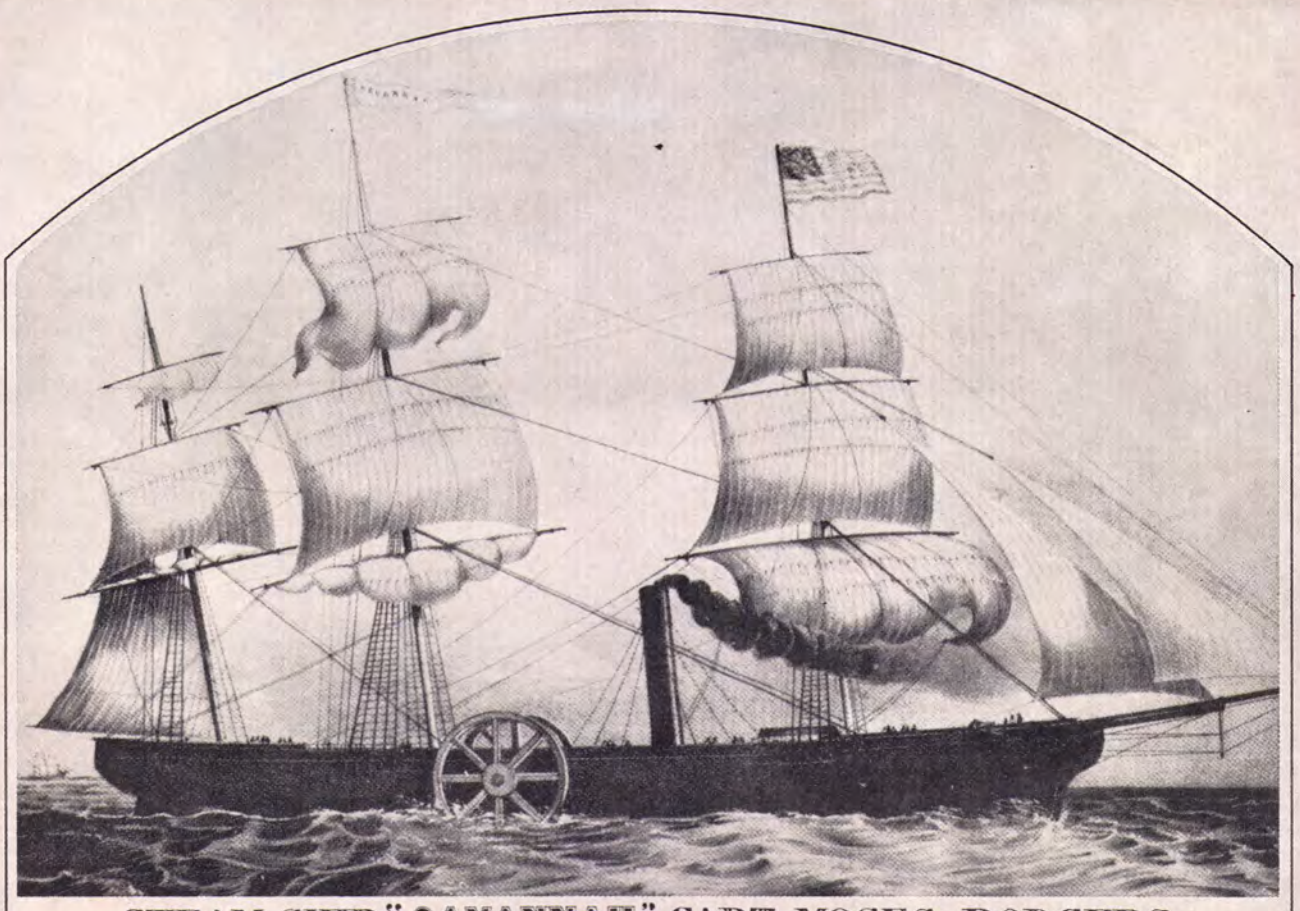
MARITIME REPORTER
AND
ENGINEERING NEWS

Key Highway Yard Of Bethlehem Steel Delivers First Semisubmersible Rig Built On East Coast Of United States

(SEE PAGE 6)

APRIL 1, 1974



STEAM SHIP "SAVANNAH" CAPT. MOSES RODGERS.

THE FIRST STEAMSHIP THAT CROSSED THE ATLANTIC OCEAN

Was built in New York and sailed March 25th 1819 arrived in Savannah after a passage of six days, thence to Liverpool in 18 days.

Full steam ahead . . . but pray for wind

The "Savannah" was the FIRST STEAMSHIP to cross the ocean. It left Savannah, Georgia, May 22, 1819, arrived in Liverpool, England, on June 20th.

However, the steam lasted for only about 85 HOURS. Then, it was time to hoist the sails. Nevertheless, it opened up the sea lanes to steam.

The "Savannah" was fitted with a 90-horsepower auxiliary steam engine and COLLAPSIBLE PADDLE WHEELS. The fuel was COAL and probably a single lubricant served for all moving parts.

Ships have come a long, long way since the "Savannah" and the diversity and complexity of today's engines call for PRECISE high-quality lubricants.

To meet this need, Gulf offers a number of superior marine diesel dual-purpose lubricating oils.

Veritas DPO's for high, medium and slow-speed diesel engines using distillate fuels.

Veritas Select 253, 254 and 353 for use in high and medium-speed, four-cycle diesel engines using distillate and residual fuels.

Each of these oils has optimum TBN to neutralize the acidic products of combustion, along with the effective dispersant detergent qualities necessary to maintain excellent overall engine cleanliness.

Gulf Marine Lubricants — unsurpassed for quality, performance and excellence.

Gulf

Gulf Oil Trading Co. — New York, N.Y.

Round-the-clock competence

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McAllister

World Ship Launchings Reach 8th Record Year According To Lloyd's

Lloyd's Register of Shipping reports that ships launched throughout the world in 1973 reached record figures for the eighth straight year.

Japan, with her 14th successive annual increase, remained the overwhelming leader, launching one of every two ships. Sweden was next, followed by West Germany and Spain, each with record launchings. Great Britain slipped to seventh place, the lowest in her history.

Of the 15 main shipping countries, only Britain, Italy, Poland and East Germany showed a drop in production. Figures for Soviet and Chinese production were unavailable.

Total tonnage launched throughout the world in 1973 was 31,520,373 tons, up 4,805,987. Japan's output represented 49.8 percent of the world total.

City Of Detroit Awards Contract To Design Fast Fireboat

The city of Detroit, Mich., has awarded a contract to Fireboats International, Inc. of Ferndale, Mich., covering design and construction supervision of a 72-foot high-speed aluminum fireboat. The work will be handled with Fireboats' associate, John Gilbert & Associates Inc. of Boston, Mass.

The new fireboat will feature fire-fighting capacity of 10,000 gpm at 150 psi, skyscraper high-pressure water system, foam system, and will be strengthened for winter ice operations in the Detroit River. The design phase is expected to be completed in early summer, 1974.

PFEL To Sell Two C-4s To Waterman

The sales for $4 million each of two of Pacific Far East Lines' C-4s to Waterman Steamship Co. has been approved by the Maritime Subsidy Board.

The vessels—Canada Bear and Philippine Bear—will be used on Waterman's Gulf-United Kingdom-European Continent and Gulf-Far East service.

One of the conditions attached to the transaction was that PFEL deposit the proceeds from the sale in the capital reserve fund for future investment, mainly in new ships.

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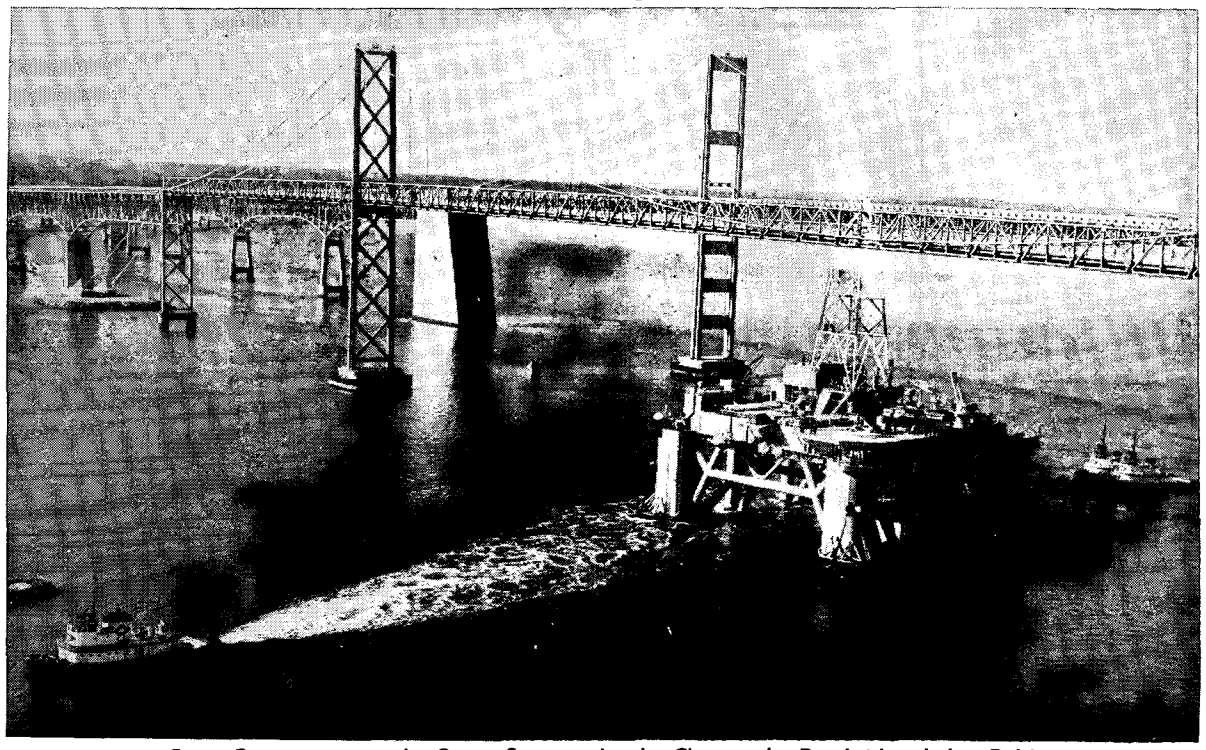
First Semisubmersible Rig Built On East Coast



