinusoidal or trochoidal wave.

This form of ship geometry input is particularly suited for computer applications, due to its compact storage requirements. It is also identical to the input used for ship dynamics calculations to determine motions, loads, vibrations, etc.

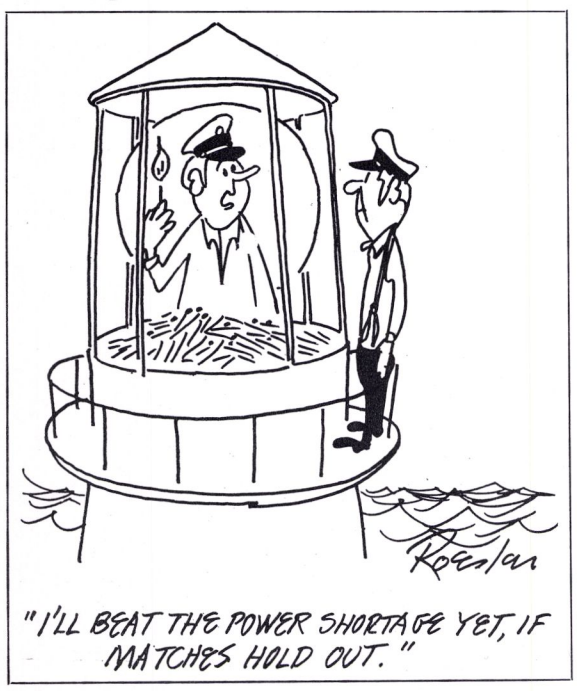
Examples showing applications of this approach in both ship design and onboard hardware manipulations are given.

Society president **Phillip Eisenberg** was present at this meeting and addressed the members of the Section on Society programs and other matters of interest to the membership.

Chemical Tanker Operator Moves New York Headquarters

Stanalchem Inc., worldwide marketer of bulk chemicals and petrochemical feedstocks, has moved its headquarters to 299 Park Avenue, New York, N.Y. 10017, it was announced by **Samuel C. Johananoff,** president.

The Amsterdam and Paris-based Johananoff Group, which includes Stanalchem, is comprised of 14 operating companies in 12 countries. Describing the Group's operations, Mr. **Johananoff,** its chief executive said: "I believe we are the largest integrated international marketer of bulk chemicals. We command a fleet of eight chemical tankers and maintain dockside bulk storage and distribution terminals in 10 strategic locations."



ASNE Annual Meeting Set For May 2-3 In Washington, D.C.

The president of The American Society of Naval Engineers (ASNE), Rear Adm. **D.H. Jackson,** USN, announced that the Society has scheduled its annual national meeting, ASNE Day, for Thursday and Friday, May 2-3, 1974, at the Shoreham Hotel, Washington, D.C.

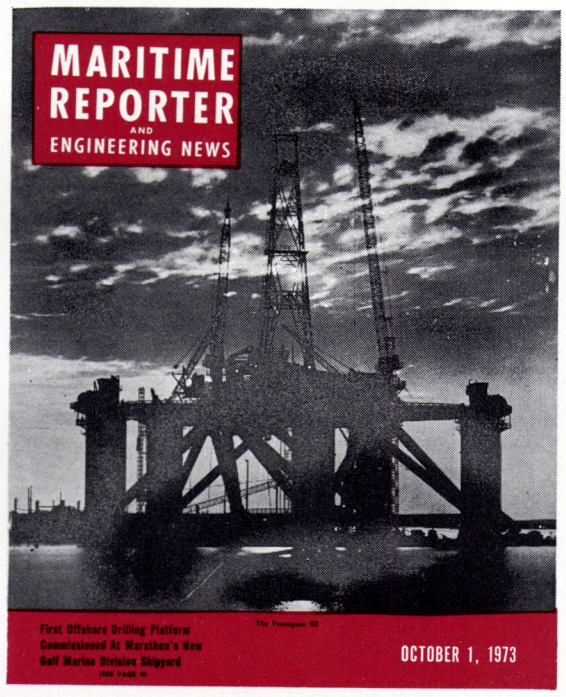
The Society, founded in 1888, by definition includes all arts and sciences applied in the research, development, design, construction, operation, maintenance and logistic support of ships, aircraft, ship-related systems, ocean structures and fixed and mobile shore facilities used by the Navy, Coast Guard, Marine Corps, and the maritime auxiliaries for the defense and well-being of the nation.

The theme of this year's meeting is "Work of Interest to the Naval Engineer" and during the two-day technical session, 16 papers will be presented covering such technical topics as Test and Evaluation Programs, Navy Diver Programs, Advances in Naval Combat Systems and Celestial Navigation, Environmental Protection Systems, Combatant Capability and Tactical Requirements, Manning Requirements, Modular Ship Design, etc. Discussions are planned to follow each presentation to stimulate activity among a cross-section of Government and industry engineers and military officers in attendance.

J. Vollbrecht, president, Aerojet General Corporation, will speak at the annual banquet on May 3, 1974.

Registration for the technical sessions and/or luncheon and banquet may be made in advance with ASNE at its headquarters at 1012-14th Street, N.W., Washington, D.C. 20005, or upon arrival at the Registration Desk in the Shoreham Hotel's Executive Room. Room reservations should be made directly with the hotel.

You need only **ONE**



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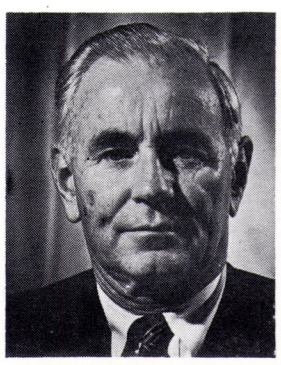
Thomas B. Crowley Elected President At Western Shipbuilding Ass'n Annual Meeting



Thomas B. Crowley

An overflow throng of members and friends of the industry were on hand for the annual membership meeting of the Western Shipbuilding Association, which was held in the Pavilion Room of the Fairmont Hotel, San Francisco, Calif., on January 18, 1974. **George W. Wintz,** outgoing president of the Association following three full years at the helm, reported on the intensive activities of WSA in 1973, during its successful efforts to convince the Congress of the great need for more Navy ship repair work. He gave special credit to **E.J. Glenn,** assistant to the WSA president for three years, commending him for his fine work in personally supplying members of Congress with fact sheets, statistics, and other material documenting the private shipyard case in the Navy issue.

Mr. **Wintz** declared that the success of the Congressional contact program was the result of a highly coordinated effort in which Western Shipbuilding Association officers, directors and members of the executive board worked closely with officials of the Shipbuilders Council of America, New England Ship Repair Yard Association, and New York New Jersey Dry Dock Association. Two labor organizations—Industrial Union of Marine and Shipbuilding Workers of America (IUMSWA) and Pacific Coast Metal Trades District Council—were also highly commended for the important part they played in the overall effort.

For the benefit of members who were unable to attend the annual meeting, the January 2, 1974 election of directors by mail resulted in election of the slate as nominated by the nominating committee and submitted to the membership for vote.

The annual meeting of the WSA board of directors was held in San Francisco on January 18, 1974, prior to the membership meeting, and the officers elected at that meeting to serve the Association during 1974 were announced as follows:

Chairman of the board, **George W. Wintz,** president, Willamette Iron & Steel Co., Portland, Ore.; president, **Thomas B. Crowley,** president, Crowley Maritime Corp., San Francisco, Calif.; first vice president, **Thomas A. Rotell,** president, Pacific Coast Metal Trades District Council, San Francisco; and executive secretary-treasurer, **Bernard W. Evans,** public relations director, Crowley Maritime Corp., San Francisco.

Area vice presidents were elected as follows:

SEATTLE — James H. Francis, general manager, Lake Union Drydock Co.; **Malcolm E. McLaren,** secretary-treasurer, Metal Trades Council of Seattle and Vicinity; and **Carl R. Meurk,** general manager, Todd Shipyards Corp.

PORTLAND—Arthur E. Farr, vice president and general manager, Northwest Marine Iron Works; **Edward J. Glenn,** assistant to the president, Willamette Iron & Steel Co.; **Norman W. Hicks,** business manager-secretary treasurer, International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers, Union Local No. 72; and **Henry P. McCarthy,** secretary-treasurer, Metal Trades Council of Portland and Vicinity.

SAN FRANCISCO BAY AREA — P.G. Filip, general manager, Bethlehem Steel Corp., San Francisco Shipyard; **Angel Garate,** general manager, Todd Shipyards Corp., Alameda Shipyard; **Clifford P. LeGette,** general manager, Triple "A" Machine Shop, Inc.; and **John D. Reilly,** vice president, Todd Shipyards Corp.

LOS ANGELES-LONG BEACH —Carl M.Lippincott, general manager, Todd Shipyards Corp.; **A.J. Maloney,** general manager, Bethlehem Steel Corp., San Pedro Shipyard; **John E. Marriner,** president, Barge Train, Inc.; and **Vernon F. Passmore,** president, Industrial Union of Marine and Shipbuilding Workers of America, Local #9.

SAN DIEGO—Paul W. Pepper, president, Pepper Industries, Inc.

HONOLULU — Sueo Hayashida, vice president, Pacific Marine & Supply Co. Ltd., and **Richard Kuwada,** president, Pacific Container Service, Inc.

The guest speaker, the Honorable **Robert J. Blackwell,** Assistant Secretary of Commerce for Maritime Affairs, discussed the growing backlog of construction contracts for U.S. merchant ships in West Coast shipyards. He forecast a resurgence of the Pacific Coast shipbuilding industry, which had been almost dormant for a time, with only seven ships built on the entire West Coast from 1963 to 1972. According to Mr. **Blackwell,** the West Coast shipbuilding industry within the next new months could have on its books more than 2.6-million tons of merchant shipping valued at more than $1 billion, a far cry from the five-ship $60-million order book of 10 years ago.

Thomas B. Crowley, newly elected president of Western Shipbuilding Association for 1974, will be serving in that capacity for the third time. He previously held the organization's top post in 1968 and 1969, two highly important years in which the efforts of the Association at the time of Congressional hearings on the Merchant Marine Act of 1970 were credited with having been largely responsible for retention in the new legislation of the "Buy American" clause in its exact language of the 1936 Act. The Association at the same time had also lent vigorous support to the inclusion of several other essential sections that appeared in the final language of that historic legislation.

Mr. **Crowley** has vowed complete support and implementation of the recent important programs of the Association directed toward betterment and preservation of the private shipyard industry and its many related industries, trades and crafts.

Robert E. Mayer, who was seated as an honored guest at the head table, was cited for the dedicated manner in which he contributed freely of his personal time and efforts on behalf of the Western Shipbuilding Association from the time of its founding in 1959 to the date of his resignation in 1973. Mr. **Mayer,** who served as the first secretary of the Association and its president in 1966 and 1967, was in his second year as chairman of the board when he resigned on May 22, 1973, the date he left the shipyard industry to accept the post of vice president with States Steamship Company.

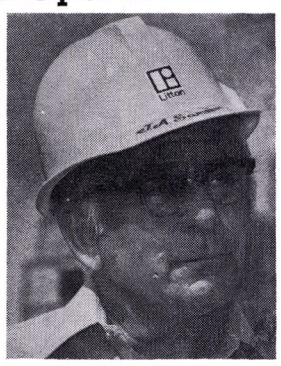
C-E Publishes New Brochure On Heavy Fabrication

C-E Combustion Division has a new brochure available entitled "Heavy Fabrication," which details the capabilities of C-E's Chattanooga (Tenn.) Works in producing heavy vessels for the utility, petrochemical and petroleum industries worldwide.

The Chattanooga facility fabricates pressure vessels to exacting specifications in sizes up to 1,000 tons, with wall thicknesses from 1 to 12 inches; materials range from low carbon to stainless steel.

Copies of the brochure (CD-126) may be obtained from Dept. 708-4, Combustion Engineering, Inc., 1000 Prospect Hill Road, Windsor, Conn. 06095.

FMD Appoints Sanchez To Direct Field Operations



Joseph A. Sanchez

J. Angus MacInnes, vice president/program manager of Frigitemp Marine Division, has announced the appointment of **Joseph A. Sanchez** as director of field operations for FMD for joiner work on two major naval contracts with Ingalls Shipbuilding Division of Litton Industries.

Mr. **Sanchez,** a Pascagoula resident, comes to FMD with over 30 years' shipyard experience, including 22 years with Ingalls where he held key production positions, particularly in the area of outfitting.

Mr. **Sanchez** was director of outfitting for Ingalls when he retired in mid-1973, and was immediately retained by Ingalls as a special consultant to the operations directorate. He also held the positions of works manager and operations director with Ingalls.

Mr. **MacInnes** said: "We at Frigitemp are particularly pleased to have been able to obtain the services of a man with the experience, know-how and accomplishments of Mr. **Sanchez.** We have a major task ahead of us at Ingalls, and Mr. **Sanchez** will be invaluable in helping us to accomplish our goals."

FMD, a division of Frigitemp Corporation of New York, has multimillion contracts for joiner work on five 820-foot amphibious assault ships, and 30 destroyers of a new class being built at Pascagoula by Ingalls for the Navy.

Pacific Inland Files $17.3-Million Title XI To Build Six Vessels

Title XI applications, with a total cost of approximately $17.3 million, have been filed with the Maritime Administration for the following: one 4,200-horsepower towboat measuring 110 feet in length, with a 32-foot beam and a 10-foot depth, costing $1.3 million; two 8,400-horsepower ocean tugs, 207 feet long, with a 45-foot beam, and a depth of 23 feet, costing $3 million each; one 12,020-dwt barge, costing $4 million; one 13,470-dwt barge costing $3 million, and one 12,200-dwt barge costing $3 million.

Pacific Inland Navigation Co., Inc. of Seattle, Wash., filed the request. The vessels will be used on the Columbia and Willamette Rivers, and as yet no construction contracts have been granted.

Alco Engines Names Comeng Holdings Ltd. Australian Licensee

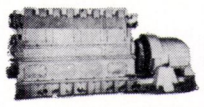
With the acquisition of the Transportation Division, A.E. Goodwin Limited, Comeng Holdings Limited, Sydney, became the new Australian licensee for Alco Engines Division of White Industrial Power, Inc.

The license to build Alco diesel engines will be administered within the Comeng Group by the Sydney-based subsidiary company, Commonwealth Engineering (N.S.W.) Pty. Limited, which is headed by **A.R. (Bert) Bushell,** general manager. Other members of the Commonwealth Engineering team who will be active in the Alco association are **Ken Smollett,** company secretary; **Alan Lachlan,** production manager; **Ivan Silink,** works manager; **Harry Anthony,** chief design engineer; **Stan Dick,** traction engineer; **Ivor Jennings,** commercial manager, and **Ken Nicholls,** supply manager. The Comeng Group has a number of other licensing agreements with American companies.

From its incorporation in 1946, Commonwealth Engineering Co., Limited, now Comeng Holdings Limited, has maintained a constant policy of growth through acquisition and diversification.

DIESEL GENERATOR SETS

1

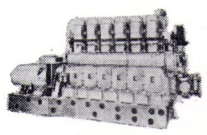


350 KW DIESEL GENERATOR SET

350 KW—120/240 volts DC—600 RPM—compound wound G.E. generator with switchgear. ENGINE: Ingersoll-Rand—heavy-duty type S—505 HP—10½x12—reconditioned to ABS.

2

250 KW DIESEL GENERATOR SET



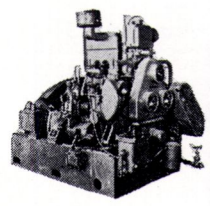
ENGINE: Enterprise 12 x 15 DSG-6 — 6 cyl. — 450 RPM crank No. 50J. GENERATOR: Westinghouse 250 KW—120/240 DC—1040 amps—450 RPM. Typical serial No. 3S-10P-913. Complete with switch gear.

3

EMERGENCY GENERATOR SUPERIOR 75KW 120/240 VOLT D.C. DIESEL GENERATOR SET

With switchgear. ENGINE: Radiator cooled Superior GBD-8—6 cylinder—1200 RPM GENERATOR: Electric Machinery Co.—120/240 volts DC—316 amps—1200 RPM—stab. shunt.

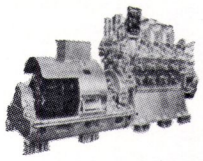
4



UNUSED 10 KW SUPERIOR DIESEL GENERATOR SET

GENERATOR: Delco 10 KW — 120 VDC — 83.3 amps—1200 RPM. ENGINE: Superior diesel—2 cyl.—4½x5¾ — 15 HP — heat exchanger cooled.