Curtis Bay tugs escort the Ocean Scout under the Chesapeake Bay bridges below Baltimore to an anchorage where the remaining sections of her drilling derrick were installed.

The Ocean Scout, the first semisubmersible oil-well drilling rig to be constructed on the East Coast of the United States was towed from Bethlehem Steel's Fort McHenry shipyard on February 21 to a site below the Chesapeake Bay bridges, where final sections of the drilling derrick were erected.

The rig was then delivered to Ocean Drilling & Exploration Company of New Orleans, La. It will be operated in the Gulf of Mexico by the Pennzoil Company.

Designed to be a mobile offshore drilling unit suitable for unrestricted ocean service, the Ocean Scout, with a lower hull length of 202 feet and width of 182 feet, was designed by Breit Engineering, Inc. of New Orleans.

The lower hull consists of two watertight structures 202 feet long, 32 feet wide and 28 feet deep, joined so that they are 150 feet apart on centers. Main members of the structure rising from the two sections of the lower hull are four 32-foot-diameter corner stability columns and four 10-foot-diameter interior columns, all interconnected by truss work.

Atop them is the upper deck which is 170 feet long, 150 feet in width and 14 feet deep. The upper deck is watertight and contains the machinery spaces. Overall, the rig measures 108 feet from the bottom of the lower hull base line to the upper deck.

The operational draft will be 48 feet in depths of water from 80 to 600 feet. Towing is done with wire towing hawsers.

Provisions are made for carrying drilling water, fuel oil, liquid mud, cement and other drilling supplies. The living quarters, including staterooms, galley, mess, lounge, hospital, offices and passageways, are air-conditioned, Accommodations are designed for a crew of 59.

The most modern fire-fighting equipment, as well as all necessary navigation aids are provided.

About 7,000 tons of steel were used in constructing the rig, which will tower 257 feet above the water when under tow. Since clearance under the Chesapeake Bay bridges is only 186.5 feet, the upper portion of the derrick was erected at an anchorage just below the bay bridges.

The Ocean Scout will be moored by eight 30,000-pound anchors, each with 2,500 feet of 2½-inch-diameter stud link anchor chain.

The unit is capable of drilling a hole in excess of 20,000 feet. Major items of drilling equipment include a 147-foot derrick, a 3,000-hp drawworks and two 1,300-hp mud pumps. The main power plant for both drilling and vessel service includes diesel engines with over 5,100-hp combined capability.

The sub-sea system includes a 20-inch blowout preventer stack with a 24-inch integral marine riser and a 13⅝-inch, 5,000-psi blowout preventer stack with a 16-inch integral marine riser. The marine riser is equipped with a hydraulic tensioning system. An underwater TV system is utilized to monitor and assist with sub-sea operations.

Two revolving cranes are situated aboard the drilling rig to provide loading and unloading capability.

SNAME Hampton Roads Section Discusses Shipyard Numerical Control Lofting Management

Pictured above during the meeting at the Commodore Country Club, left to right: **R.C. Strasser,** vice chairman of the Hampton Roads Section; **C.E. Peacock Jr.,** Section chairman; **Thomas Lamb,** author and **Don Tolefson,** introducer.

The Hampton Roads Section of The Society of Naval Architects and Marine Engineers met at the Commodore Country Club on February 7, 1974. **C.E. Peacock Jr.,** chairman of the Section, opened the meeting with an introduction of officers and guests.

Sam Tatum gave an informative presentation on the nature and purpose of the SNAME Technical and Research Program.

Don Tolefson introduced the principal speaker of the evening, **Thomas Lamb,** who presented a paper entitled "The Management of Numerical Control Software and Its Impact on the Operation of a Shipyard."

Mr. **Lamb,** manager of the Marine Division of the Value Engineering Company, gave a broad discussion on several aspects of managing shipyard numerical control lofting and fabrication processes. Areas covered included technical justification for the use of numerical control devices, and a consideration of shipyard staffing and training requirements to implement and operate a computer-aided lofting department.

Nat'l Bulk Affiliate Orders Two 268,500-Dwt Tankers

Wellington Tankships, Ltd., a Liberian affiliate of National Bulk Carriers Inc. (NBC) of the U.S., recently placed an order with IHI (Ishikawajima-Harima Heavy Industries Co., Ltd.), Japan, for two 268,500-dwt (or 126,500-gt) tankers.

E.L. Hann, vice president of Far East operations of NBC, and Dr. **Hisashi Shinto,** president of IHI, signed the contract worth approximately 30,000-million yen in total.

The two tankers will be built by IHI's Kure Shipyard, with completion scheduled for February 1978 and June 1978, respectively.

Each tanker will have a 40,000-shp IHI turbine, developing a service speed of 16.0 knots, as the main propulsion engine.

Since 1964, NBC has ordered 29 ships totaling 6,172,000 deadweight tons from IHI, including three 326,000-dwt tankers, four 445,300-dwt tankers, and ten 270,000-dwt-class tankers of the same type.

Iraq Orders 4 Tankers From Gotaverken Yard

Gotaverken, Goteborg, Sweden, has received orders for four 154,000-dwt tankers from the Iraqi National Oil Co., Baghdad, Iraq.

The ships are to be built at Gotaverken's Arendal Yard, and are due for delivery in 1977. They are the latest addition to a series of 32 similar tankers, the first of which is now being built at Gotaverken, and is to be delivered in June.

N.Y. PROPELLER CLUB PRESENTATON: Capt. **Adrian P. Spidle** presents Liberty ship model to **Albert Parente,** president, Brotherhood of Marine Officers. Left to right: Col. **James B. Soden,** (ret.), secretary-treasurer, Propeller Club, Port of N.Y.; Captain **Spidle,** vice president, Prudential Lines, and president, Propeller Club, Port of N.Y.; Mr. **Parente,** and **Thomas A. King,** Eastern Region Director, Maritime Administration, and vice president, Propeller Club, Port of N.Y. The idea of offering a Liberty ship model in return for a donation to the Hall of American Maritime Enterprise, to be located in the Smithsonian Institution, was conceived by Captain **King** to help fulfill the Club's financial commitment to the Hall.

Allen M. Fowlis Named President Vancouver Shipyards

Allen M. Fowlis

James C.F. Stewart, chairman and chief executive officer of Vancouver Shipyards Co. Ltd., has announced the appointment of **Allen M. Fowlis,** C.A., as president.

Prior to this appointment, Mr. **Fowlis** was vice president, administration, for Seaspan International Ltd., and has held a number of operating and financial positions within the group of companies over the past 15 years.

Vancouver Shipyards Co. Ltd., one of the Genstar group of companies, is engaged in ship construction and ship repairs and recently announced a $3-million expansion program which will allow the building of ships in the 50,000-ton range.

Paceco To Build Huge Deck Barge For Foss Launch & Tug

Foss Launch and Tug Company of Seattle, Wash., recently placed an order with Paceco, a division of Fruehauf Corporation, Alameda, Calif., for a heavy-duty 2,100-ton deck barge. Its measurements will be 343 feet by 76 feet by 18 feet, and it will have a deck cargo capacity of approximately 4,600 tons.

The huge barge was designed by L.R. Glosten & Associates, Seattle, for Pacific Northwest and Alaskan service. Provision has been made for conversion to either container service or tanker service to meet possible future requirements. The barge has a stern notch so that it can be either towed or pushed as desired. Delivery of the barge is planned for January 1975.

Bailey Meter Brochure Describes Marine Automation Systems

Bailey Meter Company of Wickliffe, Ohio, is offering a four-page brochure describing Bailey instrumentation and controls for marine automation.

The brochure details Bailey's propulsion, boiler, and pump and valve control systems, alarm and monitoring systems, and integrated circuit bell loggers and data loggers, as well as Bailey's marine automation school and marine automation service centers.

For a copy of the brochure B302-3004, write Sales Promotion, Bailey Meter Company, 29801 Euclid Avenue, Wickliffe, Ohio 44092.