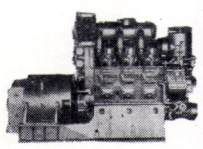
5



500 KW— 120/240 VOLT DC DIESEL GENERATOR SET EQUAL TO NEW

GENERATOR: Allis Chalmers—Compound wound. Has Class "A" insulation. Output 500 KW—120/240 volts DC—2080 amperes—720 RPM—drip-proof—self-cooling. Ambient 50°C—temperature rise 40°C. ENGINE: Model GM 8-278—2-cycle—Vee type—8½"x10½"—air starting—720 RPM. Complete with switchgear. Condition very good. Still aboard naval vessel. Has Ross shell & tube type lube oil & raw coolers—temp. control valve—shock mounts.

6



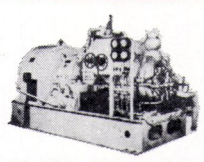
300 KW DIESEL GENERATOR SET

ENGINE: G.M. 6-278—6-cylinder—2 cycle—8¾"x10½"—750 RPM—with oil and water Ross Shell and Tube Heat Exchangers, instrument panel, pyrometer, etc. Vibro Isolators.

GENERATOR: G.E. 300 KW—120/240 volts DC—1250 amps—shunt wound—continuous overload rating 375 KW—2 hours—55° Weight of unit approximately 26,000 pounds. Complete with shock mounts. Unit 13' 2" long, 64" wide, 8' high.

TURBO GENERATOR SETS

7



400 KW WESTINGHOUSE TURBO GEN SETS FOR BETH. SPARROWS PT. HULLS 400 TO 4500; QUINCY HULLS 1600

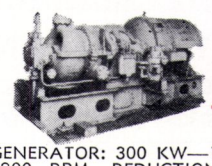
400 KW (500 KVA)—80% PF—1200 RPM—450/3/60. TURBINE: 585 lbs—840°TT—28½" vacuum—9018 RPM—serial 10A4462-3 & 10A4462-4. GEAR: 9018/1200 RPM. A.C. GENERATOR: 500 KVA—400 KW—450 volts—641 amps—80%PF—3 phase 60 cycle—1200 RPM—CR 40°—excitation amps 41—excitation voltage 120. Instruction book 5442. Switchgear available.

8

UNUSED 300 KW—240 VOLT DC WESTINGHOUSE LOW-PRESSURE TURBO-GENERATOR SET

GENERATOR: 300 KW—240 VDC—1250 amps—1200 RPM. GEAR: 5286/1200—frame 6x15—serial 10A-2612-4. TURBINE: Frame C-325—225 PSI—397° TF—5286 RPM—Serial 10-A-2611-4. Wt. 16,700 lbs. —complete in original factory crate.

9



LOW-PRESSURE UNUSED 300 KW G.E. 120/240 VOLT DC TURBO-GENERATOR SET

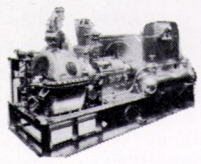
GENERATOR: 300 KW—120/240 VDC—1250 amps—1200 RPM. REDUCTION GEAR: 8.344:1 — 10012/1200 RPM—type S-182. TURBINE: DOR418N—449 H.P.—10012 RPM—working pressure 180/220 PSIG.

10

WESTINGHOUSE 440/3/60 200 KW UNIT

GENERATOR: Westinghouse 200 KW—250 KVA—450/3/60—1200 RPM—80% PF—with 40 KW—120 VDC on same shaft. GEAR: 9989/1200 RPM—double helical. TURBINE: Westinghouse — 540 PSI — superheat 322°F. Test 930 PSI 800°TT. Also operate 615 PSI—850°TT.

11

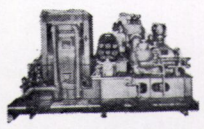


1250 KW G.E. 10-STAGE TURBO GENERATOR SET

TURBINE: 525—615 PSI—850°TT—7938 RPM—10-stage—type FSN. GEAR: Single helix—7938/3600. GENERATOR: 1250 KW—450/3/60/3600—.80 PF—type ATB with surface air cooler. Overload 25%— 2 hours—1563 KW.

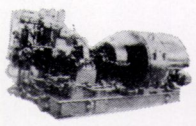
6 EQUAL-TO-NEW LATE TYPE 500 KW SHIPS SERVICE TURBO GENERATORS

12



1962—DeLaval. Very little use. Completely preserved with rotors and diaphragms crated separately. TURBINE: DeLaval —585 PSI — 840°TT—6-stage—6391 RPM—class CD — Also suitable 440 lbs.—740°TT—25" vac. GEAR: 6391/1200 RPM. GENERATOR: Allis-Chalmers—450/3/60. Totally enclosed, with static exciter and voltage regulator system. Weight 17,665 lbs. Complete with latest dead front switch gear. Also available are the condensers, circulating and condenser pumps. All very up-to-date, compact construction. Turbines will easily handle 600 KW if up-grading is desired.

13



AP2 VICTORY WORTHINGTON-MOORE CROCKER-WHEELER 300 KW UNIT

TURBINE: 440 PSI—740°TT—28½" vacuum—type S4 — 5-stage — 6097 RPM — serial 7547 & 7548. GEAR: 6097/1200. GENERATOR: 300 KW—120/240 volts DC—1250 amps—compound wound—973643—999759. Armature flange 8½"; B.C. 7"—12 holes. ALSO NEW ARMATURES IN STOCK & 300 KW SHUNT ARMATURES.

UNUSED C-4 CROCKER-WHEELER 500 KW GENERATOR ENDS ONLY 120/240 VOLTS D.C.—1200 R.P.M.

14

FORMERLY USED WITH WORTHINGTON-MOORE TURBINES & GEARS

Upgraded by U.S. Navy—rewound in glass. Generator Frame and Armature—Marine 500 KW type 3-1200—dripproof enclosure—base mount. Modified from Crocker-Wheeler generator frame 152HD — 240/120 volts DC — 2083/521 amps — 1200 RPM. Ambient temperatures 50°C. APPLICATION: For C-4-SA1; C4-SA-3; T-AP-134 vessels, using Worthington-Moore Turbine—Form S-6 and generator Form 14 x 10. No pedestal bearing.

15

WESTINGHOUSE 400 KW TURBO-GEN 835 LBS — 840°TT

Newport News Hulls 480—541 Esso ships. TURBINE: Westinghouse 835 lbs/840°TT—9018 RPM—6-stage —instruction book 1430-C1—serial 5A-7090-7 & 8. GEAR: 9018/1200 RPM. GENERATOR: Westinghouse 400 KW—440/3/60/1200 RPM—rewound field—instruction book 5442. EXCITER: 5.5 KW.

TWO 538 KW WESTINGHOUSE T-2 AUX. GENERATORS (COMPLETE)

16

TURBINE: 538 KW @ 5010 RPM—438 PSIG—750°TT—28½" vacuum. GEAR: 5010/1200 RPM. A.C. GENERATOR: 400 KW 450/3/60/1200—0.8 PF. DC EXCITER: 32.5 KW—120 volts (variable voltage)—shunt—4-pole—DC excitation 5 KW. ALWAYS WELL MAINTAINED BY MAJOR OIL CO.

TURBINES & ROTORS

MAIN PROPULSION

17

BETH. CLASS—13,600 H.P.

Sparrows Point & Quincy 1600 hulls. H.P. turbine casing only. Excellent blading & labyrinth packing.

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THE BOS

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18

H.P. & L.P. COUPLINGS

1 Set—for Beth Class 13,600 HP 4400 hulls and Quincy 1600 hulls.

19

G.E. 6690 HP @ 7062 RPM HIGH PRESSURE 8-STAGE TURBINE

835 lbs—840°TT—#83341—originally built for Esso Christobol—Newport News.

T-2 TURBINES & ROTORS

20

COMPLETE WESTINGHOUSE T-2 MAIN TURBINE—UNSHROUDED 6600 HP—435 PSI—750°F 28" VACUUM—3720 RPM

Instruction book IB-8345—type D—serial No. 5A-2124-6—unshrouded. Unit complete with all packing, stationary blading, linkage, governors, diaphragms, nozzles, etc. WILL SELL ROTOR SEPARATELY OR COMPLETE TURBINE CASING & ROTOR. Always well maintained by major oil company.

21

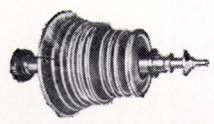
2 COMPLETE T-2 G.E. TURBINES

#61818 and #61834—large Lynn—all stages magnafluxed.

ROTOR WILL INTERCHANGE WITH ELLIOTT MAIN TURBINE

Will Sell Rotors Separately

22



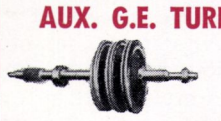
T2-SE-A1 MAIN PROPULSION ROTOR — G.E.

Large Schenectady — serial 77418 — reconditioned Bethlehem Steel 1970—all stages magnafluxed.

23

T-2 TANKER UNUSED—4 UNITS AVAILABLE

AUX. G.E. TURBO GEN. ROTORS



DORV — 325M — 5645 RPM — for 525 KW G.E.

VICTORY SHIP TURBINES & ROTORS

24

8500 H.P. 8-STAGE TURBINES FOR LARGE VICTORY SHIPS

L.P. – 3509 RPM
H.P. – 6159 RPM

LP Serial #77943—HP Serial #77942—Interchanges Ingalls C-3—Class 442 & Sun C-4 vessels—U.S. Navy Victory "Liberty".

LP Serial #72272—HP Serial #72271—Interchanges Ingalls C-3—10 boxes of spares.

LP Serial #62042—HP Serial #62043—GEI 16263—Ridgeway Victory.

WRITE OR PHONE FOR DETAILED INFORMATION AND PRICES

TON METALS CO.

ORE ST. • BALTIMORE, MD. 21202

539-1900 Marine Dept.: (301) 355-5050

25 **VICTORY SHIP AP2 H.P. & L.P. TURBINES NEW — UNUSED — 6000 H.P. SETS**

G.E.—H.P. & L.P.—with throttle valve
Westinghouse—L.P.—with throttle valve
Allis-Chalmers—H.P & L.P.—with throttle valve

26 **6000 H.P. G.E. — NORTH CAROLINA C-2**

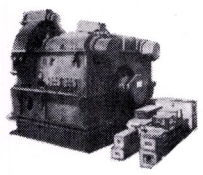
H.P.—8-stage—serial 78040
L.P.—7-stage—serial 78043
G.E.I. 16262

27

19 STAGE WESTINGHOUSE H.P. ROTOR FOR AP2 VICTORY

Reconditioned — balanced—with ABS. Serial 4A-2079—type B — 19 stage reaction blades. Excellent — just out of shop. 13" Flange diameter with 14 bolts.

28



G.E. 8500 H.P. REDUCTON GEAR FOR LARGE AP3 VICTORY & C3

MD-48A—8500 HP—6159/3509/763/85 RPM.

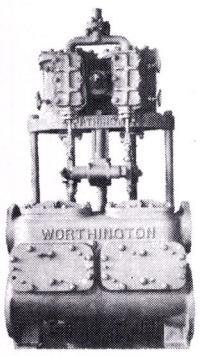
29 **ALSO 6000 H.P. VICTORY AP2 REDUCTION GEAR**

Westinghouse 4A-1640.

PUMPS

CARGO STRIPPING PUMPS

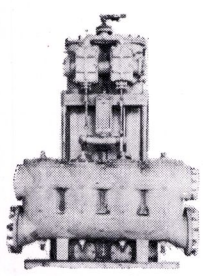
30



BRONZE T2 TANKER STRIPPING PUMPS

14x14x12—700 GPM at 100 lbs. Same pump available in steel for fuel oil transfer, etc.

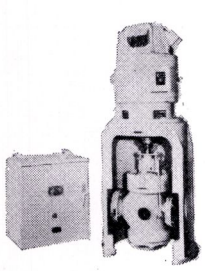
31



WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

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

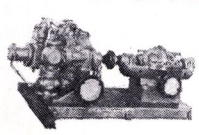
32



UNUSED DELAVAL IMO ROTARY PUMP

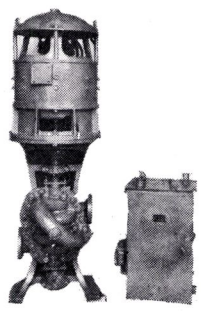
175 GPM—35 PSIG—10 HP—120 volts DC—1750 RPM—serial E-8619—frame 324 VY—76 amps—mfg. by Electro Dynamics. With magnetic control. Excellent condition.

33 **NEW TURBINE DRIVEN FIRE AND GENERAL SERVICE PUMP**



Allis-Chalmers 6 x 5 pump, type SKH—1200 GPM—125 PSI—3500 RPM. Coppos turbine type TF-22-2½ — 3500 RPM. 273#—50° superheat.

34



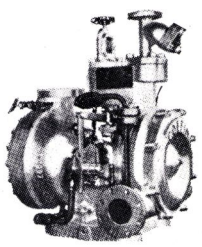
DAYTON-DAWD 2-STAGE FIRE AND BILGE PUMP

Vertical 2-stage type TDV-10—20 HP—200 GPM @ 184'—3" discharge—4" suction—1775 RPM—Maumee Sun. Motor: 120 volts DC—20 HP—1775 RPM.

BOILER FEED PUMPS

Suitable for Navy and Merchant Vessels

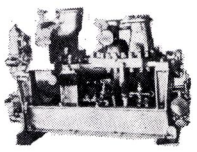
35



COFFIN TYPE CG-4A FEED PUMP

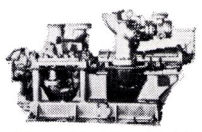
2 Available—very little use. Maximum 325 GPM—1760' head or 750 lbs Steam inlet 575 lbs. — 540°TT — exhaust 20 lbs. — speed 760 RPM.

36 **UNUSED DD445 CLASS WORTHINGTON TURBINE-DRIVEN FEED PUMP**



Worthington — drawing SL5043—425 GPM—1675' total dynamic head—5000 RPM 3-stage — double suction. Flanged 4½" inlet—4" outlet. Powered by Sturtevant steam turbine—282 HP—590 PSI. For Fletcher DD-445 Class Destroyers.

37



BUFFALO SIZE 4 FEED PUMPS

Terry Turbine—BM—273 HP—550 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs—5"x4"—built for USN DD destroyers. DD 445 Class Fletcher.

38

WORTHINGTON 3-STAGE UNUSED BOILER FEED PUMP

PUMP: 5" Worthington—460 GPM @ 750 PSI—5000 RPM—305 HP—steam flow 8052/hr—26.4 lbs HP hr. TURBINE: Sturtevant C-22—type 21—575# dry saturated steam—15 lb. back pressure—259°F water temperature—15 lbs/inch suction pressure.

39 **INGERSOLL-RAND BRONZE CARGO PUMP**

10GT—4500 GPM at 125 lbs.—2-stage—size 14x12.

40

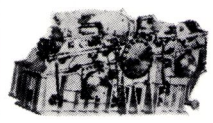
C-25 CARGO PUMP TURBINE SPARE GEARS

One set of gears available for Westinghouse C-25 Cargo Pump Turbine.

MISCELLANEOUS

DOUBLE REDUCTION GEARS for Diesel Drive

41



3200 HP DOUBLE INPUT SINGLE OUTPUT DIESEL REDUCTION GEARS 20 DEGREE OFFSET

Farrell-Birmingham — 3200 SHP. REDUCTION GEAR: 1.81:1—handles two 1600 HP diesels @ 720 RPM. With hydraulic couplings & Fawick clutch. Port and starboard. Gear output 400 RPM. Suitable for dredge pumps. Non-reversing. OK for 38D8-⅛ engine.

42 **2:67:1 RATIO DOUBLE IN-LINE GEARS**

Farrell-Birmingham 3200 HP non-reversing — from seaplane tenders. Ratio 1.867:1. Complete with hydraulic couplings, etc. Will handle two 38D8-⅛ FM diesels. Has Fawick clutch.

43 **2100 HP DOUBLE INPUT SINGLE OUTPUT GEARS—3:435:1 RATIO**

Farrell-Birmingham — heavy duty — originally built for 2 heavy-duty direct-reversing engines —300 RPM—1050 HP each. Ratio 3.435:1.