Dearborn-Storm Completes Sale Of Computer Portfolio

Dearborn-Storm Corporation, 9545 Katy Freeway, Houston, Texas 77024, has announced completion of the sale of their portfolio of IBM System 360 computers to a group of private investors for $17 million in cash. A spokesman for the new investor group stated that the new company will continue with the same management and staff as had previously operated Dearborn-Storm's Computer Leasing Division.

Arthur Weiss, Dearborn-Storm's chairman of the board, stated that the sale of the computer portfolio has significantly improved the company's financial position and earnings opportunities. He commented that the sale price of $17 million in cash was nearly equivalent to the today value of cash flows that would have been generated from the computer Leasing Division over the remaining life of the computer portfolio without the risk factor inherent in computer leasing activities. He also pointed out that "if the proceeds of this sale were invested in short-term securities, interest income would exceed $1,500,000 annually. Investment of these funds in the offshore petroleum services industry could double this return."

14 LNG Tankers Now On Order Use Gaz-Transport Design

It has recently been announced that the state-owned Algerian Steamship Navigation Co., C.N.-A.N., has ordered three LNG tankers with Gaz-Transport invar membrane design. Two of them, each with a capacity of 129,400 cubic meters, are to be built at C.N.I.M. shipyards, La Seyne, France, for delivery in 1977 and 1978. One, of 125,000 cubic meters, will be built at Chantiers de l'Atlantique, St. Nazaire, France, for delivery in 1978.

Only a few weeks ago, another order for two LNG tankers of 129,-400-cubic meters capacity was confirmed, also to be built according to the Gaz-Transport technique. One will be built by Boelwerf Shipyard in Antwerp for Compagnie Maritime Belge; the second one at France-Dunkerque yards in Dunkirk for the French owner Dreyfus & Co. Both vessels will be used by the European consortium SAGAPE to carry LNG from Algeria to France and Italy.

These orders bring the number of LNG tankers ordered with the Gaz-Transport invar membrane design to a total of 14 ships of 1,476,-000 cubic meters.

There are already three vessels in operation at sea with this design —Polar Alaska and Arctic Tokyo in service for four years between Alaska and Japan, and Hassi R'Mel, Algerian flag in service for two years between Algeria and France.

In total, 17 LNG tankers with the Gaz-Transport design are in service or on order, representing an "actualized" value of over $1.2 billion.

Gaz-Transport is represented in the United States by Permal Gas, a division of Permal International, 919 Third Avenue, New York, N.Y. 10022.

Kings Point Receives Grant From Exxon

Rear Adm. **Arthur B. Engel,** USCG (ret.), accepts the Assistance Grant from **E.W. McNeil** of the Exxon Company.

The U.S. Merchant Marine Academy at Kings Pont, N.Y., has received a $2,500 Assistance Grant from the Exxon Company. Presented to Rear Adm. **Arthur B. Engel,** USCG (ret.), Superintendent of the Academy, by **E.W. McNeil** of Exxon, the grant will be used to further special projects at the Academy.

Exxon proposed the grant as "an expression of our support of Kings Point and our appreciation for the many fine graduates who are in our employ today."

IHI Receives First Order From Iraq— 144,000-Dwt Tanker

I H I (Ishikawajima - Harima Heavy Industries Co., Ltd.), Japan, recently received an order for a 144,000-dwt tanker from Iraqi National Oil Company of Iraq.

This is the first ship to be exported to Iraq by IHI.

The contract was signed at Baghdad between Dr. **Sadoon Hammadi,** president of Iraqi National Oil Company and also Minister of Oil of Iraq, and **Hirotaro Nemoto,** director and general manager of IHI's Ship Sales Division.

The 144,000-dwt (or 72,000-gt) tanker will be constructed by the Aioi Shipyard and will have the following approximate measurements: overall length of 886 feet; breadth of 146 feet; depth of 71 feet, and draft of 55 feet. She will be equipped with a 29,000-bhp IHI-Sulzer 10RND 90 type marine diesel engine to develop a service speed of 15.6 knots.

Delivery is scheduled for December 1976.

Avondale Awarded Semisubmersible Rig Contract By SEDCO

Avondale Shipyards, Inc. of New Orleans, La., a subsidiary of Ogden Corporation, has been awarded a contract by South Eastern Drilling Company (SEDCO) for the construction of an additional semisubmersible offshore drilling rig at a contract price in excess of $20,000,000.

This Gulf of Mexico type drilling rig, designated Rig 709, is similar to the two rigs previously built by Avondale for SEDCO, and is scheduled for delivery in November 1976.

Ogden's Avondale Shipyards, a leading American shipbuilder, is also a major producer of offshore drilling rigs and fixed platforms. With the delivery of this new rig for SEDCO, Avondale will have constructed a total of 12 since 1972.

In size, the rigs have an overall length of 295 feet, an overall beam of 245 feet, and the height from base line to the main deck is 112 feet. The overall height will be 168 feet above the base line, and the operating draft is 85 feet. Living facilities for 100 men will be a feature of the new rigs.

Carrington Slipways Describes Operations In New Brochure

Carrington Slipways Pty. Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322, has recently published a brochure describing their 40-acre shipyard that has been building oil rig supply vessels, tugs and special purpose vessels for American and European owners for worldwide service.

Carrington Slipways, only 15 years ago a small four-acre yard, has steadily grown to the present 40-acre flow-line shipyard equipped with the latest facilities and equipment, a highly qualified staff and the personal attention of the Laverick family. Capable of doubling present production, Carrington is now building vessels up to 400 feet in overall length.

Write to **D.J. Laverick** at the address above for a copy of the brochure.

Wilmington Shipping Names T.A. Dromgool As New York Area Rep

Thomas A. Dromgool of Dromgool Associates, Inc., New York, N.Y., has been appointed by Wilmington Shipping Co., Wilmington, N.C., to represent that firm's interests in the New York area.

Wilmington Shipping Co., a steamship agency and stevedoring firm, operates in the North Carolina ports of Wilmington and Morehead City. In Morehead City, its office is listed as Morehead City Shipping Co. Mr. **Dromgool** will represent these interests, as well as East Carolina Ship Agencies, Inc., a subsidiary of Wilmington Shipping Co., in the two ports.

Carboline Company Employs Saroyan As Coatings Consultant

The Carboline Company of St. Louis, Mo., announces the employment of **John R. Saroyan** as consultant for the company to assist in the research and development of new generation antifouling and antipolluting protective coatings for the marine industry.

Prior to joining Carboline in a consulting capacity, Mr. **Saroyan** was head of the Naval Paint Laboratory, Mare Island, Calif., the Navy's principal laboratory for paint research and development. Mr. **Saroyan** is recognized throughout the world as a foremost authority on antifouling paints and coatings. He has written numerous articles and holds many patents on antifouling paints. He is the recipient of the coveted Civilian Service Award presented for his significant contribution in the antifouling field during World War II.

Mr. **Saroyan** will maintain his home in Vallejo, Calif., and coordinate his work with the St. Louis Laboratory.

The Carboline Company, 350 Hanley Industrial Court, St. Louis, Mo. 63144, manufactures a wide range of industrial and marine protective coatings, finishes, waterproofing materials, fireproofing coatings and adhesives.

Shipping Executive Predicts Oil Imports Will Triple In 1970s

While there are grave uncertainties in the picture of world oil supply and demand as a result of Middle East and other developments, it is expected that U.S. tankerborne imports of oil will more than triple during the 1970s.

The projection was made in Tulsa, Okla., before the "Symposium on Transportation Developments of the 70's," at the 76th National Meeting of the American Institute of Chemical Engineers. It was offered by **Philip J. Loree,** chairman of the Federation of American Controlled Shipping (FACS). FACS members control 85 percent of the U.S. Effective Control tanker fleet, and also own and operate more than half of the U.S.-flag tanker fleet. (The U.S. Effective Control fleet is made up of U.S.-owned Liberian and Panamanian tankers and bulk carriers which have been committed to the United States by their owners in times of national emergency.)

Mr. **Loree** forecast that U.S.-waterborne imports will escalate from 2.7-million barrels a day in 1970, to more than 9-million barrels a day in 1980. He stressed that his projections were essentially valid "assuming that the oil embargo is lifted and that limitations on foreign oil production are removed."

The FACS chairman explained that although the figures were based on a study completed before the Arab boycott, they remained appropriate because they were conservative. He also pointed out that the study was limited to 1980, making it further appropriate because "Project Independence cannot realistically be expected to produce energy self-reliance until some time in the 1980s."

Mr. **Loree** pointed out that U.S. production of crude oil is peaking, and has not been able to be developed fast enough to keep pace with the growing demand. Of particular significance, he said, is the fact that in 1970 America's primary source of imported oil was Venezuela—only 1,800 miles from U.S. East Coast terminals. By 1980, Mr. **Loree** explained, "it is anticipated that 60 percent of all U.S. crude oil imports will come from the Middle East, 11,500 miles away from the same terminals."

The FACS chairman estimated that another 15 percent of crude oil imports will come from northern and western Africa, and the remainder from South America. At the same time, he said that tankerborne petroleum products will be imported from Europe, Canadian and Caribbean refineries.