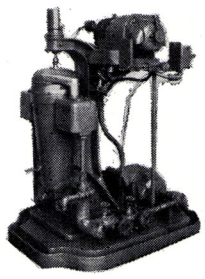
44 **SINGLE ENGINE REDUCTION GEAR**

Farrell-Birmingham — non-reversing—1600 HP at 2.4909:1. With hydraulic couplings.

45 **ANCHOR WINDLASS**

Hyde 2-11/16" — 12x14 — 100 PSI — steam — 54,100 lbs.

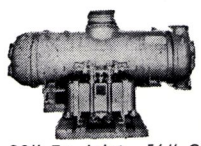
46



SHARPLES LUBE & DIESEL OIL PURIFIERS

Type M-34-W22-UM—15,000 RPM. BOWL MOTOR: 2 HP—230 volts DC—8.5 amps—3450 RPM—250 to 300 GPH. Originally built for C-1-A diesel vessels.

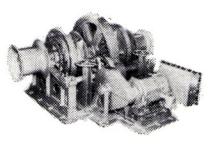
47



UNUSED 1135 SQ. FT. C.H. WHEELER CONDENSER

20" Ex. inlet—⅝" CU-NI tubes—with or without air ejector.

48

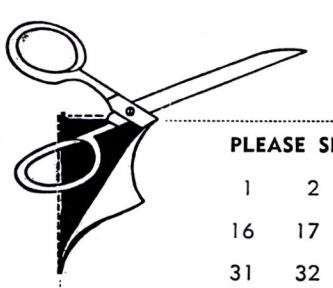


UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

Chain and two 10640 lb anchor & 30 fathoms chain @ 30 FPM. 70 HP—230 volts—shunt DC motors—233 amps—550 RPM—55°C rise. Wildcat centers 47½". Base 9'5" wide x 11' long. Weight 36,000 lbs.

INQUIRE FOR ALL OTHER ITEMS

Forced draft blowers, reduction gear parts, bilge and ballast pumps, main circulators, general service pumps, F.O. transfer pumps, lube oil service, standby feed pumps, condensate pumps, aux. circulating pumps, feed water heaters, wash water pumps, etc.



PLEASE SEND INFORMATION ON THE FOLLOWING: (Please circle items) 2/15/74

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16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
46	47	48												

NAME..... COMPANY.....

ADDRESS..... POSITION..... PHONE.....

CITY..... ZONE..... STATE.....

Friede & Goldman Inc. Design Zapata Rigs Building At Avondale

The three new SS-2000 Class semisubmersible offshore drilling rigs being built for Zapata Off-Shore Company by Avondale Shipyards, Inc., were designed by Friede & Goldman, Inc., naval architects and marine engineers, New Orleans, La.

Design of the New Zapata rigs is an outgrowth of an in-house research and development program in which Friede & Goldman, Inc. spent several years designing and model testing a highly advanced new type of semisubmersible drilling unit. Successful results of the research and development program, backed by the experience of designing more than 100 offshore drilling units, led to Friede & Goldman's design of the new Pacesetter series (Pacesetters I, II and III) of self-propelled semisubmersibles for the Western Company of North America, and to the SS-2000 series for Zapata Off-Shore Company.

Friede & Goldman, Inc., under the direction of its president and principal designer, **Jerome L. Goldman,** has pioneered a great variety of design developments in offshore technology, including one of the first true offshore mobile drilling units; the first jackup drilling unit ever to be raised by hydraulic jacks; the first mobile drilling unit to work in the North Sea; concepts for the first catamaran drilling ships; a long series of giant submersible drilling units built between 1955 and 1960; a score or more of semisubmersibles including the Sedco 135 type, and the first application of cycloidal propulsion for dynamic positioning of a drilling ship.

The new Zapata SS-2000 rigs, scheduled for delivery beginning in the spring of 1975, are distinctive by their twin lower hulls of catamaran or ship-like configuration which provide superior performance characteristics, particularly in the dampening effect when subjected to surge motions. The 260-foot-long 200-foot-beam drilling platform is supported by six cylindrical stability caissons. Normal drilling draft is 45 feet, with a displacement of 16,750 long tons. Each unit will have a variable deck load capacity of 2,000 tons and quarters accommodations for 90 persons.

The units will contain high-capacity drilling equipment capable of drilling to depths of more than 25,000 feet. They will have a design capability for drilling in 2,000 feet of water. Design of the rigs meets all U.S. Coast Guard and American Bureau of Shipping standards.

Acadian Marine Expands International And Domestic Division

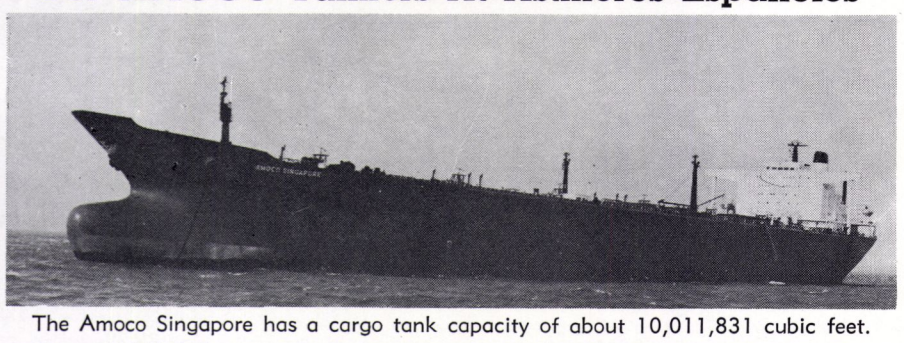
The increased demand for vessels in the Gulf of Mexico and in the North Sea has prompted Acadian Marine Service, New Orleans, La., to expand its International and Domestic Divisions.

Billy Duck and **Milton Aucoin** have been named operations manager and port captain, respectively, of Acadian's Domestic Division. Mr. **Duck** was formerly with Tidewater Marine Service.

Mark Vorenkamp has been named operations manager-North Sea, and **Jason Rogers** has been named hull and machinery superintendent for Acadian Marine's International Division.

Acadian Marine Service, Inc., is a worldwide marine transportation company, primarily servicing international oil and construction companies.

Sea Trials And Launching Ceremonies Held For AMOCO Tankers At Astilleros Espanoles



The Amoco Singapore has a cargo tank capacity of about 10,011,831 cubic feet.

The 230,000-dwt tanker Amoco Singapore recently completed successful sea trials. Built at the Cadiz shipyard of Astilleros Espanoles, S.A., the vessel is the second in a series for Amoco Transport Company from the Cadiz yard.

The first of the series, the Amoco Milford Haven, was delivered in June 1973.

The third unit, the Amoco Cadiz, was launched during recent ceremonies with **Mrs. L.C. Adams,** wife of the executive vice president of Amoco International Oil Company of Chicago, serving as sponsor.

Principal characteristics of the tankers are approximately as follows: length overall, 1,096 feet; molded breadth, 167 feet, and molded draft, 65 feet.

The propulsion machinery on each tanker comprises an AESA-Burmeister & Wain supercharged eight-cylinder 8K98FF-type main engine, arranged to burn fuel-oil in service and diesel-oil on trials, totaling a maximum continuous output of 30,400 bhp at 103 rpm, built at the Manises Works of Astilleros Espanoles, S.A.

Other equipment, such as windlasses, winches, steering gear, main boilers, heavy forgings and castings, etc., have also been manufactured at different works of Astilleros Espanoles, S.A.

Pictured above during launching ceremonies of the Amoco Cadiz: **Mrs. L.C. Adams,** the vessel's sponsor, and **Luis Nadil Cuenca,** director of the shipyard at Cadiz.

Ametco Shipping Elects J.E. Hundt President

John E. Hundt

John E. Hundt has been elected president and a member of the board of directors of Ametco Shipping, Inc. Mr. **Hundt** also continues as director of traffic of Ametalco, Inc. Both Ametco and Ametalco are in the American Metal Climax Group of companies.

A graduate of the U.S. Merchant Marine Academy, and holder of an M.B.A. degree from the Wharton School of Finance and Commerce, Mr. **Hundt** has served both in the U.S. Navy and merchant marine, and holds a Coast Guard license of chief mate, steam and motor vessels, any gross tons upon oceans.

He has extensive experience in the international and domestic maritime fields, having previously been associated with Moore-McCormack Lines, Grace Lines, and Allied Chemical Corporation.

Mr. **Hundt** is a member of the Kings Point Faculty-Alumni Committee, and Kings Point and Wharton Alumni Associations. He has served as a lecturer in the Graduate Division of the Baruch School, City University of New York, and as deputy faculty advisor to the City College Chapter of the Rho Epsilon Fraternity.

World Dredging Ass'n New Midwest Chapter To Meet February 28

The Midwest Chapter of North America of the World Dredging Association announces its first chapter meeting to be held Thursday, February 28, 1974, in St. Louis, Mo., from 9 a.m. to 3 p.m. at the St. Louis Hilton Airport Inn.

The chapter will be dedicated to the advancement of dredging technology, including the design and construction of dredges and the techniques and systems used in dredging operations. It will encompass a 16-state area and include the Canadian Province of Ontario. The Midwest states include: Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Ohio, Oklahoma, Tennessee, and Wisconsin.

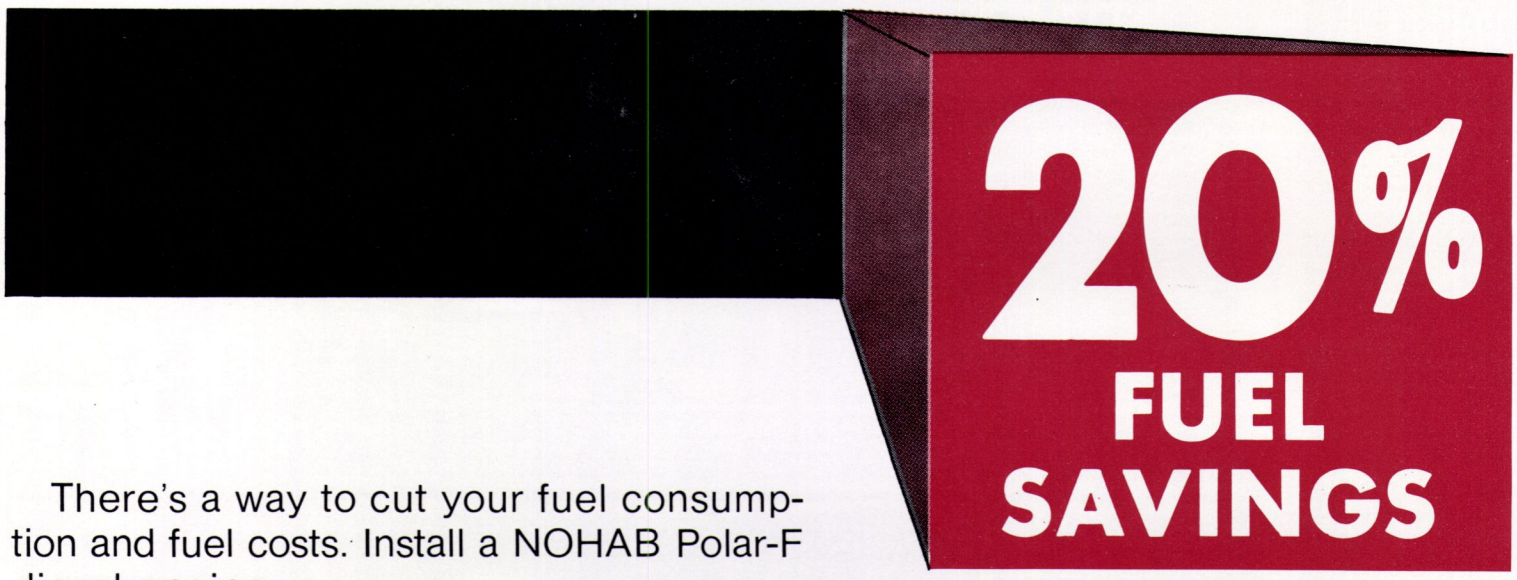
In order to "focus-in" on the three major areas of concern to dredging in the Midwest, the meeting shall consist of a morning workshop session devoted to contract dredging, sand and gravel dredging and lake reclamation. Persons attending will select one of the three parallel morning session workshops. Each individual workshop shall consist of a panel with a chairman, together with user, manufacturer, Corps of Engineers and E.P.A. representation. Mutual problems, solutions and experiences will be shared, and following the workshops, each chairman will give a progress report.

Keynote speaker of the day will be **Carl Cable,** Chief Construction Operations Division, North Central Division, U.S. Army Corps of Engineers, Chicago, Ill. Mr. **Cable** will address the membership at 1:30 p.m. sharp. His subject will be "Dredging Programs for the Great Lakes."

"Dredges and Dredging Behind the Iron Curtain" will be the topic of a talk to be given by **Veljko Zvolanek,** chief mechanical engineer, St. Louis Ship. A business meeting to elect officers for the new chapter will also be held.

All persons involved and interested in dredging are urged to attend, and should contact **Marlee Seward** at Dixie Dredge Corporation, 8224 Polk Street, St. Louis, Mo. 63111, phone (314) 638-4000. Reservation forms will be sent promptly.

The NOHAB Polar-F can cut your fuel consumption and costs up to 20%



There's a way to cut your fuel consumption and fuel costs. Install a NOHAB Polar-F diesel engine.

With today's fuel shortages and rising costs, it'll pay you to check the technical bulletin on the NOHAB Polar-F which lists a rated fuel consumption of 0.342 lbs. per Brake Horse Power at full load and RPM.

NOHAB—THE STANDARD FOR PERFORMANCE AND RELIABILITY

NOHAB, Trollhättan, Sweden, has been manufacturing engines since 1896. The first motor ship to cross the Atlantic was powered by NOHAB.

Since their introduction in 1962, the Polar-F engines have set international standards for performance and reliability in their class. Today, Polar-F diesels power offshore and ocean-going vessels around the world.

GEORGE ENGINE—THE SOLE US DISTRIBUTOR FOR NOHAB POLAR-F DIESEL ENGINES

In 1972, NOHAB appointed George Engine Company of New Orleans its first and sole distributor for Polar-F engines in the US.

George Engine can meet your specifications whatever they are. The flexible Polar-F ranges in sizes up to 3600 horsepower, in-line or vee types, all with a common cylinder size.

Many are already installed in offshore supply vessels, tugboats and inland towboats. They're at work saving your competition fuel and money at this moment.

Why not investigate for yourself. And start saving.

George Engine Co., Inc.

SOLE US DISTRIBUTOR FOR NOHAB POLAR-F DIESEL ENGINES

604 Destrehan Avenue, Harvey, Louisiana 70058, Telephone (504) 347-7341, Cable: GECOINC

L. Arthur Strenkert Named Sales Manager Smit Nymegen Corp.

L. Arthur Strenkert

L. Arthur Strenkert has been appointed sales manager of Smit Nymegen Corporation. The announcement was made by **Paul Roos,** president.

A veteran of many years' experience in sales to the marine industry, Mr. **Strenkert** most recently served as international sales manager of the Perolin Company, Inc., and was previously sales manager of the Combustion Control Division of Electronics Corp. of America. Earlier, he held the post of guarantee engineer for the Foster Wheeler Corp.

A native of Darien, Conn., Mr. **Strenkert** is a graduate of the U.S. Merchant Marine Academy.

Smit Nymegen Corporation is the recently organized U.S. subsidiary of Smit Ovens Nijmegen of Holland. The company will design, manufacture, market and service a complete line of marine inert and N_2 gas generator systems. Internationally, more than 145 Smit gas generating systems are currently in operation on marine carriers.

Smit Nymegen headquarters are located at 400 Totten Pond Road, Waltham, Mass.

Magnavox Announces Offshore Drill Rig Positioning System

A low-cost rugged equipment for real-time precise positioning of offshore drilling vessels has been developed by Magnavox, Advanced Products Division of Torrance, Calif. This system automatically provides a position fix day or night, anywhere in the world, in all weather.

The system receives messages as transmitted from five polar orbiting satellites. Thus, no signal range limitations or shore stations are required. These satellite messages are processed and a position fix is automatically printed-out in latitude, longitude (and height).

Position accuracies of better than 10 meters (in three dimensions) can be achieved by automatically obtaining approximately 10 satellite fixes.