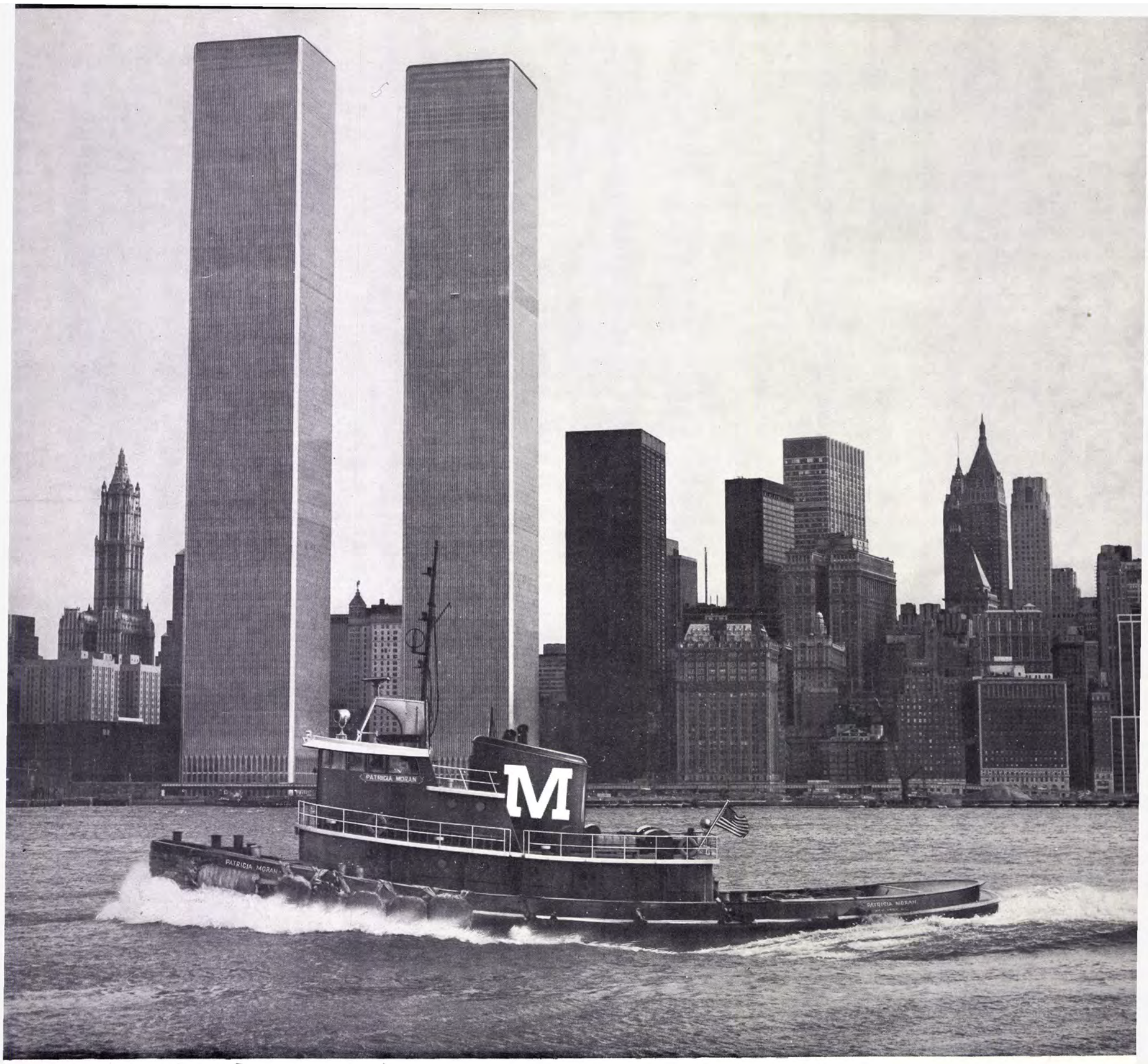
Mr. **Loree** said that by 1980, assuming that U.S. deepwater facilities were available, oil imports will require 135 "small" tankers of 45,000 deadweight tons each, 285 "medium" tankers of 70,000 deadweight tons, and 72 Very Large Crude Carriers (VLCCs) of 250,000 tons. Should deepwater terminals not be available to accommodate VLCCs, the 1980 requirements would demand a fleet of 135 small and 555 medium tankers. He compared these numbers to 1970, when the fleet needed was equal to only 89 small tankers and 14 medium tankers.

Mr. **Loree** pointed out that the projected figures are only for the U.S. oil import trades and do not include domestic tanker trades—nor the oncoming Alaska-to-U.S.-West Coast trades. Neither do they include tankers required to cover shipments of crude oil from oil-producing nations to offshore refineries and transshipment terminals, such as those in Europe, Canada and the Caribbean.

Matson Promotes Choo And Faria

Matson Navigation Company, San Francisco, Calif. 94105, has promoted **S.H. (Sam) Choo** to the newly established post of regional freight operations manager, northern California, and **Fred E. Faria** has been promoted to assistant regional freight operations manager.

Mr. **Choo** was formerly regional container operations superintendent. Mr. **Faria** was formerly assistant regional container operations superintendent.



Two Famous Landmarks of New York Harbor

A continuously expanding Moran fleet has kept pace with the soaring skyline of New York for more than a century. By providing the power, experience, and versatility to efficiently and economically meet the full range of the port's transportation needs, Moran has helped make the Port of New York a leader in world commerce.

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"The Best in the Business"

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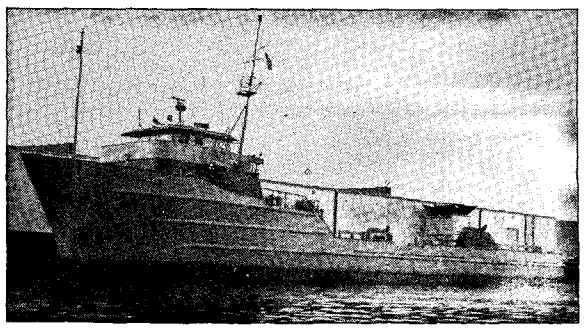


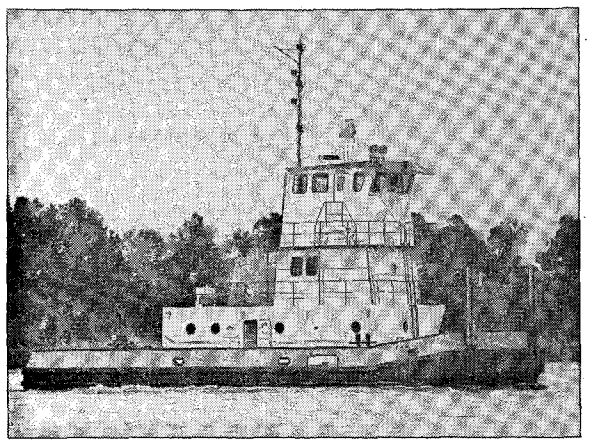
FIRST HALLIBURTON LIQUID MUD VESSEL: Halter Marine Fabricators of Moss Point, Miss., recently delivered the motor vessel Halliburton 218. The vessel was built by Halter Marine for the Halliburton Company of New Orleans, La. She is equipped with both a liquid mud and a dry mud system, making her the first Halliburton liquid mud vessel. The 176-foot by 38-foot by 14-foot vessel carries an ABS Loadline Certificate and is also certified by the U.S. Coast Guard. Halliburton 218 departed from Pascagoula, heading for the Gulf of Mexico, where it will service offshore oil and mineral rigs.

Atlantic Marine Delivers New Pusher Tug To Belcher

Atlantic Marine, Inc., located in the Jacksonville, Fla., suburb of Fort George Island at the intersection of the St. Johns River and the Intracoastal Waterway, recently delivered the 70-foot pusher tug E.N. Belcher Jr.

The boat is named after the late chairman and president of the owner, Belcher Oil Co. of Miami. The tug will be based in Fort Myers and used in oil deliveries on the Okeechobee Waterway and Florida's lower west coast. **L.C. Morris,** Belcher's towing operations manager, selected the shallow-draft pusher tug design for more flotation and power in the shallow waters of the Caloosahatchee River connecting Lake Okeechobee with the Gulf of Mexico.

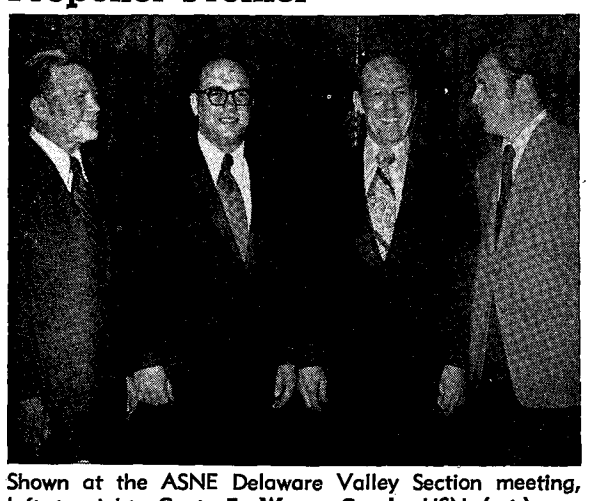
The tug is 70 feet long, with a 27-foot beam and a depth of 9.5 feet. Power is supplied by two Caterpillar D-379 engines with a total of 1,100 horsepower, driving stainless steel propellers measuring 74 by 54 inches. Two GM 471 generators each develop 40 kilowatts of A.C. power. The steering gear is by Skipper Hydraulics, Inc. The deck is fitted with two Beebee winches. Electronics include Decca RM-914 radar.