A two-dimensional, latitude and longitude, position fix of 100 feet (RMS) can be achieved by computing a single satellite fix. This accuracy is achieved while the vessel is stationary or under way, provided speed and heading are known.

Several large oil companies are using this technique to move and position their drilling vessels.

To provide a real-time position fixing capability, the dual channel satellite receiver is connected to the computer and the satellite data is processed immediately and a position fix is printed. When a position is required, though not in real-time, a data recorder can be used to store the raw satellite data, and a post computation of this data will provide the identical precise position information. The data-recording technique is often used in either inaccessible or highly remote areas for boundary or fixed site positioning.

In addition to these Magnavox positioning systems, Magnavox has successfully integrated satellite navigation systems with various speed and sensors and seismic systems to provide fully automatic precise navigation, data recording and seismic control systems. These systems are being used in offshore geophysical exploration, oceanographic research, deepsea mining, cable laying, and numerous military applications.

Additional information may be obtained by contacting the Marketing Manager-Marine Electronics, or **E.B. Hecht,** Product Support/ Information Manager at Magnavox, 2829 Maricopa Street, Torrance, Calif. 90503.

Paper On Waterjet Propulsion Discussed During SNAME Philadelphia Section Meeting

Shown at the January meeting of the Philadelphia Section of SNAME, left to right: (seated) **T.J. Kavanagh,** Section chairman; Lt. Comdr. **Dennis F. Kruse,** author, **John J. Lawlor,** coordinator; (standing) **H.T. McVey,** Section vice chairman; **S.S. Morse, F. Collison,** and **K.C. Thornton,** discussers.

The subject of the January meeting of the Philadelphia Section of The Society of Naval Architects and Marine Engineers was "Waterjet Propulsion." Considering the U.S. Navy's latest philosophy of smaller, faster, ships, the paper was very timely.

Lt. Comdr. **Dennis F. Kruse,** USN, presented his paper titled "Waterjet Propulsion, An Optimization Procedure."

The paper is a description of the development of computer programs for optimization and performance evaluation of certain waterjet propulsion design parameters. Work was performed as a graduate student research project at M.I.T. and was sponsored by the U.S. Navy for purposes of furthering its hydrofoil boat program. The presentation included the basic dynamics of waterjet propulsion and the rationale involved in the optimization process and performance evaluation.

An existing computerized method for optimum design of waterjet propulsion systems for sub-cavitating hydrofoil craft is analyzed for sensitivity to variations in normally fixed parameters and for sensitivity to variations in the starting points for the search used in the optimization procedure. A compatible method for off design evaluation of waterjet propulsion systems is developed and incorporated into the optimization program in a manner which permits off design evaluation to be performed separately or in conjunction with design. The evaluation routine requires that system geometry, craft characteristics and pump characteristics be specified. System drag and losses are calculated to determine required flow rate and pump head and the corresponding pump speed, efficiency and required power are determined. Results of design optimization for a series of similar craft are presented and show a strong sensitivity to the input estimate of the take-off drag. Sensitivity to starting values of the independent variables was noted in some cases and appears to be due to the fact that jet velocity ratio dominates the other independent variables as an influence on total system weight.

John Lawlor, Sun Shipbuilding & Dry Dock Company, coordinated the meeting for the local Section.

Discussers included **K.C. Thornton,** J.J. Henry Company; **F. Collison,** Sun Shipbuilding and Dry Dock Company, and **S.S. Morse,** Arco.

MORAN TOWING VEEP HONORED: Capt. **Leonard G. Goodwin** (right), operations vice president for Moran Towing Corp., receives the original Coast Guard issue of many of his seagoing licenses in recognition of his almost 40-year seagoing career, from Capt. **Stanley L. Waitzfelder,** Commanding Officer of the New York Coast Guard Marine Inspection Office. The documents, dating back to 1943 and which are now expired, were at Coast Guard headquarters in Washington and made available to Captain **Goodwin** by Rear Adm. **William F. Rea III,** Chief of the Coast Guard's Office of Merchant Marine Safety. Captain **Goodwin's** most recent accomplishments include being the first master of the largest U.S.-built vessel, the 1,094-foot tanker Brooklyn, as well as the skipper of the tug Amy Moran, which brought the specially built liquefied natural gas barge Massachusetts on its maiden voyage to New York Harbor.

Ocean Resources Engineering Moves To Larger Quarters

Joe W. Key, president of Ocean Resources Engineering, Inc., has announced their recent move to 2060 North Loop West, Houston, Texas, as a result of recent expansion. Ocean Resources is a consulting engineering firm which provides design, inspection and construction management of offshore facilities and floating equipment. The firm is doing extensive engineering work for Sun Oil Company, Kennecott Exploration, Santa Fe Engineering and Construction Co., and other clients.

Worthington Service Corp. Names Budrick And Jennings

Robert G. Budrick has been named Group vice president, and **Richard M. Jennings** has been elected vice president of Worthington Service Corporation, it was announced by **F.E. Peltier,** president.

Mr. **Budrick** joined Worthington in 1957, and was appointed vice president and manager of Worthington Service Corporation's U.S. operations in 1970. As Group vice president, he will assume operating authority for the company's international operations, including overall responsibility for Service Centers in the United Kingdom, the Netherlands, Belgium, France, Italy, Spain, Hong Kong, Venezuela, Saudi Arabia, as well as those in Mexico and Canada.

Mr. **Jennings** has been elected vice president for Worthington Service Corporation, in addition to his current responsibilities as general manager of Worthington Service Corporation's Midwest region in the U.S. He joined Worthington in 1952 and was appointed Midwest region manager in 1968. Mr. **Jennings** will continue to be headquartered at the company's Northbrook, Ill., Service Center.

Worthington Service Corporation operates more than 30 Service Centers worldwide, providing preventive maintenance and emergency repair service on all types of industrial and marine equipment, including compressors, turbines, engines, and pumps, regardless of who manufactured them.

Zapata Corporation Reports Record Results

Zapata Corporation, Houston, Texas, has reported that operating performance for the three months ended December 31, 1973 was the best in company history by a substantial margin.

Net income for the quarter was $8,009,000, an increase of 81 percent over the $4,420,000 for the year-earlier period, despite an increase in effective tax rate from 11 percent for last year's quarter to 40 percent this year. Earnings per common and common equivalent share were $1.83 for the quarter, an increase of 132 percent from the 79 cents a year ago, while fully diluted earnings per share were $1.46 and 70 cents, respectively. Revenues for the fiscal 1974 quarter were $66,916,000, compared to $39,780,000.

William H. Flynn, Zapata chairman and chief executive officer, said that, as indicated in Zapata's annual report, management estimates of 1974 earnings will be updated at the end of each forthcoming quarter.

Zapata Corporation (NYSE) provides diversified natural resource services and products around the world. Its activities presently include contract drilling and supply vessel services for offshore operators, petroleum exploration, copper and coal mining, menhaden and tuna fishing, agricultural development, and building, general and marine construction.

ADDED TO COX MARINE FLEET: The 5,600-hp Hoosier Friend, latest addition to the Cox Marine Corporation's fleet of towboats, was recently placed in service, working for Central Soya Corporation of Fort Wayne, Ind., on a regular run from New Orleans to St. Louis. **John H. Cox** of Cox Marine stated that the market price today on this 160-foot-long 40-foot-wide towboat is $1,650,000, and it is the largest towboat hull ever built at Greenville, Miss. The new towboat was built by Mississippi Marine Towboat Corporation, an affiliate company.

Kerr-McGee Buys Southwestern Of Texas And Royal Of New York

D.A. McGee, chairman and chief executive officer of Kerr-McGee Corporation, Oklahoma City, Okla., and **S.S. Seltzer Jr.,** president and chief executive officer of Southwestern Oil & Refining Company of Corpus Christi, Texas, and Royal Petroleum Corporation, New York City, announced that an agreement had been reached providing for the purchase by Kerr-McGee of all of the outstanding stock of Southwestern and of Royal.

Southwestern owns and operates a refinery with a capacity of 100,000 barrels per day at Corpus Christi. Royal owns terminal and distributing facilities near Perth Amboy, N.J., and in the New York City area.

The officials stated that further details will be released at a later date.

Drew Chemical Names Rogers Managing Director New So. Africa Subsidiary

A.G. Giudice, executive vice president, Drew Chemical Corporation, New York, N.Y., a subsidiary of United States Filter Corporation, has announced the appointment of **John A.D. Rogers** as managing director of Drew's new subsidiary, Arnock Chemical & Engineering Services, Pty., Ltd., Cape Town, South Africa. Mr. **Rogers** will continue to function as head of Arnock Chemical & Engineering, a position he held before the merger with Drew Chemical, and will be responsible for Drew's operations in South Africa.

Mr. **Rogers** was born and educated in the United Kingdom, later serving in the British Royal Navy as an engineer. Before forming the company of Arnock Chemical in 1968, he was previously employed by Table Bay Power Station and Dundas & Miller, both located in Cape Town. Mr. **Rogers** will report directly to **Frederick Morris,** assistant vice president, director of marine sales, Europe, based in the London office of Drew Chemical.

Drew Chemical Corporation is a major supplier of products and services for water management and specialty chemicals in both the marine and industrial sectors. United States Filter Corporation serves air pollution control, water and waste-water treatment markets and also provides management, engineering, design and planning services for energy and environmental systems.

Luckenbach To Build New Tampa Terminal

Luckenbach Steamship Company, Inc. has announced its intention to support the Tampa Port Authority's new facilities presently under construction at Holland Terminal. **Edgar F. Luckenbach Jr.,** president of the 124-year-old shipping firm, said in a prepared statement that in recognition of the rapidly changing complexion of downtown Tampa, that Luckenbach had commenced negotiations some weeks ago to sell its seven-acre tract of land on Garrison Channel and would move its entire operation to the land owned by the Tampa Port Authority.

Mr. **Luckenbach** said that he believes that it would be in the best interests of the city of Tampa for all shipping activity to transfer operations from the shallow water downtown channels to the more accessible open waters of the East Bay. In concert with this proposal, Mr. **Luckenbach** has implemented a program to provide for the sale and leaseback of his Franklin Street property which Luckenbach will occupy until the expiration of the lease now scheduled for 1975. "It is my hope that the forthcoming announcement of the sale of our terminal property will not be misinterpreted as an indication of our intention to abandon the Port of Tampa, for our company will continue its active role in encouraging the port's future expansion and development of the area's natural assets and expects to grow even larger as the commerce of the port becomes even more prominent on the national maritime scene."

SNAME Players Perform At Pacific Northwest Section's 27th Annual Fall Meeting

The 27th annual fall meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers was held recently at the Harrison Hot Springs Hotel.

The technical session featured "North to Tuktoyatuk," a panel discussion and audio-visual presentation on the design, construction and delivery voyage of the tugs and barges for Northern Transportation Ltd. for service on the McKenzie River in Canada's Arctic. The panel, moderated by **Les Coward,** included **L. Montpetit,** Northern Transportation Ltd.; **C.G. Tait,** Arctic Transportation Ltd.; **A. McLaren,** Allied Shipbuilders Ltd.; **V. Gadsby,** Vancouver Shipyards Ltd.; **D. Hengeveld** and **R. Allan,** R. Allan N.A. Ltd.

Mr. **Montpetit** outlined the reason for Northern Transportation's requirements for a fleet of four 4,500-hp tugs, twenty 250-foot river barges, and four thruster barges for operation, brought about by increased activity in oil exploration in the McKenzie Valley Delta in Canada's Arctic region. **Robert Allan,** naval architect, briefly summarized the design problems encountered in developing acceptable propulsive efficiency in tugs operating in a very shallow draft condition. Shipbuilders **Vic Gadsby, Arthur McLaren** and **D. Hengeveld** explained the logistics problems encountered in building and delivering this fleet of vessels within the six months that were available for this massive project. Capt. **George Tait** narrated a slide presentation of the 3,700-mile delivery voyage from Vancouver to Tuktoyatuk.

The SNAME players performing are, left to right: **Jim Shepard, Derik Thomson,** and **Jack Heyrman** in "No, No, Noah, That's a No No!"

The technical session was followed by a marine curling bonspiel in the afternoon and the traditional closing dinner-dance that evening. Opening up the social events was a buffet-cabaret the previous evening, which featured a satirical revue about the design of the ark, entitled "No No, Noah, That's a No No!" and starred the SNAME players.

David O'Neil To Head New Firm Of Marine Propulsion Consultants

On January 13, 1974, Seaworthy Engine Systems officially opened its doors to provide engineering services to the marine industry. Although marine engineering services of a general nature will be available, the full thrust of Seaworthy Engine Systems will be in the areas of marine gas turbines, diesels and fuel systems.

The offices of Seaworthy Engine Systems will be located in the Canton Professional Center in Canton, Conn. 06109.

Heading up this firm will be **David A. O'Neil,** who has been involved with marine gas turbines since their initial acceptance in the United States and abroad. He has authored numerous technical papers in the gas turbine field for The Society of Naval Architects and Marine Engineers, the American Society of Mechanical Engineers, IME, and VSI in Germany. An ex-merchant marine and Naval officer, Mr. **O'Neil** is a USMMA engineering graduate, with additional education at the Massachusetts Institute of Technology in naval architecture. He spent 12 years at United Aircraft's Pratt & Whitney Aircraft Division and Turbo Power and Marine Systems subsidiary in various engineering, supervisory and project management capacities.

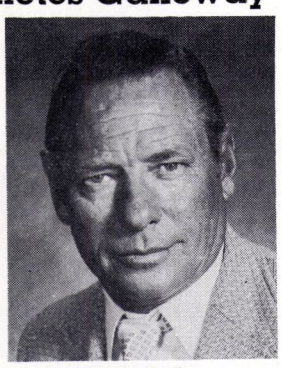
Initially, Mr. **O'Neil** was associated with the gas-turbine-powered Danish Navy frigates and high-speed personnel carrier projects. He later supervised both the sales engineering and the design phases of the DDH-280 destroyer, FHE 400 hydrofoil, 378-foot high-endurance Coast Guard cutter, 694-foot Adm. Wm. M. Callaghan ro/ro, 800-foot Euroliner class containerships, and 400-foot Polar Icebreaker programs for TPMS.

David A. O'Neil

SES is staffed with full-time professional personnel with extensive experience in all phases of gas turbine and diesel applications. Additional personnel will come to SES from other gas turbine and diesel manufacturers to broaden SES's expertise in this field.

The major program for SES during 1974 will be to assist shipowners and shipyards in the proper application and selection of gas turbine power, and with programs relating to fuel utilization and systems management.

Mangone Shipyards Promotes Galloway



Ernest E. Galloway

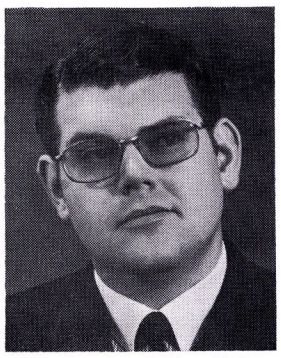
Ernest E. Galloway has been promoted to production superintendent at the Mangone Shipyards in Houston, Texas.

Don Godeau, vice president and general manager of Mangone Shipbuilding Co., Inc., said Mr. **Galloway** was outfitting superintendent before the new appointment. Mr. **Galloway** has been with Mangone since it was started by the late **Ivan W. Mangone** in 1965.

With close to 18 years in the shipbuilding industry, Mr. **Galloway** has been in all phases of the industry. Before coming to Houston, he was with Avondale Shipyards and Halter Marine in his native city of New Orleans, La.

Mangone Shipbuilding Company builds offshore supply-tug vessels which are used throughout the world in servicing offshore industries. Mr. **Godeau** said that the Houston firm is presently building ships primarily for foreign countries, particularly Norway and Brazil.

Liberian Services —Consulting Firm Elects Wiswall Pres.



Dr. Frank L. Wiswall Jr.

Dr. **Frank L. Wiswall Jr.,** has been elected president of Liberian Services, Inc., 103 Park Avenue, New York, N.Y. 10017.

Fred T. Lininger, former president, has assumed the new post of chairman and chief executive officer of the worldwide maritime consulting firm, which has headquarters in New York and subsidiaries in several foreign ports and banking centers.

Dr. **Wiswall** graduated from Colby College, earned doctorates in law from both Cornell and Cambridge Universities, and is author of the Yorke Prize legal text "Admiralty Jurisdiction and Practice Since 1800." Before joining Liberian Services last year as a vice president, Dr. **Wiswall** practiced law with the New York admiralty firm of Burlington Underwood & Lord. He will continue to act as general counsel to Liberian Services.

A member of the bars of Maine, New York and the Supreme Court of the United States, Dr. **Wiswall** is also a fellow of the Royal Historical Society and is active in a number of professional bodies. He has often lectured in maritime and international law at the Cornell Law School, and has served as a delegate to several international diplomatic conferences on maritime affairs. He is a member of the Legal Committee of the Inter-Governmental Maritime Consultative Organization, a United Nations agency situated in London.

Diamond M Orders Two Jackup Rigs And A Semisubmersible

The board of directors of Diamond M Drilling Company, Houston, Texas-based international drilling contractor, has authorized the construction of two new self-elevating jackup drilling rigs and a self-propelled semisubmersible drilling vessel.

The jackups are to be constructed at Levingston Shipbuilding Co. in Orange, Texas, and are scheduled for completion in September 1975 and February 1976. The new semi is to be built by Alabama Dry Dock & Shipbuilding Company, Mobile, Ala., and delivery is scheduled for November 1975. It will be the third Diamond M-Korkut designed and semisubmersible built by Diamond M at Alabama Dry Dock. The first was delivered on November 5, 1973. The second is scheduled to be delivered in August 1974 for work in the Gulf of Mexico. Additional shipyard costs due to revised plans and specifications have increased the original cost estimate for this second semi from $18½ million to $25½ million.

The addition of these new mobile rigs will bring the company's mobile offshore rig construction program—which began in 1972—to over $120 million.

Diamond M chairman and chief executive officer **Don E. McMahon** said the company has executed definitive agreements in connection with the previously announced venture with a group of Norwegian investors with respect to the construction supervision and management of another self-propelled semisubmersible drilling vessel of the Diamond M-Korkut design. This Norwegian rig will also be built at Alabama Dry Dock, and delivery is scheduled for July 1975. The rig will be owned by a newly formed Norwegian company, in which Diamond M will have a 20 percent interest.

Diamond M now owns 12 barge rigs, four self-contained platform rigs, a self-propelled drilling tender, a self-elevating mobile platform, and one twin-hull propulsion assisted semisubmersible drilling vessel. The company's equipment is currently located off the Texas and Louisiana coasts and offshore Aracaju, Brazil.

Management Changes At Dearborn-Storm

Dearborn-Storm Corporation, Chicago, Ill., operators of offshore drilling equipment, announced the following management changes acted upon at the recent board of directors meeting.

Arthur Weiss, formerly president of Dearborn-Storm, was named chairman of the board and chief executive officer. Mr. **Weiss** has served as president and director since the company began operations on June 1, 1967.

Charles R. DeLay was appointed president and the company's chief operating officer. Mr. **DeLay** was formerly president of Dearborn's largest division, Storm Drilling Company. His association with Storm Drilling began in 1960, and he has been associated with the oil industry for more than 25 years.

Jerome T. Weil was named vice president, finance and treasurer and elected to the board of directors. Prior to joining the company, he was vice president, finance and administration, for an international manufacturing company.

Jerry C. Martin was appointed corporate controller and an officer of the parent company. Mr. **Martin** was formerly the financial planning manager of Dearborn.

Mr. **Weiss,** newly elected chairman of the board, stated that these management changes should provide greater continuity in Dearborn's ever-increasing offshore service activities.

Tanker Management Firm Promotes Nichols

Alexis Nichols

Alexis Nichols (Nicolacopoulos) has been named vice president of Brokerage & Management Corp., 76 Beaver Street, New York, N.Y. 10005, it was announced by **G. Callimanopulos,** president.

Mr. **Nichols** joined Brokerage & Management in 1972 as operations manager. Before that, he was marine claims adjuster with Lamorte, Burns & Company, Inc., and handled freight, demurrage and defense disputes in consultation with the leading British underwriters concerned. He brings with him considerable varied experience, primarily in the transportation field, acquired both in the United Kingdom and the United States.

Brokerage & Management's principal activities involve the operation of a fleet of tankers, bulk carriers, and combination carriers engaged in worldwide trading.

Mr. **Nichols** attended the Athens College, University of Edinburgh, and the New London, Conn., Submarine School while serving in the Royal Greek Navy. His professional affiliations include membership in the Society of Maritime Arbitrators.

Twin City Shipyard Receives Contracts For Additional 109 Barges

Twin City Shipyard, Inc., St. Paul, Minn., reported it has received firm contracts and a letter of intent for the construction of an additional 109 jumbo hopper barges.

John W. Lambert, president, said that the new orders, from various customers, extend the backlog to late 1977. He added that the current volume of unfilled orders for barges is more than 200 units.

Twin City Shipyard's new semi-automated fabrication facility, which began production last June, is now turning out barges at the rate of one per week. The huge facility can accommodate four barges in various stages of fabrication.

Twin City Shipyard is a subsidiary of Twin City Barge & Towing Company, with headquarters in St. Paul. Twin City Barge has served the Twin Cities area since 1937 and Chicago since 1961. The company operates harbor towing, petroleum barge service and barge fleeting service around these cities.

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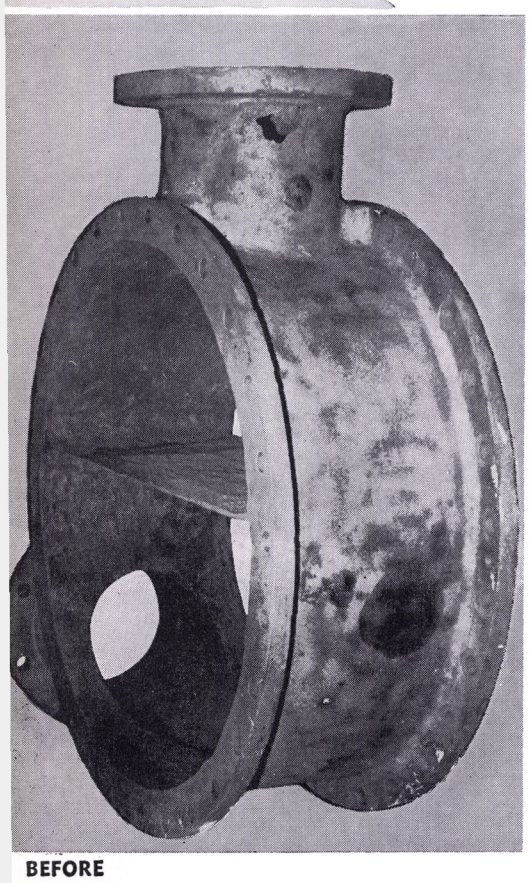

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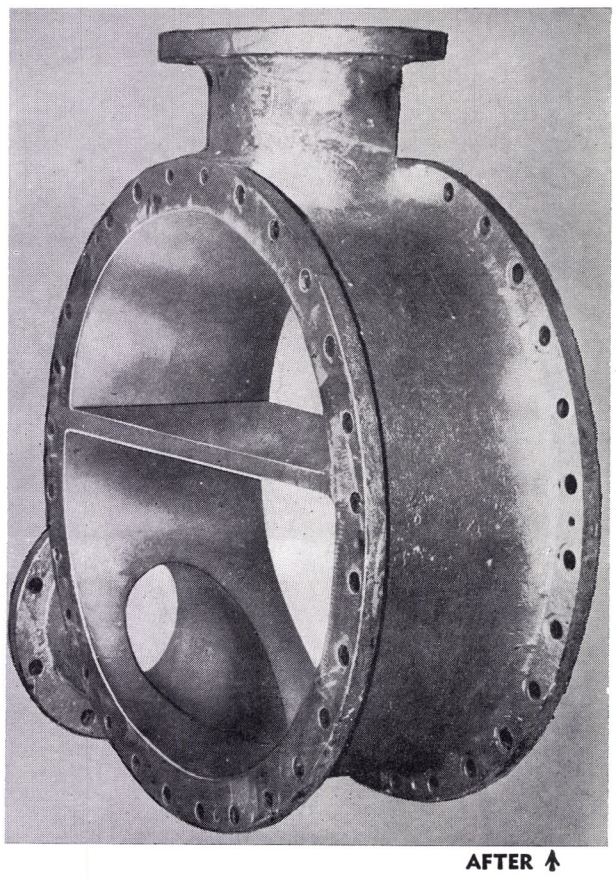

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Raytheon Company Submarine Signal Div. Appoints R.G. Popovici

Richard G. Popovici has been named assistant manager of commercial operations at Raytheon Company's Submarine Signal Division, Portsmouth, R.I.

In addition to expanded duties in all commercial activities of the division, Mr. **Popovici** will continue in his present role as manager of the Ocean Systems Center, an element in the commercial operation.

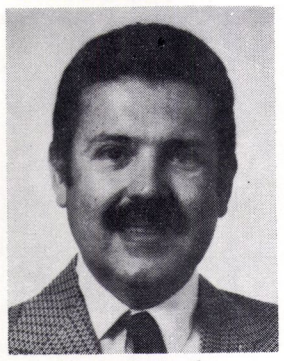
With the company since 1964, he has served in a series of responsible engineering and business-management positions, including manager of electrographic systems and manager of instrumentational products.

Prior to joining Raytheon, Mr. **Popovici** was with Litton Industries as manager of ASW oceanographic instrumentation, and earlier with ITT Laboratories as a project manager.

He received a B.S. degree in electrical engineering from City College of New York in 1956, and an M.S. degree in industrial management from Stevens Institute of Technology in 1960.

Mr. **Popovici** is the author of several technical articles on oceanographic instrumentation and is a member of the Marine Technology Society, the American Management Association, and Raytheon's Advanced Management Association.

Berwind Lines Names Bericochea Exec. VP



Victor Bericochea

Victor Bericochea, vice president, has been appointed executive vice president and chief operating officer of Berwind Lines Inc. of San Juan, Puerto Rico, announced board chairman **Hugh McComas.**

Mr. **McComas** also announced that he himself has assumed the presidency of the maritime cargo line after **Bruce Robeson,** president, resigned his post to join American President Lines in San Francisco, Calif.

Mr. **Bericochea** has a B.S. degree from the State University of New York Maritime College, a juris doctor degree from the University of Puerto Rico School of Law, and has studied at the Pennsylvania State University. He is a licensed merchant marine officer and holds a commission in the U.S. Naval Reserve.

He is a past president of The Propeller Club of San Juan, past member of the Regional Export Expansion Council, vice president of the Exchange Club of San Juan, and is an active member of various other civic and professional organizations.

Ocean Science Elects E.R. Lawlor President

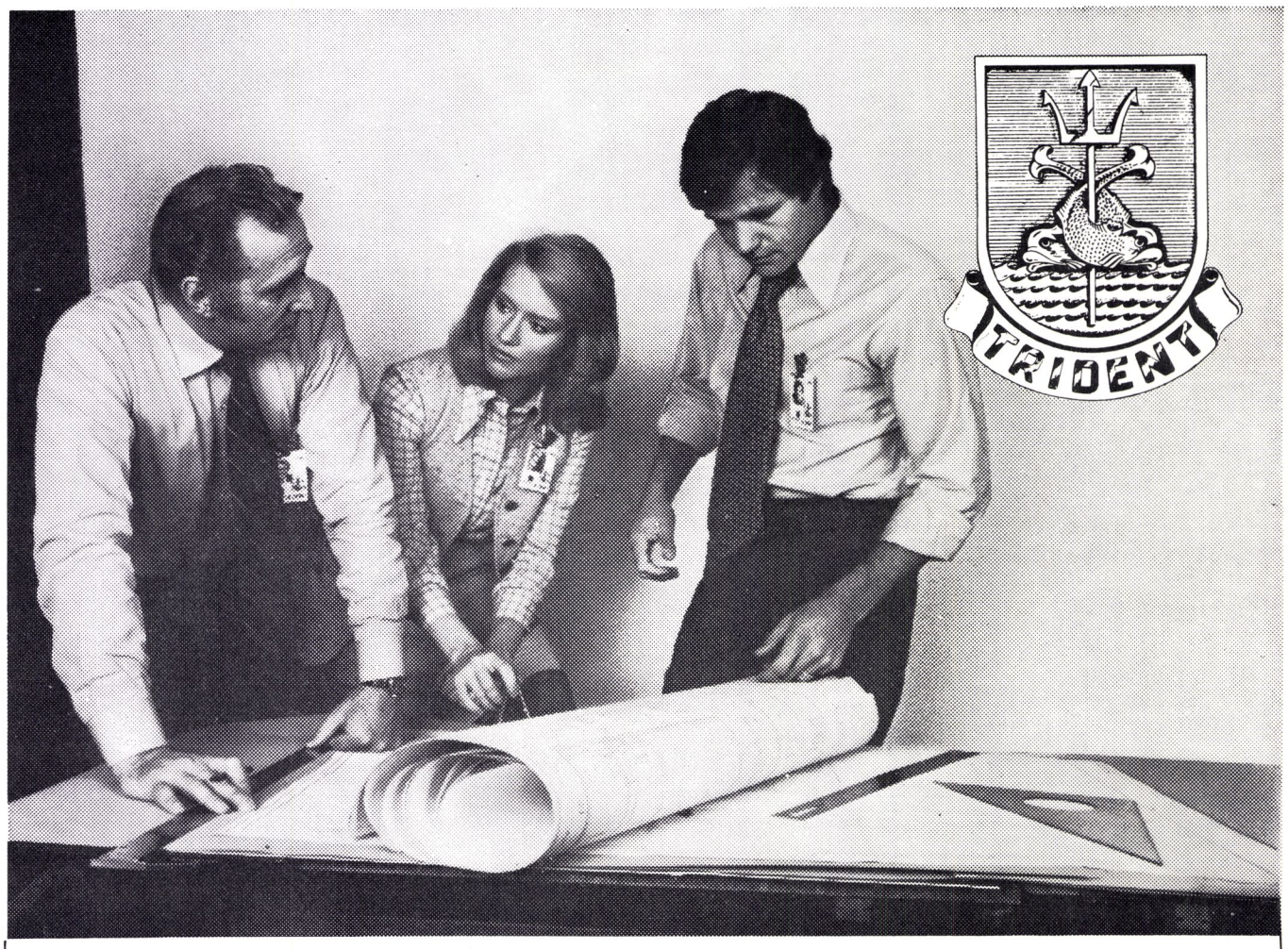
Edward R. Lawlor was elected president of Ocean Science and Engineering, Long Beach, Calif., and its subsidiaries at a recent board of directors meeting. He continues as general manager and director of the firm.

At the same meeting, **William H. Glennon** resigned as president and director of Ocean Science and Engineering.

Ocean Science and Engineering, Inc., provides services and products that are generally related to the ocean and the offshore petroleum industry. Subsidiaries include Ocean Science Ships, Inc., a firm engaged in the operation of geophysical vessels, and California Shipbuilding and Dry Dock Company.

American Mfg. Names R.L. Johnson To Southern Branch

Robert L. Johnson has been added to the sales staff of American Manufacturing Co., Inc., Brooklyn, N.Y., to handle cordage, oakum and packing, twine, welt cord and strapping. He will cover Florida, Georgia, and South Carolina, working from the southern branch of the company at 429 Talleyrand Avenue, Jacksonville, Fla. 32201.