The new 1,100-hp pusher tug will be used pushing oil barges in the shallow waters of Florida's rivers.

Accommodations are provided for six—captain, mate, two deckhands, and two tankermen. A Climate Master heat pump system air-conditions the entire vessel, which features a deep-freeze locker in the galley, and holding tanks for all sanitary wastes.

ASNE Delaware Valley Hears Paper On New Propeller Profiler



Shown at the ASNE Delaware Valley Section meeting, left to right: Capt. **F. Warne Gooch,** USN (ret.), coordinator; Comdr. **James K. Williams,** USN, speaker; Capt. **Vernon Klemm,** USN, Section vice chairman, and **Gil A. Carlton,** Section chairman.

A paper on the recently installed propeller profiler at the Philadelphia Naval Base was presented at a meeting of the Delaware Valley Section of The American Society of Naval Engineers on February 20, 1974. Comdr. **James K. Williams,** USN, author, read the paper titled "Automated Propeller Profiler," and Capt. **F. Warne Gooch,** USN (ret.), was coordinator. Over 30 members attended the session.

The new propeller profiler is an automated, numerically controlled machine tool with five axis motion. It uses both side mill and end mill cutters to produce accurately contoured propellers up to 15 feet finished diameter from work pieces weighing up to 25 tons. Machine operation is controlled through the medium of punched tape containing the set of instructions for a particular portion of the work. The instruction sets are generated on an IBM 360 Computing System using an extended version of the APT (Automatically Programmed Tools) Program originally developed by M.I.T. and A.I.A., and currently administered by the Illinois Institute of Technology Research Institute.

3 frequencies, 6 depth ranges

The ELAC solid-state LAZ 51 meets the tough new IMCO and OTAK requirements. It features three frequencies (30, 50 or 200 KHz) and a 6-inch chart recorder with 6 selectable depth ranges. Add our DAZ 6 Digital Depth Indicator, and you have an easily read navigational sounder whose accuracy and reliability are unequalled.

True-bottom readouts

The DAZ 6 displays the LAZ 51 soundings as large four-digit continuous readouts which may be set to show fathoms, feet, meters, or decimeters. Accuracy is ±0.5% or, with optional crystal control, ±0.01%. Unlike other digital units, the DAZ 6 automatically filters out unwanted echoes from fish, other sounders, etc. True-bottom readouts are assured without manual adjustments. The DAZ 6 is also equipped with an automatic alarm which can sound at any preset depth. Its digital output can be used to run printers, card punchers, computers, and up to four slave repeaters.

Patented greyline recording

ELAC's patented greyline recording system makes the LAZ 51 very versatile. With it, objects close to the bottom are not lost in strong bottom echoes. Moreover, while a hard bottom is clearly defined, the depth and solidity of any overlying sediments are shown by the depth and tone of the grey bottom zone.

The LAZ 51 is available with a wide choice of ceramic or magnetostrictive transducers. Pulse power output is 450 watts at 30 and 50 KHz and 250 watts at 200 KHz.

Five models (each with 6 ranges recorded in fathoms, feet or meters) are available for maximum sounding depths from 60 to 750 fathoms.

Echosounders for every need

ELAC Echosounders are the most complete and technically advanced in the world. Standard or narrow beam ceramic or magnetostrictive transducers...70 watts to 5kW pulse outputs with frequencies from 12 to 200 KHz...sounding depths up to 6600 fathoms...chart recorders with a variety of ranges and paper widths from 3 to 8 inches...single and multi-beam sonars...scale expanders...scope units...digital calibrators and indicators. Whatever your echosounding needs—navigation, oceanography, off-shore drilling, cable laying, or dredging—you'll find ELAC equipment that's best for the job.

We make our guarantee work

ELAC units have earned a reputation for rugged construction and trouble-free operation. But if maintenance is ever required during or after the one-year guarantee period, you can depend on the trained technicians of over 100 nationwide ITT Decca Marine dealers and 200 worldwide ELAC agents to have you underway quickly.

For more information and the name of your nearest dealer, write: ITT Decca Marine, Inc., Dept. MR4, 386 Park Avenue South, New York, New York, 10016, (212) 685-5157.

DECCA
ITT DECCA MARINE

LAZ 51 Echosounder

DAZ 6 Digital Depth Indicator

Want to see navigation soundings clear across your bridge or chart off-shore sites, find pipelines and survey bottoms? ELAC has the answer.

Overseas Shipholding Reports 36% Gain In 1973 Earnings

Overseas Shipholding Group, Inc., bulk shipping company whose fleet in worldwide operations aggregates 2.2 million deadweight tons, has reported that its 1973 earnings amounted to $20,312,474, a gain of 36 percent from the previous year.

OSG stock was split 3 for 2 last November. Per share income for 1973 was $2.08, and an annual dividend of 7 cents a share, payable April 15 was voted by the directors.

The OSG fleet now includes 39 tankers and dry bulk carriers, and the company has on order 25 vessels which will account for a total of 3.5 million tons. Two-thirds of this tonnage has already been placed under long-term charter from dates of delivery.

OSG emphasizes a policy of long-term charters and announced in New York recently that 89 percent of its present fleet is chartered through 1974, and more than 70 percent at least through 1976.

Lloyd's Publishes New Brochure On Specification Services

Lloyd's Register of Shipping has published a new brochure entitled "Specification Services," which sets out the comprehensive technical supporting services offered by Lloyd's Register to shipowners, shipbuilders and manufacturers.

The photographs in the booklet illustrate part of the range of ships and structures on which Specification Services supervision duties have been carried out.

These services, supported by Lloyd's Register's extensive technical experience in ship construction and marine engineering, are quite distinct from the Society's classification function. They are available all over the world and are coordinated by a separate unit known as Specification Services.

Lloyd's Register of Shipping is located at 71 Fenchurch Street, London, England, EC3M 4BS. The New York office is located at 17 Battery Place, New York, N.Y. 10004.

AIMS Elects Thomas B. Crowley Board Chairman

Thomas B. Crowley

A key West Coast maritime executive who is nationally and internationally known in the tug and barge industry has been elected chairman of the board of the American Institute of Merchant Shipping (AIMS).

He is **Thomas B. Crowley,** president and board chairman of Crowley Maritime Corporation, San Francisco, Calif., representing the largest tug and barge operation on the Pacific Coast.

Change in AIMS's leadership was announced by outgoing board chairman **Thomas J. Smith,** president and chief executive officer of Farrell Lines Incorporated, New York, following AIMS's annual meeting at the Mark Hopkins Hotel in San Francisco. It was also announced that the chairman of the AIMS Liner Council will be **Norman Scott,** president, American President Lines, Ltd., San Francisco, replacing Capt. **J.W. Clark,** president, Delta Steamship Lines, New Orleans, La. Remaining as chairman of the AIMS Tanker Council and Dry Cargo and Coastal Council will be Capt. **Charles M. Lynch,** manager, marine transportation, Atlantic Richfield Company, Los Angeles, Calif., and **Eugene Yourch,** vice president, Marine Transport Lines, Inc., New York, respectively.

For more than 40 years, Mr. **Crowley** has been associated with the diverse Crowley West Coast maritime enterprises, begun by his father in San Francisco before the turn of the century. The various tug and barge companies under the Crowley Maritime Corporation are located in several regions of the Pacific Coast, including Alaska. His famed Red Stack tugs handle the docking and undocking of ships in the harbors of Los Angeles, Long Beach, San Francisco, and Eureka, while the firm's barge fleet provides harbor and coastwise transportation for all types of cargo. Other Crowley affiliated companies include two ship repair yards in Oakland and a passenger transportation business on San Francisco Bay and in Los Angeles Harbor. Mr. **Crowley's** varied operations also include specialized contract and common carriage transportation on the East and Gulf Coasts, plus a deepsea towing service on a worldwide basis.

Mr. **Crowley's** company has for a number of years provided essential shipping services in support of Arctic oil exploration and development, and in 1968 delivered the first commercial cargo to Alaska's North Slope. More recently, his seagoing tugs and barges made the biggest Arctic sealift in history when 62 tugs and barges flying the Crowley houseflag delivered 185,000 tons of oil field supplies and construction material to Prudhoe Bay. Presently, his company is building 16 new 400-foot oceangoing barges, each with a 12,500-ton cargo-carrying capacity.

In 1970, on recommendation of the Secretary of Defense, Mr. **Crowley** received the coveted National Transportation Award for his company's outstanding work in delivering supplies and equipment to the far-flung military bases of Alaska. He has been a board member of both AIMS and the American Bureau of Shipping, has served as president of the Western Shipbuilding Association and regional director of the American Waterways Operators, in addition to serving as a member of numerous other shipping and transportation organizations.

As board chairman of AIMS, Mr. **Crowley** assumes the leadership of an association organized in 1969 through the merger of three steamship trade associations representing all coasts. As the nation's largest American-flag shipowners' association, AIMS is comprised of 33 companies operating 330 dry-cargo ships, tankers, ore carriers and barges in the foreign, coastal and intercoastal trades. These vessels represent over 60 percent of all active, privately owned ships registered under the U.S. flag and aggregate over 7.5 million deadweight tons.

In addition to Messrs. **Crowley, Scott, Yourch** and Captain **Lynch,** AIMS board members for 1974 include: **Fred S. Sherman,** president, Calmar Steamship Corporation, New York; **L.C. Ford,** president, Chevron Shipping Company, San Francisco; Capt. **J.W. Clark,** president, Delta Steamship Lines, Inc., New Orleans; **O.R. Menton,** general manager, Marine Division, Exxon Company, U.S.A., Houston, Texas; **W.C. Brodhead,** vice president, marine industry and government relations, Gulf Oil Trading Company, Philadelphia, Pa.; **Adolph B. Kurz,** president, Keystone Shipping Company, Philadelphia; **J.T. Lykes Jr.,** chairman, Lykes Bros. Steamship Co., Inc., New Orleans; **Harmon Hoffman,** general manager, marine transportation, Mobil Oil Corporation, New York; **James R. Barker,** chairman of the board and president, Moore-McCormack Lines, Inc., New York; **J.R. Dant,** president, States Steamship Company, San Francisco; and **Edward J. Heine Jr.,** president, United States Lines, Inc., New York.

AIMS officers reelected for the year by the board were **James J. Reynolds,** president; **Albert E.**

May, vice president, and **William J. Coffey,** secretary-treasurer.

In a review of AIMS's activities, Mr. **Reynolds** said the organization had recently completed its fifth year of operation. AIMS came into being, he recalled, to unify the industry, resolve or minimize the differences among shipping segments and to speak with one voice on all policy matters affecting the American merchant marine, both on the national and international scene.

"Some of our goals we have achieved," Mr. **Reynolds** said. "Others we have not. Disappointingly, there is still devisiveness in this industry; some shipping lines refuse to cooperate to bring about a unified industry. This is the exception, however, rather than the rule. Ninety percent of the industry pulls together. It is our hope that the small amount of devisiveness still poisoning this industry will be overcome, and the American merchant marine will be an increasingly effective and dynamic force to be reckoned with in international trade and the pride of a nation determined to rebuild its seapower."

AIMS, Mr. **Reynolds** added, has been "most active" in 1973 in working with industry and Government to achieve the goals set forth in the 1970 Merchant Marine Act's shipbuilding program. "There is renewed vigor in our industry today," he said, "with new high-capacity ships being added to the roster at an unprecedented peacetime pace. American exporters and importers, in the liner trades, are becoming increasingly U.S.-flag conscious, and a new fleet of large bulk carriers is coming down the ways. New names and faces are joining the group of traditional U.S. ship operators — another sign of vigor and growth."

As to the U.S. fleet's future. Mr. **Reynolds** said:

- U.S. liner vessels will be increasingly competitive on major U.S. foreign trade routes and, in many instances, will transport more than 50 percent of the available liner cargoes on certain routes.
- The U.S.-flag bulk carrier segment, after years of antiquity and oblivion, will reappear with new highly innovative ships in our nation's international commerce, carrying liquid and dry bulk cargoes safely and economically throughout the world.
- U.S. maritime labor and management will continue to work together in a "new era of harmony" that has become apparent in recent years, and
- The U.S. merchant marine, after a changeover from a U.S. Government attitude of neglect to a positive policy of support and encouragement, will finally realize a long-sought goal: to become an indispensable force in U.S. economic, political and defense planning without which the nation cannot function effectively in peace or war.

Mr. **Reynolds** cited these problems U.S. ship management faces in 1974:

- The current energy crisis, despite shipping's cooperative effort to adopt every feasible conservation measure, is a severe burden to an industry which needs adequate amounts of bunker fuel at a reasonable price for its ships.
- Some U.S. Government departments still treat the industry as a "whipping boy." The Department of Defense continues to pursue a policy designed to drive military cargo rates down to rock bottom in an era of rising costs, and the Department of State still appears to view the welfare of the U.S. merchant marine as a minor expendable piece on the chessboard of international affairs.
- Overtonnaging and predatory rates are a major disruptive influence, and pressures from well-meaning but overzealous environmentalists threaten to disrupt U.S. shipbuilders and operators with their advocacy of impractical and unnecessarily restrictive constructive standards and opposition to the efficient use of deep-draft vessels.

However, Mr. **Reynolds** concluded: "Without minimizing these problems, I envision the next five years as promising ones for the U.S.-flag steamship industry—a period of stability, growth and economic maturity for a new and exciting marine technology."

The answer to your bilge-water discharge problem: Keene Marine Discharge Control System™.

Ready now–to meet the July 1 deadline.

Keene has long been part of the marine industry—supplying Keene (Bowser) fuel and lube filters and other equipment for over 75 years. So to help you meet the July 1 deadline, we've developed a complete system that automatically assures that bilge discharge is within limits acceptable under the Federal Water Pollution Control Act and related Coast Guard regulations:

Automatic fail-safe control.

The Keene Marine Discharge Control System removes oil and other contaminants from bilge water and monitors the effluent stream. The fail-safe control permits only sheen-free water to be discharged.

Proof of compliance.

The system includes a real-time continuous recorder which prints a chart verifying the purity of all overboard discharge. This data becomes part of the captain's or master's log, providing permanent proof of compliance.

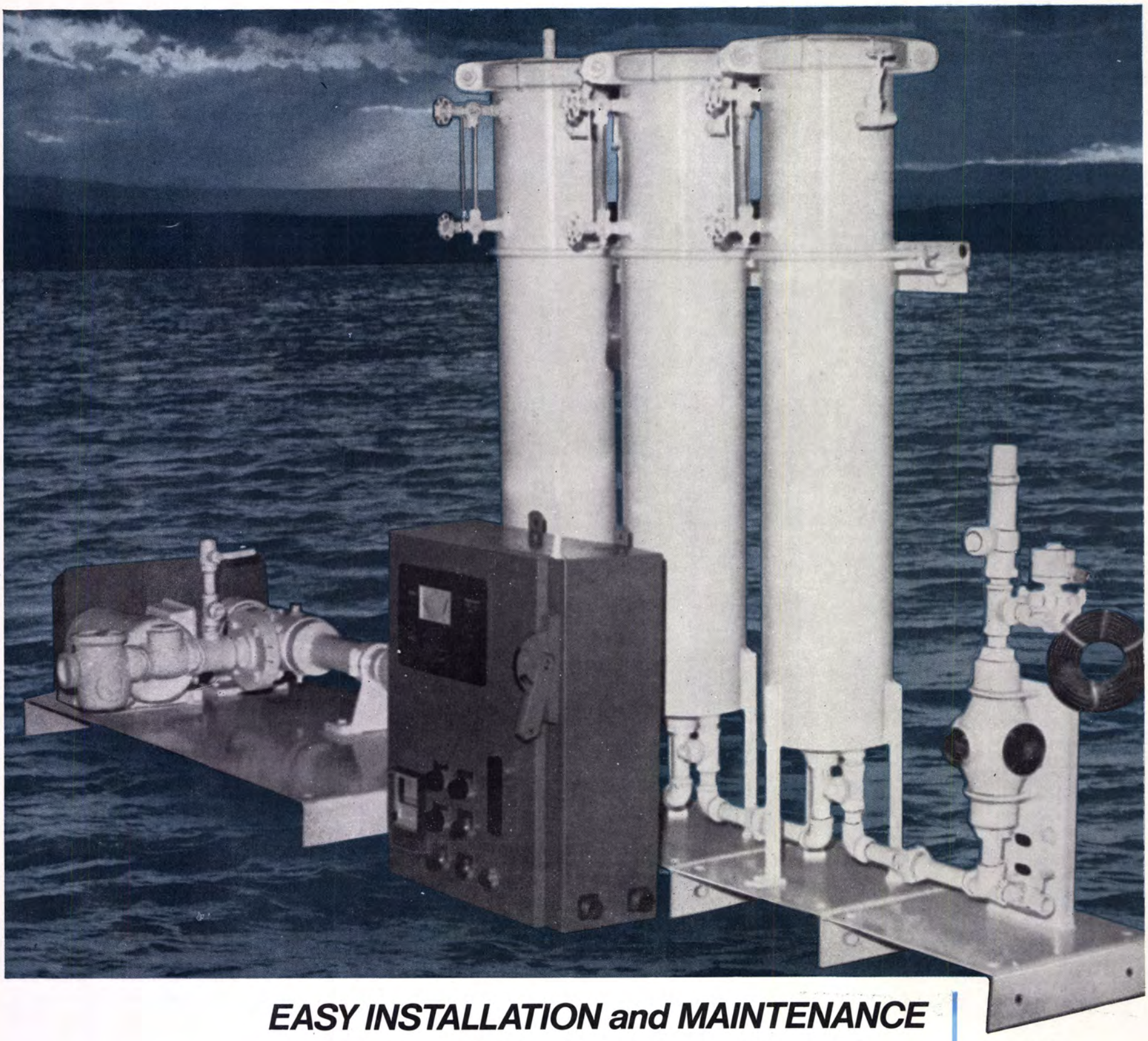
Passes Coast Guard regulations.