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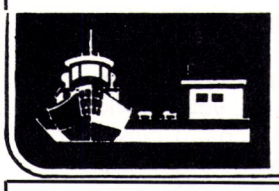

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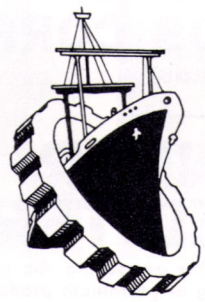

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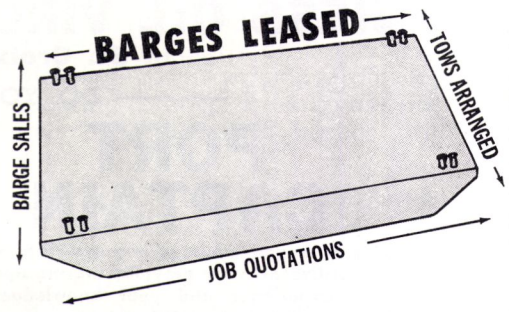

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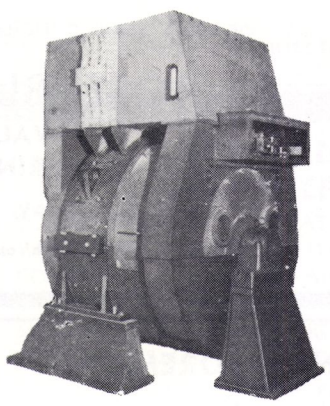

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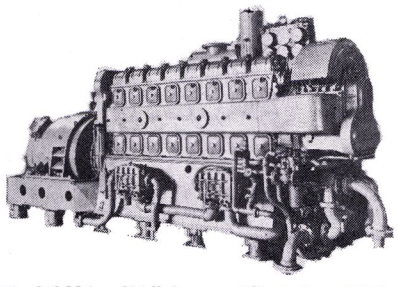

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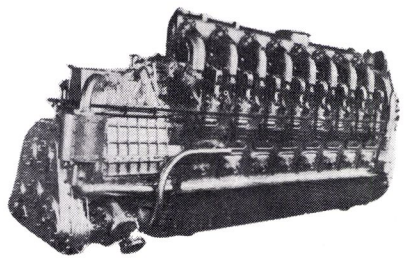

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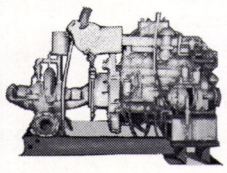

2—BUDA, Model 6-LD-468, Diesel Engines, 6 cylinders, 100 BHP, Marine, Gardner-Denver centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280′ head, 6″ suction and 5″ discharge.

DC, VERTICAL-ROTARY

1—WORTHINGTON, Size 4GRVS, with Westinghouse Motor, 15 HP, 230 Volts DC, 1310/1750 RPM.

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1—GARDNER-DENVER, 5″ suction, 3″ discharge, 350 GPM, 336′ head, 50 HP, 440/3/60, 3500 RPM.

1—CARVER, 400 GPM, 100 PSI, 3½″ suction, 2½″ discharge, 3500 RPM, 35.7 HP, 440/3/60.

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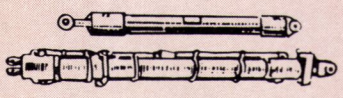

Bore	Overall Stroke	Rod Diameter	Retracted Length	Action
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10″	26″	3.75″	58½″	double
2″	8″	1½″	20″	double
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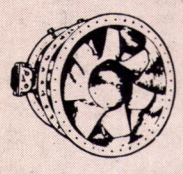

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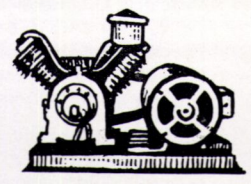

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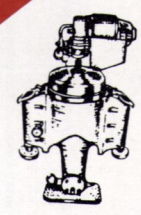

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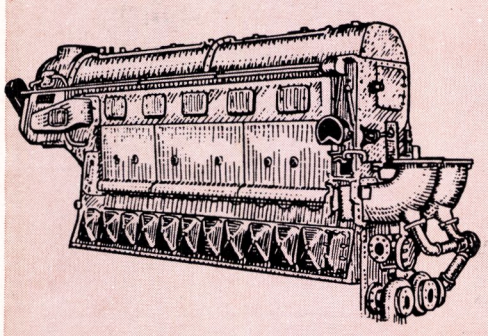

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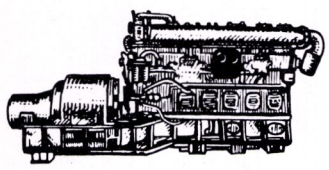

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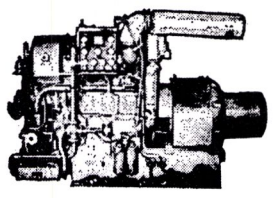


1—GENERAL MOTORS, Model 3-268A, Marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generator. 120/240 DC.

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

TURBINE GENERATORS A.C. AND D.C. VOLTAGES

A.C.

2—1500 KW, GENERAL ELECTRIC Turbines: Type FN4-FN30, Steam 525 PSIG. 8145 RPM, with G.E. Generators, 1500 KW, 450/3/60.

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

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

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

D.C.

1—WORTHINGTON, 225 PSI, 397°F, 6510 RPM, with Westinghouse Generator, 150 KW, 120 DC, 1250 Amperes.

6—WESTINGHOUSE, 200 PSI, with Westinghouse Generators, 60 KW, 120 DC.

4—ALLIS-CHALMERS, 440 PSI, 740°F, with Allis-Chalmers Generators 300 KW, 240/240 DC.

1—GENERAL ELECTRIC, 525 PSI, with G.E. Generator, 250 KW, 440/3/60.

1—GENERAL ELECTRIC, with G.E. Generator, 350 KW, 440/3/60.

ALLIS-CHALMERS, 440 PSI, 740°F, 300 KW, 120/240 DC.

JOSHUA HENDY, 300 PSI, 550°F, with Westinghouse Generator, 300 KW, 120/240 DC.

WORTHINGTON, Form S4, 440 PSI, 740°F to a Westinghouse Generator, 250 KW, 440/3/60, and to a 90 KW, 120 DC.

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

SUBMARINE DIESEL GENERATOR ENGINES

(Without Generators)

2—GENERAL MOTORS, Model 16-278A, 1600 HP, 750 RPM.

1—FAIRBANKS-MORSE, Model 38D8-1/8, 16 cylinder, O.P., 1600 HP, 720 RPM.

☆

FOR ELECTRICAL EQUIPMENT 503 / 228-8691 ASK FOR "ELECTRICAL DIV."

FOR MARINE VALVES & FITTINGS: 503 / 228-8691 ASK FOR "VALVE DIV."

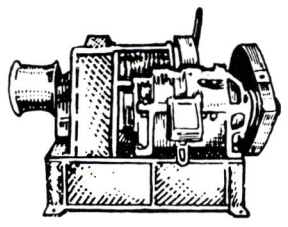
Steel Watertight DOORS

Used, Good Condition, Trimmed Frames.

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

26″x48″—4 Dogs—**$60.00** ea.
26″x57″—6 Dogs—**$80.00** ea.
26″x60″—4 Dogs, 6 Dogs—**$86.00** ea.
26″x66″—6 Dogs, 8 Dogs—**$100.00** ea.
26″x66″—Q.A. Type **$175.00** ea.

CARGO WINCHES



American Hoist and Derrick Company Winches with Westinghouse Motors, 50 HP, 230 Volts DC, complete with Contractor Panels, Master Switches, and Resistors.

Single Speed, Single Drum

UNIT WINCHES

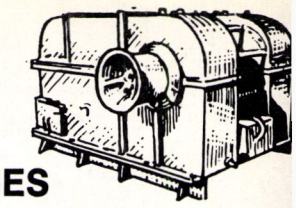
American Hoist and Derrick Co.

U3H—SINGLE DRUM, Single speed (4)
Line Pull: 7450#—223 FPM,
6360#—237 FPM,
3720#—287 FPM.

U6H—DOUBLE DRUM, Single Speed (2)
Line Pull: 7450#—223 FPM,
6360#—237 FPM,
3720#—287 FPM.

Motor: Westinghouse, 50 HP, 230 Volts DC, 1900 RPM, Model 288212, 183 Amperes, compound wound, Frame 9 UW, horizontal.

Unit Winches complete with Contactor Panels, Resistors, Master Switches.



UNIWINCHES

LAKESHORE UNIWINCHES, with Allis-Chalmers Motors, 50 HP, 230 Volts DC, complete with Control Equipment.

Single speed, double drum, 7450 # at 220 FPM.

Single speed, single drum, 7450 # at 220 FPM.

ANCHOR WINDLASSES

1—HORIZONTAL, of German Mfg., double wildcat for use with 3″ anchor chain, double gypsy with 230 VDC motor, complete with electrical control equipment.

AMERICAN ENGINEERING, horizontal, double 2⅛″ Chain, 65 HP, 230 DC, complete.

2—AMERICAN HOIST AND DERRICK COMPANY, horizontal, double wildcat for 2¼″ chain, double gypsy, 70 HP, 230 Volts DC, with electric controls.

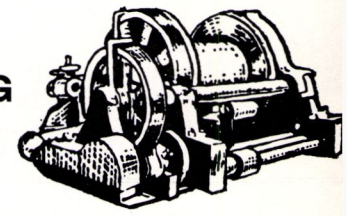
2—HESSE-ERSTED, horizontal, double wildcat, 2⅛″ chain, 60 HP, 230 DC.

1—HYDE HORIZONTAL ANCHOR WINDLASS double wildcat for use with 2⅛″ Anchor Chain, and with General Motors Electric Motor, 60 HP, 230 volts DC, 560/1700 RPM, Type CDM 18831 AE. Complete with Contractor Panel, Resistors, and Master Switch.

ANCHOR WINCHES

1—JAEGER, single drum capacity approximately 900′ of 1½″ wire rope, double gypsy, with 35 HP Motors, 230 Volts DC, complete with electricals.

STEAM TOWING WINCH

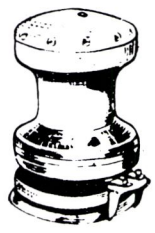


Single drum capacity 2000′ of 2″ wire rope, cylinder size 9″ bore by 10″ stroke.

ANCHOR CHAINS

Used — good

1⅛″ size
1⅜″ size
1½″ size
2 1/16″ size
2¼″ size
2⅝″ size
3⅜″ size



CAPSTAN WINDLASSES

Model CWP-3, Vertical 24″ Planetary Capstan Windlasses, Single Wildcat — using 1¼″ Anchor Chain, Single Gypsy with 20 HP Motor, 230 Volts DC, complete with Contactor Panel, Master Switch, and Resistors.

2—HESSE-ERSTED VERTICAL, Single Wildcat—for 1⅜″ Anchor Chain, single gypsy, with 35 HP General Electric Motor, 230 Volts DC, complete with Controller equipment.

HYDE, VERTICAL, Single Wildcat, for 1⅛″ Anchor Chain, single gypsy, with 20/5 HP Motor, 440/3/60.

CARGO HOISTER BLOCKS

5 ton rated, Steel, as removed from surplus ships. Manufactured by: Young, Draper, etc., 12″ and 14″ sizes.

$44.50 ea.

$49.50 each with pull test certificates

Hundreds of other items in stock from Carriers, Cruisers, Destroyers, Submarines, Landing Vessels, Troop Ships and Cargo Ships

★

YOUR INQUIRIES INVITED AND PROMPTLY ANSWERED

Contact: Ralph E. Ingram

ZIDELL EXPLORATIONS, INC.

3121 S.W. Moody Avenue
Portland, Oregon 97201

A/C 503, Phone 228-8691

SHARPLES OIL PURIFIERS

Complete with motor, starter and pump

FUEL OIL OR LUBE OIL

DIESEL LUBE OIL

225 GPM—viscosity 180-200 SSU @ 130°F

DIESEL OIL

225 GPM—viscosity 45 SSU @ 100°F

MODELS

Lube Oil: M-85-34-5-23BM-44
Fuel Oil: M-85-35-5-8CA-13

SPECIFICATIONS

Bowl speed 17,000 RPM — 1" oil inlet & outlet. 2 HP vertical GE motor—440/3/60/3400—complete with starter. Plans available.

THE BOSTON METALS COMPANY

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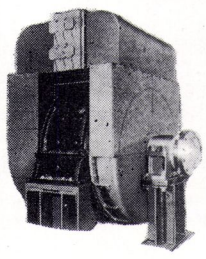
ALLIS-CHALMERS 1200 KW D.C. GENERATORS



SUITABLE FOR DIESEL ELECTRIC TUGS AND VESSELS OR OIL FIELD DIRECT DRIVE D.C. GENERATORS

1200 KW—525 Volts D.C.—750 RPM—2290 amps—totally enclosed—self-ventilated with surface air coolers. Frame: split type. 2-Bearings: split sleeve, spherical seat, self-aligning. Separately excited from a 120 volt source. Continuous duty. Very good condition.

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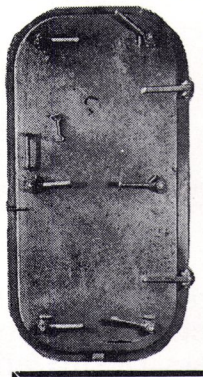
NEW WATERTIGHT DOORS



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

SIZE	NET WT.
26"x48"	250 lbs.
26"x60"	300 lbs.
26"x66"	320 lbs.
30"x60"	330 lbs.

EACH DOOR

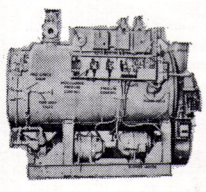
IMMEDIATE DELIVERY

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
539-1900 (301) 355-5050

SELF-CONTAINED—ALL CONTROLS CYCLOTHERM STEAM BOILERS

MODEL MC-90
OUTPUT
2600 LBS/HOUR



Design pressure 100 PSI—2-Pass—1 burner (pressure atomizing)—burner capacity 26 gal./hr. Electric ignition. Equipped with fuel pump — 1½ HP (Feed pump 10 GPM @ 300 ft. head — 3 HP — 440/3/60) Blower 5 HP—440/3/60 — pressure 20" water — 3400 RPM. TUBES: 22 at 2½" x 0.110 wall and 22 at 2" x 0.095 wall. Furnace 16" OD x ⅜" thick. Head ½" thick. Steel plate 5/16". **$1395**

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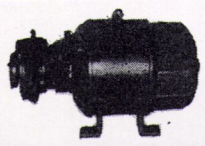
UNUSED ALLIS-CHALMERS FIRE & GENERAL SERVICE PUMPS



200 GPM — 180' head — 2½"x2"—bronze—flange connections. MOTOR: 20 HP—115 volts DC—2400 RPM—153 amps.

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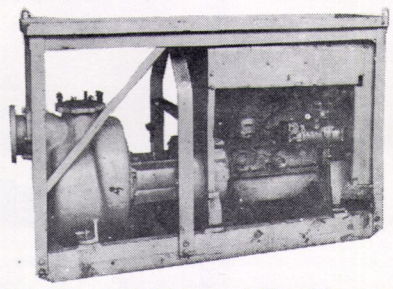
PORTABLE 6" CARVER SALVAGE PUMPS



Reconditioned—mounted in portable steel frame. 1750 RPM—1100 GPM @ 100' head; 1500 GPM @ 70' head; 1800 GPM @ 50' head; 2100 GPM @ 20' head. Leroi gas engine—model D-201P3—4 x 4—1750 RPM—hand crank——wt. 600 lbs. **$995**

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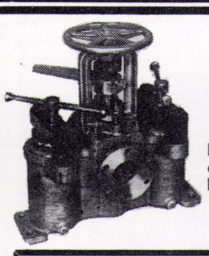
UNUSED 2" BRONZE STRAINERS (DUPLEX)



Flanged—mfg by Derbyshire Machine & Tool Co. Flange has 6 holes 9/16".

$299.00

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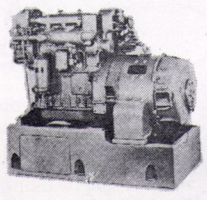
DIESEL GENERATOR SETS



30 KW GM 3-71 DIESEL SET

GENERATOR: Delco 30 KW—120 Volts DC—250 amps—1200 RPM—Type I-3563. ENGINE: GM 3-71—45 HP—electric starting—shock mounted. In Navy crate. New Navy rebuilt.

20 KW GM 2-71 DIESEL SET

GENERATOR: Delco I-3665—20 KW—120 volts DC—167 amps. ENGINE: GM 2-71—reconditioned—in very good condition.

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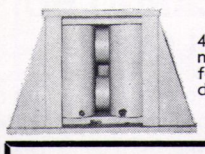
NEW UNUSED NAVY SURPLUS UNIVERSAL FAIRLEADS



SHIPBOARD TYPE

4 Rollers—8" x 18"—2 horizontal mount—2 vertical mount. OAL of fairlead 36" wide—24" high—24" deep. 28 available.

$995 Each

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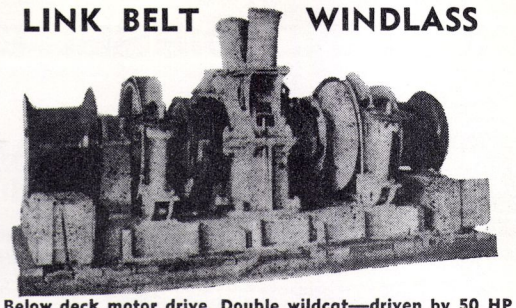
UNUSED 1⅝" HEAVY DUTY LINK BELT WINDLASS



Below deck motor drive. Double wildcat—driven by 50 HP 230 VDC motor with vertical shaft and worm drive. Single speed—handles 7000 lb anchors and 60 fathoms of 1⅝" chain at 7 fathoms per minute. Wildcat centers 56". Complete with all controls and warping features. Total weight 27,500 lbs. With spares.