Bilge water discharged through the Keene system exceeds EPA and Coast Guard "no sheen" requirements. In addition, the U.S. Coast Guard has agreed to waive the bilge containment provisions of Title 33, Subchapter 0, paragraphs 155.330 through 155.360 to vessels with the Keene system installed.

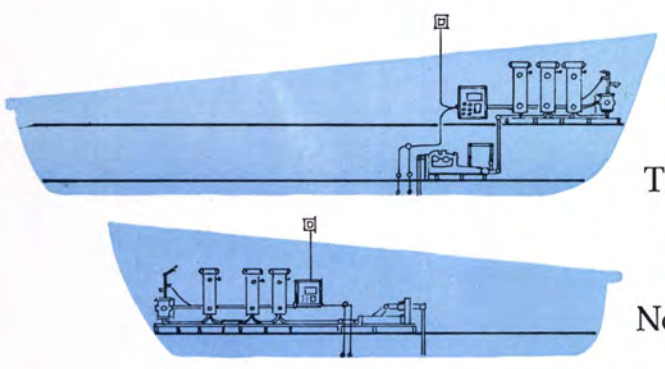
Pennant to identify installation.

Large reflective pennants are furnished for attachment to the exterior of vessels which have the Keene system installed. These pennants readily identify Keene-equipped vessels, and may eliminate these vessels as suspected polluters.

KEENE MARINE DISCHARGE CONTROL SYSTEM
PROTECTED



EASY INSTALLATION and MAINTENANCE



The system can be installed in one compact area, or modules can be separated to fit wherever you have available space.

Modular design.

The rotating shaft of the positive displacement pump is the only moving part in the system.

Only one moving part.

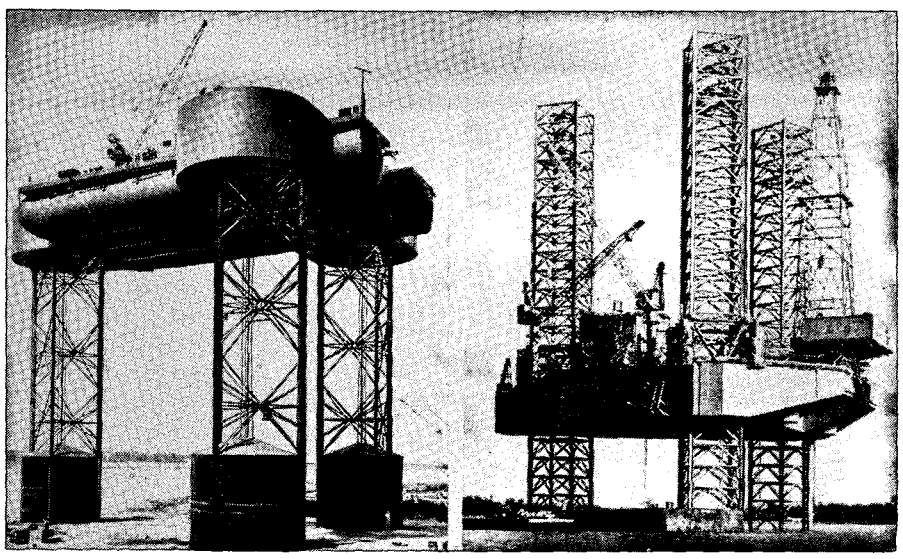
No steam cleaning, blow-down or backwashing required.

Disposable separation elements.

The system is ready now. Keene Marine Discharge Control Systems are installed and working today. They are available now through an authorized Keene marine distributor or shipyard. For further information, and the name of the distributor nearest you, call (615) 526-9571. Or write Keene Corporation, Fluid Handling Division, Dept. EW, Cookeville, Tenn. 38501. Time is short—act now!

KEENE
CORPORATION

FLUID HANDLING DIVISION



The first jackup rig made at Marathon's Vicksburg yard in 1955 is shown here at the left. At right is recent jackup rig built in 1973. This photo review spans almost 20 years of rig construction at Marathon's Vicksburg yard.

Marathon Launches 47th Rig From Vicksburg Yard

Marathon LeTourneau Company, Marine Division in Vicksburg, Miss., launched its 47th self-elevating "jackup" drilling platform March 1, 1974. During 1973, Marathon's Vicksburg yard completed production and delivered three jackup drilling platforms, along with completing a major modification and repair job on another jackup rig that was originally constructed at the yard in 1963.

The 47th rig, Marathon's Hull No. 71, has been built for Reading & Bates. The jackup rig is 230 feet long by 200 feet wide by 410 feet high. It is equipped with 410 feet of jackup legs and will crew 94 workmen. The jackup weighs 6,000 tons and will drill in 300 feet of water. It is also equipped with three Marathon LeTourneau 50-ton capacity marine cranes.

In 1973, Marathon Manufacturing Company, the parent company, contracted for the sales of nine new offshore drilling rigs and one jackup rig component parts assembly. This represents 17 percent of the total number of rigs sold and 55 percent of the total number of jackup rigs sold by the U.S. and foreign-based firms throughout the year.

A plant that was opened 32 years ago to build defense products during World War II and later became a pioneer in the manufacture of mobile offshore drilling platforms —this is Marathon's Marine Division facility in Vicksburg.

The year was 1942, and the country was becoming accustomed to war and shortages and ration stamps. The nation desperately needed tools for that war. In Vicksburg, production lines were established as the plant was under construction.

The first products were 155 millimeter shells. Later came scrapers, bulldozers and cranes for the war effort. From Pearl Harbor to V-J Day, R.G. LeTourneau, Inc., predecessor to Marathon LeTourneau Company, built 10,000 scrapers, 14,000 bulldozers, 1,600 sheepfoot rollers, 1,200 rooters and 1,800 two-wheel tractors for the armed forces. The Vicksburg factory also built cranes for the U.S. Navy.

The Marine Division plant is located about 10 miles south of the city of Vicksburg. Here the company owns approximately 2,770 acres of land. The factory entrance fronts on U.S. Highway 61, with manufacturing facilities near the entrance and an assembly site on the banks of the Mississippi River about three miles away.

The city of Vicksburg combines the charm of the Deep South with the pulsating excitement of an industrial city. Vicksburg remembers its past. A major battle was fought here during the War between the States, and a national cemetery in the city honors those men from both sides who died in the battle. A tour of the battleground is a must when visiting Vicksburg. The Mighty Mississippi bends in and around as it flows by the bluffs of the city. A narrow two-lane bridge across the river connecting the city with Louisiana has been replaced with a new multilane bridge that is part of Interstate Highway 20.

The Marine Division's main plant building contains 325,000 square feet of floor space. The division has almost a half million square feet of office and manufacturing space located in numerous buildings, both at the main plant site and at the riverside assembly area.

Because the plant was built during the war years, housing for the employees was difficult to find. The company began then to develop the community known as LeTourneau Rural Station, which is adjacent to the main plant. The community contains 91 homes and 155 mobile home sites. There is a post office, a grocery store and a community center. Recreational facilities in the community include playgrounds, tennis courts, a swimming pool and a softball diamond.

In the early 1950s, the firm began a development program on the now famed electric wheel. Marathon's predecessor in 1953 sold various patents and three plants to another firm, and the development of the electric wheel began in earnest. Now, electric wheel equipment is manufactured at Marathon LeTourneau's plant in Longview, Texas. The Vicksburg plant, however, continues to manufacture gears and gear boxes for heavy equipment built in Longview.

A shortage of petroleum reserves in the early 1950s led to the search of offshore areas for oil and gas production, and this led to the development of Marathon Marine Division's primary product—the self-elevating mobile offshore drilling platform.

In 1955, Marathon LeTourneau built and launched its first offshore rig. Since that time, 47 of the huge units have been manufactured at the Vicksburg plant.

A unique combination of features in Marathon offshore platforms has established for the company a distinguished record of leadership in the offshore industry. Some of these features include high mobility, self-contained design, self-elevating capability and rugged hull construction.

Basically, a platform manufactured in Vicksburg has a triangular-shaped hull with a leg located at each corner. The platform is towed to location with the legs raised. On location, the legs are lowered to the sea floor. Strong electric motors that lowered the legs continue to operate, and the platform is then raised above the water surface. The bottom of the platform hull may be 40 to 60 feet over the water, far above wind and wave action. When drilling is completed, the platform is lowered, the legs are raised and the unit is ready for towing.

Legs on these platforms are raised and lowered through an expertly engineered rack and pinion system. Makers of fine automobiles boast of rack and pinion steering as the most advanced steering system available. On Marathon's self-elevating platforms, this feature is especially important. Large electric motors power the rack and pinion and, when stopped, lock the system to hold the tremendous weight.