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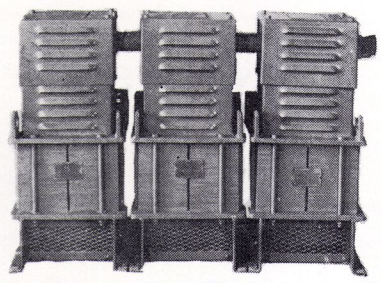
TRANSFORMERS



15 KVA—3 per bank—450 V primary—177 volt secondary. **$295.00 PER BANK**

Also inquire about other sizes: 10 KVA/20 KVA/25 KVA/37 KVA

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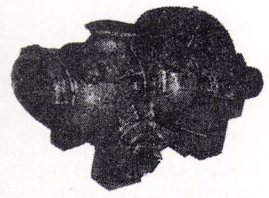
8" x 8" WATEROUS HEAVY DUTY ROTARY CARGO PUMP



Mfg. Waterous Co.—730 GPM—pump speed 232 RPM—reduction ratio 900/232—8" suction—type P-1256—80 PSI pressure—60 HP—herringbone reduction gear—8" discharge.

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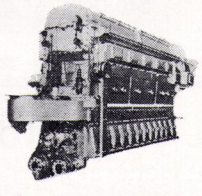
FAIRBANKS-MORSE 38D8-1/8 OP DIESEL



1800 HP @ 800 RPM—2-cycle—8½x10—air starting. Still aboard naval vessel and in very clean, complete condition. Equipped with engine operating panel board. Mufflers, heat exchangers and filters are available. Priced to sell at

$8750

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NATIONAL METAL'S CURRENT T-2 INVENTORY

MANY OTHER ITEMS NOT LISTED • ALL ITEMS FURNISHED WITH A.B.S. OR LLOYDS'

TURBOGENERATORS

525 KW GENERAL ELECTRIC AUXILIARY TURBOGENERATOR 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.

538 KW WESTINGHOUSE TURBOGENERATOR UNIT

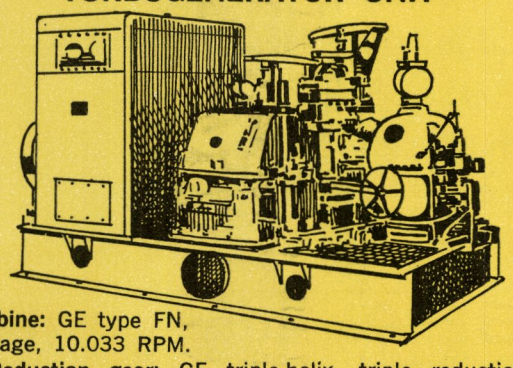
Complete with L.O. Coolers and exciters. **Turbine:** Westinghouse 538 KW, 5010 RPM. Inlet pressure 435 psi. Temp. 750 degrees F.TT. Exhaust pressure 28½ hg vac. **Generators:** (1) 400 KW, 450 VAC, 3 pole, 60 cycle, PF 80%, 1200 RPM, ship's service. (2) 32.5 KW, 125 VDC, 1200 RPM, variable voltage exciter. (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 TURBOGENERATOR 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 1¾ 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.

★★ ALSO AVAILABLE!! ★★

600 KW GENERAL ELECTRIC TURBOGENERATOR UNIT



Turbine: GE type FN, 6-stage, 10.033 RPM.

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

MAIN MOTOR FOR T2

Gen. Elect. #5690714 Type TSM-80, 6000 HP, 90 RPM, form H.L., 2300 Volts, Amps. arm. 1160, P.F. 1.0, KVA 4625 Phase 3 cycle 60, Exciter volts 120, amps field 390 contin. @ 60°C. rise.

5400 KW MAIN GENERATOR

General Electric, S/N 79938, Marks 6937958 G-4, 5F-1690-2, 164-M.

PUMP UNITS

CARGO STRIPPING PUMP

(Steam) Worthington, vertical duplex, double acting, size 14" x 14" x 12", speed 46 ft./min., 700 GPM, 150 psi operating pressure.

MAIN FEED PUMP

Pump: Coffin Turbo Pump Co., single stage, centrifugal, size CG-12A, 6980/7030 RPM, 240/280 GPM, 254/280 HP, 6" x 3", 750 psi @ 1760 ft. head, complete with turbine.

MAIN FEED PUMP

Coffin, turbine drive, Type F, 7200 RPM, 200 GPM, 150 HP, 150 psi w 1329 ft. head.

MAIN CIRCULATING PUMP

Pump: Ingersoll Rand, type 24 VCM, single stage, double suction centrifugal, 585 RPM, 16,500 GPM against TDH 25 ft. @ 30 psi, 26" x 24". **Motor:** General Electric, Model 5K633AP1, Frame N-6336-B, 585 RPM, 440 volts AC, 191 amps, 3 phase, 60 cycle, complete with controller.

MAIN CIRCULATING PUMP

Pump: Ingersoll Rand, type 24 VCM, size 24", 585 RPM, 14,000 GPM @ 25 ft. TDH, 26" x 24", operating pressure 15 psi. **Motor:** Westinghouse, Model CS, Frame 876C, 125 HP, 585 RPM, 440 volts AC, 159 amps, 3 phase, 60 cycle, complete with controller.

MAIN CARGO PUMP UNIT

Pump: Ingersoll Rand, type 2 stage horizontal, size 6-GTM, 1750 RPM, 2000 GPM, 12" x 12", 100 psi @ 280 ft. head. With motor.

FUEL AND LUBE OIL PUMP

Pump: Quimby, size 2½ head screw, 1200/600 RPM, 15 GPM @ 325 psi disch. press. **Motor:** General Electric, Model 5KF364PP1, Frame 364, 7.5/3.75 HP, 1160/580 RPM, 440 volts AC, 10/9.7 amps, 3 phase, 60 cycle, complete with controller.

LUBE OIL SERVICE PUMP

Pump: Quimby, Type vertical rotex, size 4-B, 1150 RPM, 175 GPM @ 60 psi with 20 ft. head, 6" x 5". **Motor:** General Electric, Model 5KF365AJX1, Frame 365, 5 HP, 1170 RPM, 440 volts AC, 20 amps, 3 phase, 60 cycle, complete with controller.

MAIN CONDENSATE PUMP

Pump: Ingersoll Rand, size 2VHM, 1760 RPM, 180 GPM @ TDH 165 ft., 5" x 2", disch. press. 67 psi. **Motor:** General Electric, Model 5KF365AJN-1, Frame 365V, 20 HP, 1765 RPM, 440 volts AC, 3 phase, 60 cycle, 25.5 amps, with controller.

AIR COMPRESSORS

COMBUSTION CONTROL AIR COMPRESSOR UNIT

Compressor: Ingersoll Rand, type 30, Model 253 x 5, 20 CFM at 100 psi, 600 RPM. **Motor:** General Electric, Model 5KG254B2782, Frame 254, Type K, 440 volts, AC, 7.5 amps, 3 phase, 60 cycles, 5 HP, 1723 RPM, complete with controller and switch.

SHIP SERVICE AIR COMPRESSOR UNIT

Compressor: Ingersoll Rand, Type 30, Model 5 x 5 x 4, 545 CFM at 100 psi, 750 RPM. With motor and base.

VALVES

Gate: 10", 12", 14", 16", 20" and 24"
Angle: 12", 14" and 18" **Crossover:** 16"
High suction: 26" **Low suction:** 26"

TURBINE ROTORS

5400 KW GENERAL ELECTRIC TURBINE ROTOR

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

525 KW GENERAL ELECTRIC TURBINE ROTOR

S/N 60137, ABS 71-LA-12430-624 A624 B, Reconditioned April 21, 1971.

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 WESTINGHOUSE MAIN TURBINE (Profile type):

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.

MISCELLANEOUS T-2 EQUIPMENT

MAIN AIR EJECTOR

Main air ejector, Graham Mfg. Co., type 2 stage twin, size 163B, capacity, 65 PPH of air (220 GPM cont. @ 79°F.), oper. press. 150 PPH.

MAIN CONDENSER END

Graham (waterbox).

MAIN CONDENSER END

Westinghouse (waterbox).

MAIN CONDENSER END

Westinghouse (return head).

AUXILIARY CONDENSER END

Graham (waterbox and return head), surface condenser, size 1500 sq. ft., S/N 2915, Design press Shell 15-Tubes 25, Test press Shell 30-Tubes 50.

TAIL SHAFTS

ABS 59-S1768-AB810
Reconditioned, ABS 70-LA-11901-946

RUDDER WITH STOCK (complete)

SEND NOW FOR NEW 1974 CATALOG

HUNDREDS OF OTHER ITEMS ALSO AVAILABLE!

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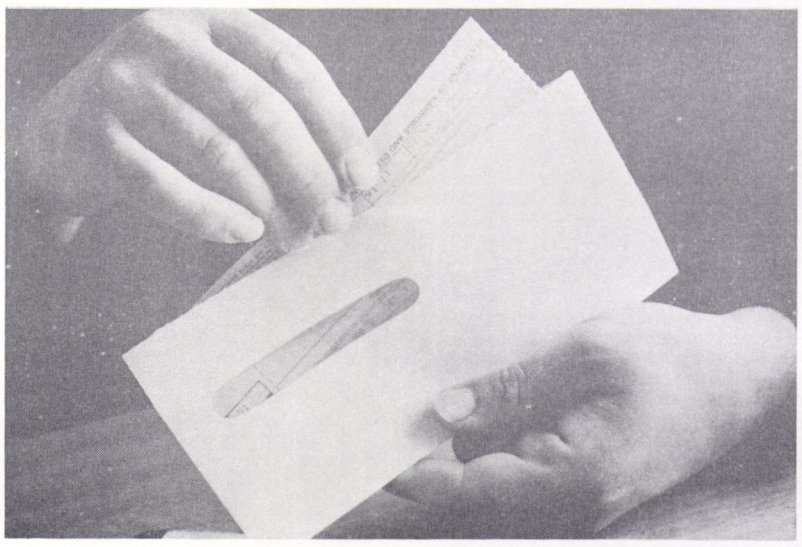
Do you make more money than your industry's average?

Probably.



Because you're somebody special.

You are on this magazine's circulation list because you have been *qualified* as an important decision-maker.

People who don't qualify, don't get the magazine.

The editors have people like you in mind when they plan their issues.

They want to make the information they provide in these pages as useful as possible to men in your type of job with your types of informational needs.

That's why you'll periodically get a request from us asking if you're in the same job, at the same address, or have gone on to another assignment. We require this information because our circulation is *audited* — just as your company's books are — to assure our advertisers that our circulation claims are correct.

When you see the BPA symbol on a publication, you know it's edited for people whose jobs are important.

BPA

Business Publications Audit of Circulation
360 Park Avenue So., New York, N.Y. 10010

This symbol means:
edited **for businessmen**
audited **to make sure the records are correct**

NATIONAL METAL'S CURRENT T-2 INVENTORY

MANY OTHER ITEMS NOT LISTED • ALL ITEMS FURNISHED WITH A.B.S. OR LLOYDS'

TURBOGENERATORS

525 KW GENERAL ELECTRIC AUXILIARY TURBOGENERATOR 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.

538 KW WESTINGHOUSE TURBOGENERATOR UNIT

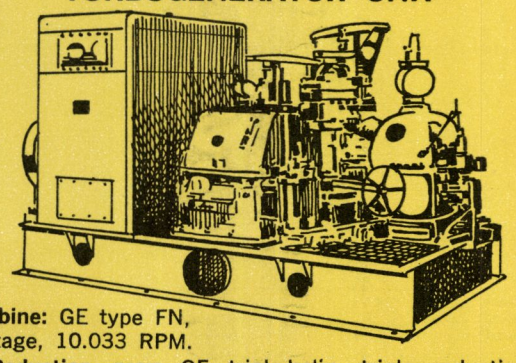
Complete with L.O. Coolers and exciters. **Turbine:** Westinghouse 538 KW, 5010 RPM. Inlet pressure 435 psi. Temp. 750 degrees F.TT. Exhaust pressure 28½ hg vac. **Generators:** (1) 400 KW, 450 VAC, 3 pole, 60 cycle, PF 80%, 1200 RPM, ship's service. (2) 32.5 KW, 125 VDC, 1200 RPM, variable voltage exciter. (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 TURBOGENERATOR 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 1¾ 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.

★★ ALSO AVAILABLE!! ★★

600 KW GENERAL ELECTRIC TURBOGENERATOR UNIT



Turbine: GE type FN, 6-stage, 10.033 RPM.

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

MAIN MOTOR FOR T2

Gen. Elect. #5690714 Type TSM-80, 6000 HP, 90 RPM, form H.L., 2300 Volts, Amps. arm. 1160, P.F. 1.0, KVA 4625 Phase 3 cycle 60, Exciter volts 120, amps field 390 contin. @ 60°C. rise.

5400 KW MAIN GENERATOR

General Electric, S/N 79938, Marks 6937958 G-4, 5F-1690-2, 164-M.

PUMP UNITS

CARGO STRIPPING PUMP

(Steam) Worthington, vertical duplex, double acting, size 14" x 14" x 12", speed 46 ft./min., 700 GPM, 150 psi operating pressure.

MAIN FEED PUMP

Pump: Coffin Turbo Pump Co., single stage, centrifugal, size CG-12A, 6980/7030 RPM, 240/280 GPM, 254/280 HP, 6" x 3", 750 psi @ 1760 ft. head, complete with turbine.

MAIN FEED PUMP

Coffin, turbine drive, Type F, 7200 RPM, 200 GPM, 150 HP, 150 psi w 1329 ft. head.

MAIN CIRCULATING PUMP

Pump: Ingersoll Rand, type 24 VCM, single stage, double suction centrifugal, 585 RPM, 16,500 GPM against TDH 25 ft. @ 30 psi, 26" x 24". **Motor:** General Electric, Model 5K633AP1, Frame N-6336-B, 585 RPM, 440 volts AC, 191 amps, 3 phase, 60 cycle, complete with controller.

MAIN CIRCULATING PUMP

Pump: Ingersoll Rand, type 24 VCM, size 24", 585 RPM, 14,000 GPM @ 25 ft. TDH, 26" x 24", operating pressure 15 psi. **Motor:** Westinghouse, Model CS, Frame 876C, 125 HP, 585 RPM, 440 volts AC, 159 amps, 3 phase, 60 cycle, complete with controller.

MAIN CARGO PUMP UNIT

Pump: Ingersoll Rand, type 2 stage horizontal, size 6-GTM, 1750 RPM, 2000 GPM, 12" x 12", 100 psi @ 280 ft. head. With motor.

FUEL AND LUBE OIL PUMP

Pump: Quimby, size 2½ head screw, 1200/600 RPM, 15 GPM @ 325 psi disch. press. **Motor:** General Electric, Model 5KF364PP1, Frame 364, 7.5/3.75 HP, 1160/580 RPM, 440 volts AC, 10/9.7 amps, 3 phase, 60 cycle, complete with controller.

LUBE OIL SERVICE PUMP

Pump: Quimby, Type vertical rotex, size 4-B, 1150 RPM, 175 GPM @ 60 psi with 20 ft. head, 6" x 5". **Motor:** General Electric, Model 5KF365AJX1, Frame 365, 5 HP, 1170 RPM, 440 volts AC, 20 amps, 3 phase, 60 cycle, complete with controller.

MAIN CONDENSATE PUMP

Pump: Ingersoll Rand, size 2VHM, 1760 RPM, 180 GPM @ TDH 165 ft., 5" x 2", disch. press. 67 psi. **Motor:** General Electric, Model 5KF365AJN-1, Frame 365V, 20 HP, 1765 RPM, 440 volts AC, 3 phase, 60 cycle, 25.5 amps, with controller.

AIR COMPRESSORS

COMBUSTION CONTROL AIR COMPRESSOR UNIT

Compressor: Ingersoll Rand, type 30, Model 253 x 5, 20 CFM at 100 psi, 600 RPM. **Motor:** General Electric, Model 5KG254B2782, Frame 254, Type K, 440 volts, AC, 7.5 amps, 3 phase, 60 cycles, 5 HP, 1723 RPM, complete with controller and switch.

SHIP SERVICE AIR COMPRESSOR UNIT

Compressor: Ingersoll Rand, Type 30, Model 5 x 5 x 4, 545 CFM at 100 psi, 750 RPM. With motor and base.

VALVES

Gate: 10", 12", 14", 16", 20" and 24"
Angle: 12", 14" and 18" **Crossover:** 16"
High suction: 26" **Low suction:** 26"

TURBINE ROTORS

5400 KW GENERAL ELECTRIC TURBINE ROTOR

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

525 KW GENERAL ELECTRIC TURBINE ROTOR

S/N 60137, ABS 71-LA-12430-624 A624 B, Reconditioned April 21, 1971.

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 WESTINGHOUSE MAIN TURBINE (Profile type):

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.

MISCELLANEOUS T-2 EQUIPMENT

MAIN AIR EJECTOR

Main air ejector, Graham Mfg. Co., type 2 stage twin, size 163B, capacity, 65 PPH of air (220 GPM cont. @ 79°F.), oper. press. 150 PPH.

MAIN CONDENSER END

Graham (waterbox).

MAIN CONDENSER END

Westinghouse (waterbox).

MAIN CONDENSER END

Westinghouse (return head).

AUXILIARY CONDENSER END

Graham (waterbox and return head), surface condenser, size 1500 sq. ft., S/N 2915, Design press Shell 15-Tubes 25, Test press Shell 30-Tubes 50.

TAIL SHAFTS

ABS 59-S1768-AB810
Reconditioned, ABS 70-LA-11901-946

RUDDER WITH STOCK (complete)

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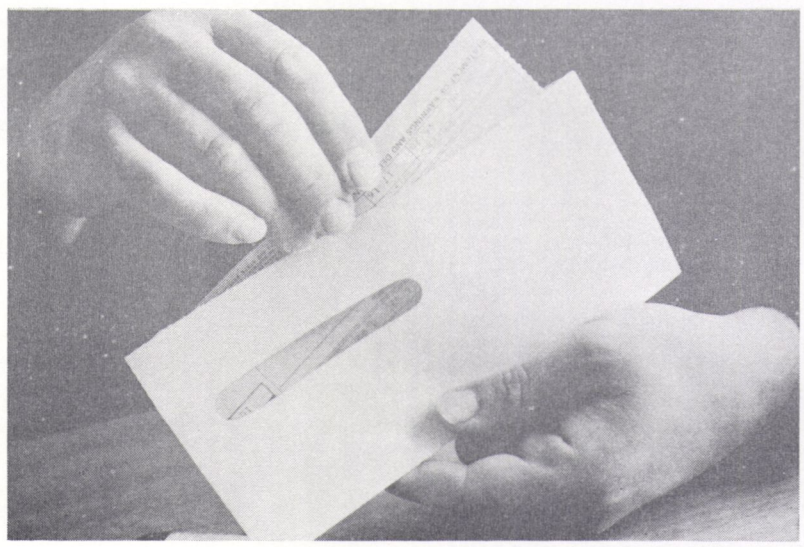

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Independent Petroleum Supply Co., 1345 Ave. of Americas, New York, N.Y. 10019
The West Indies Oil Co., Ltd., St. John's Antigua, W. I.

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Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
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Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
RPC Division, Midland-Ross Corp., P.O. Box 490, Roxboro, N.C. 27573

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Washington Chain & Supply Co., P.O. Box 3645, Seattle, Wash. 98124

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Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
WABCO Fluid Power Division, 1953 Mercer Road, Lexington, Kentucky 40505

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Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144

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Houston Systems Mfg. Co., P.O. Box 14551, Houston, Texas 77021
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

CRANE LOAD INDICATORS
W.C. Dillon & Co., 14620 Keswick St., Van Nuys, Calif. 91407
Trans-Sonics, Inc., P.O. Box 326, Lexington, Mass. 02173

DECK COVERING
Randustrial Corp., 13311 Mar Union Ave., Cleveland, Ohio 44120

DECK COVERS (METAL)
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Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

DECK MACHINERY
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ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
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A G. Weser, Seebeckwerft, 2850 Bremerhaven 1, Germany

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Electro-Motive Division General Motors, La Grange, Illinois 60525
George Engine Co., Inc., P.O. Box 8, Harvey, La. 70038
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
H.O. Penn Machinery Co., Inc., 1561 Stewart Ave., Westbury, N.Y. 11590
Waukesha Motor Co., 1000 W. St. Paul Ave., Waukesha, Wis. 53186

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Merrin Electric, 162 Chambers St., New York, N.Y. 10007
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Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

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Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207

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Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517
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Edo Corporation, 13-10 111th Street, College Point, N.Y. 11356
Edo Western Corporation, 2645 South 2nd West, Salt Lake City, Utah 84115
Electro-Nav, Inc., 501 Fifth Ave., New York, N.Y. 10017
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ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Lorain Electronics Corp., 2307 Leavitt Road, Lorain, Ohio 44052
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Cal. 90503
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Standard Communications Corp., 639 N. Marine Ave., Wilmington, Calif. 90744
Teledyne Hastings Raydist, P.O. Box 1275, Hampton, Va. 23361
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721
The Waterways Co., 3512 Metairie Hts. Rd., New Orleans, La. 70002

OILS—Marine—Additives
Exxon Company, U.S.A., P.O. Box 2180, Houston, Texas 77001
Exxon International Company, 1251 Avenue of the Americas, New York, N.Y. 10020
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PAINT—Marine—Protective Coatings
Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
International Paint Co., 21 West St., New York, N.Y. 10006
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Transocean Marine Paint Association, P.O. Box 456, Delftseplain 37, Rotterdam, Holland

PETROLEUM SUPPLIES
Independent Petroleum Supply Co., 1345 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
The West Indies Oil Co., Ltd., St. John's, Antigua, W. I.

PIPE—Cargo Oil
Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan

PLASTICS—Marine Applications
Ameron Corrosion Control Div., Brea, Calif. 92621
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

PORTS
Port of Galveston, P.O. Box 328, Galveston, Texas
Jacksonville Port Authority, 2701 Talleyrand Ave., Jacksonville, Fla.

PROPELLERS: NEW AND RECONDITIONED
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Coolidge 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

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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
Houttuin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Arkansas 72204

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

REFRIGERATION
Foster Refrigerator Corp., Mill & North Second Streets, Hudson, N.Y. 12534

REGENERATORS—Fuel Savings
Harrison Radiator Division, General Motors Corp., 200 Upper Mt. Road, Lockport, New York 14094

ROPE—Manila—Nylon—Hawsers—Wire
American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Atlantic Cordage & Supply Corp., 60 Grant Ave., Carteret, N.J. 07008
Du Pont Co., Room 31H1, Wilmington, Delaware 19898
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Wall Rope Works, Inc., Beverly, N. J. 08010

RUDDER ANGLE INDICATORS
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
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.

SANDBLASTING EQUIPMENT
Pauli & Griffin Co., 826 Folsom St., San Francisco, Calif. 94107

SCAFFOLDING EQUIPMENT
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
Western Gear Corp./Sky Climber Inc., 17311 S. Main St., Gardena, Calif. 90248

SEALS
Syntron Co., Parts & Material Handling Div., FMC Corp., Homer City, Pa. 15748

SEWAGE DISPOSAL
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Koehler-Dayton, Inc., P.O. Box 309, New Britain, Conn. 06050

SEAWATER TREATMENT
Engelhard Industries, 430 Mountain Avenue, Murray Hill, N.J. 07974

SHAFT REVOLUTION INDICATOR EQUIP.
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Ultra Products, Inc., 805 Central Ave., New Orleans, La. 70121

SHIPBOARD VENTILATION
Coppus Engineering Corp., P.O. Box 457, Worcester, Mass. 01613

SHIPBREAKING—Salvage
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
National Metal & Steel Corp., 1251 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
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
Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004
United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

SHIPBUILDING—Repairs, Maintenance, Drydocking
Albina Engine & Machine Works, 2100 N. Albina Ave., Portland, Oregon 97208
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Beliard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bell Aerospace Company, Div. of Textron, P.O. Box 1, Buffalo, N.Y. 14240
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Bludworth Shipyard, Inc., Box 5426, Cypress St., Brady Island, Houston, Texas 77012
Carrington Slipways Pty. Ltd., Tomago, N.S.W. 2322, Australia
C.M.R. (Compagnie Marseillaise de Reparations), 274 Chemin du Littoral, 13 Marseille (15E) France
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock, Inc., P.O. Box 153, Willemstad, Curacao, N.A.
Dillingham Shipyard, Pier 41, P.O. Box 3288, Honolulu, Hawaii 96801
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Empresa Nacional Bazon, 65 Castellana, Madrid 1, Spain
Equipment Systems, Inc., A Microdot Co., P.O. Box 95, Port Deposit, Md. 21904
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
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Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigon-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Keppel Shipyard (Private) Ltd., P.O. Box 2169, Singapore
Kockums Mekaniska Verkstads AB, Malmo 1, Sweden
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Marathon Manufacturing Company
Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002
Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520
Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Bunbartonshire, G81-1YB, Scotland
Marine & Rail Equipment Division/FMC Corp., 4700 N.W. Front Ave., Portland, Oregon 97208
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mercantile Marine Engineering & Graving Docks Co., N.V., Antwerp, Belgium
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport Ship Yard, Inc., 379 Thames St., Newport, R.I. 02840.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Odense Steel Shipyard Ltd., P.O. Box 176, DK-5100 Odense, Denmark
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
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 1578, Morgan City, La. 70380
Slocum Iron Works, Inc., P.O. Box 2506, 1752 Telegraph Road, Mobile, Ala. 36601
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Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor/Mas, Inc., P.O. Box 13107, Port Everglades, Fla. 33316
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
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Puerto Rico Lighterage Co., P.O. Box 1072, San Juan, P.R. 00902
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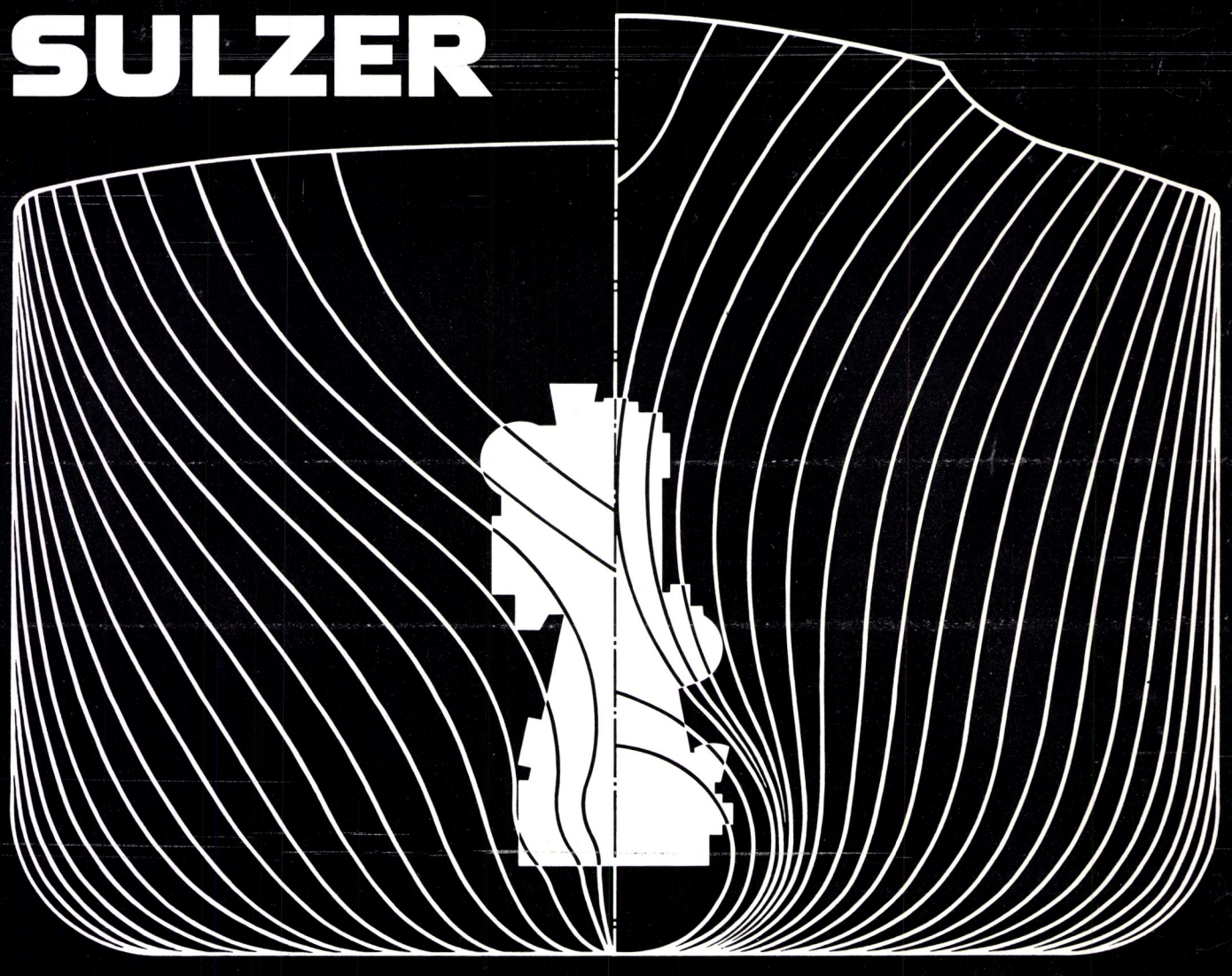

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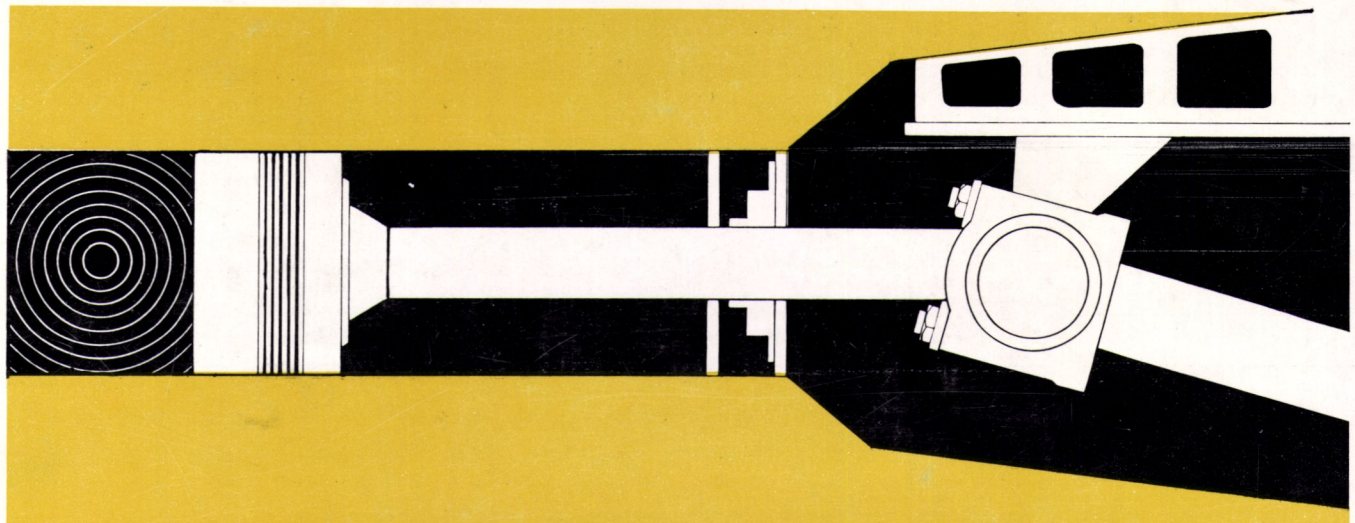

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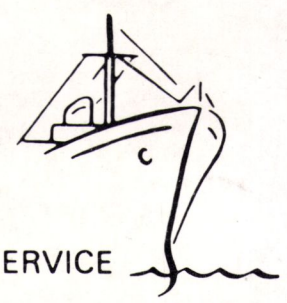

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