Each platform contains huge electric generators to furnish power for drilling operations and all other functions. Crew quarters, galley and dining facilities are all attractive and air-conditioned. Recreation rooms are usually provided and, in some cases, a small hospital has been included.

The dependability of offshore platforms built in Vicksburg contributed greatly to Marathon's backlog of orders for marine products. At present, there are seven platforms under construction at the riverside assembly area, and the plant work force is now 1,200 strong.

It all began 32 years ago in Vicksburg. One interesting note is that a young man who went to Vicksburg in 1942 to work in the plant is now president of Marathon LeTourneau's Marine Division. He's **Clyde Wilson.** Since its beginning, and up to the present, Mr. **Wilson** has seen 47 jackup rigs launched from the Vicksburg yard. There have been many hundreds of others who have had a part in establishing leadership for Marathon in the offshore industry, and the platforms they've built are now operating in offshore areas around the globe.

Along with the Vicksburg yard, Marathon also has yards in Brownsville, Texas, Clydebank, Scotland, and Singapore. These yards are capable of constructing jackup and semisubmersible-type platforms and other marine and ship-shaped vessels.

Marathon LeTourneau Company, Marine Division, is a subsidiary of Marathon Manufacturing Company, a leading producer of offshore drilling platforms, associated marine and industrial metal products.

Marathon Clyde Yard Gets Gulf Contract To Build Offshore Rig Fitted For Pipelaying

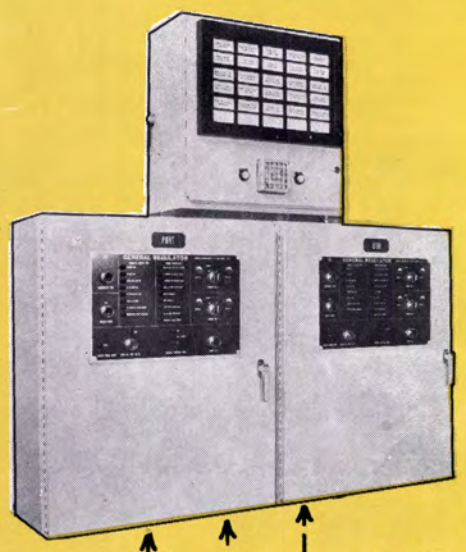
Gulf Oil has ordered a new type of jackup drilling rig from the Marathon yards, Clydebank, Scotland, at a cost of approximately $13.6 million. The rig has been specially designed for work off West Africa, and will be able to undertake construction work not normally tackled by a drilling vessel.

Keydril, a wholly owned subsidiary of Gulf, said the rig would be able to drill in up to 200 feet of water or the swampy delta conditions off Nigeria.

The rig would also be fitted with a 250-ton crane which would enable the rig to be used for siting well jackets and offshore platform modules, driving piles, and performing offshore repair work. It would also be fitted with pipelaying equipment able to handle pipe up to 24 inches in diameter.

Keydril said the spasmodic demand for construction and pipelaying barges off West Africa made it worthwhile to incorporate the more expensive new features into the design.

A BOILER MANAGEMENT SYSTEM
(for new construction or retrofit)



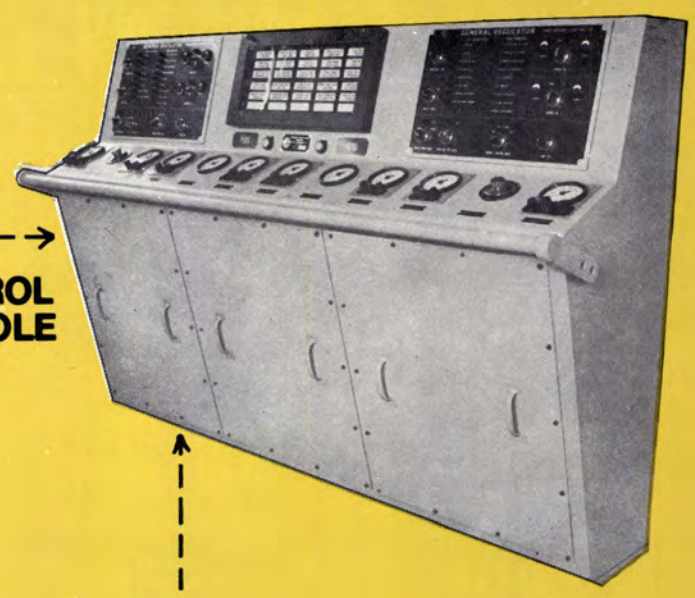
BURNER MANAGEMENT CABINET

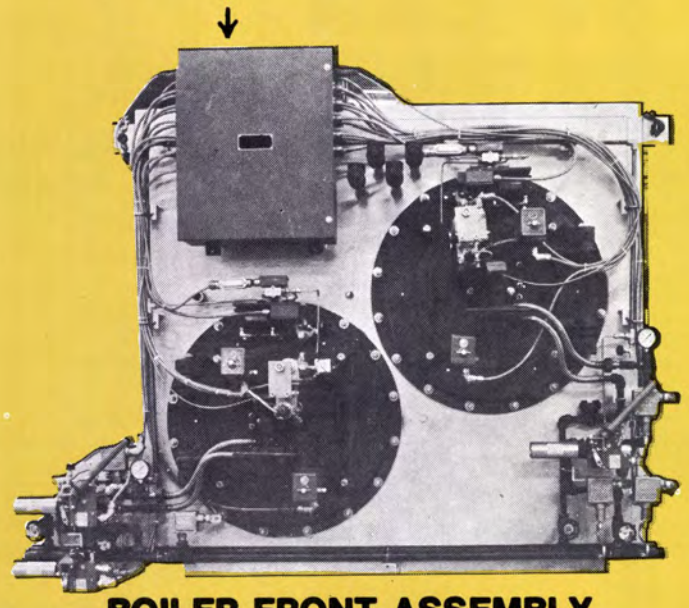
STANDARD SYSTEMS PROVIDING SAFE, RELIABLE AUTOMATIC BOILER OPERATION

- USCG & ABS APPROVED FOR REDUCED MANNING
- FACTORY TESTED FOR MINIMUM INSTALLATION COST
- SERVICED WORLD WIDE BY GENERAL REGULATOR

BOILER #2

BOILER CONTROL CONSOLE





BOILER FRONT ASSEMBLY

CONTROL SYSTEM ELEMENTS:

- FUEL OIL CONTROL VALVES
- F.D. FAN ACTUATORS
- FEEDWATER CONTROL VALVES
- SUPERHEAT CONTROL VALVES
- OTHERS (AS REQUIRED)

GENERAL REGULATOR DIVISION

FORNEY ENGINEERING COMPANY
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MAILING ADDRESS: P. O. BOX 189 ☐ ADDISON, TEXAS 75001
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A SUBSIDIARY OF FOSTER WHEELER CORPORATION

Propeller Club Miami Chapter Convention May 1-3

The Miami, Fla., chapter of The Propeller Club of the United States has announced that plans are nearing completion for its upcoming Southeastern Regional Convention, May 1-3, at the Sonesta Beach Hotel, Key Biscayne.

The three-day business and pleasure meeting is the group's annual gathering. An estimated 200 persons are expected to attend, according to **Arthur A. Pendleton,** convention coordinator.

Included in the program will be a joint meeting of the group's national executive committee and board of governors. Work sessions include a group discussion on the "Challenge of the Future" for southeastern ports, moderated by Capt. **Robert Waldron,** Miami port director.

Miami Mayor **Maurice Ferre** is among the speakers scheduled, as is **Milton Fisher,** president of Panelfab International, who will discuss "Exporting for Profit."

Rounding out highlights of the meeting will be a report by **J.R. Jackson,** vice president and manager, environmental affairs, Exxon Corporation, regarding the effect of the energy crisis on international trade.

Highlight of the entertainment portion of the program will be a special luncheon aboard the M/S Emerald Seas. A special ladies' program has also been arranged.

Information regarding reservations for the program should be directed to **Arthur A. Pendleton,** c/o Marsh & McLennan, Inc., 1000 Brickell Avenue, Miami, Fla. 33131, (305) 374-7672.

International Paint Names Robert Murphy

Robert E. Murphy

Robert E. Murphy has been appointed sales/service representative for the Newport News-Norfolk, Va., territory, it has been announced by International Paint Company, Inc. president **Thomas Reinhardt.**

A former resident of New Orleans, La., where he serviced International heavy-duty marine customers, Mr. **Murphy** is active in several marine organizations, including The Propeller Club, Port of New Orleans. He holds a B.A. degree from St. Edward's University, Austin, Texas.

Teleflex To Purchase Marine Division Of Capilano Engineering

Teleflex Incorporated of North Wales, Pa. 19454, and Capilano Engineering Co., Ltd. of Vancouver, British Columbia, Canada, have announced an agreement in principle for Teleflex to acquire Capilano's Marine Division. The transaction is subject to approval by the boards of directors of both companies.

Capilano's Marine Division produces proprietary hydraulic steering systems used primarily in commercial and large pleasure marine craft.

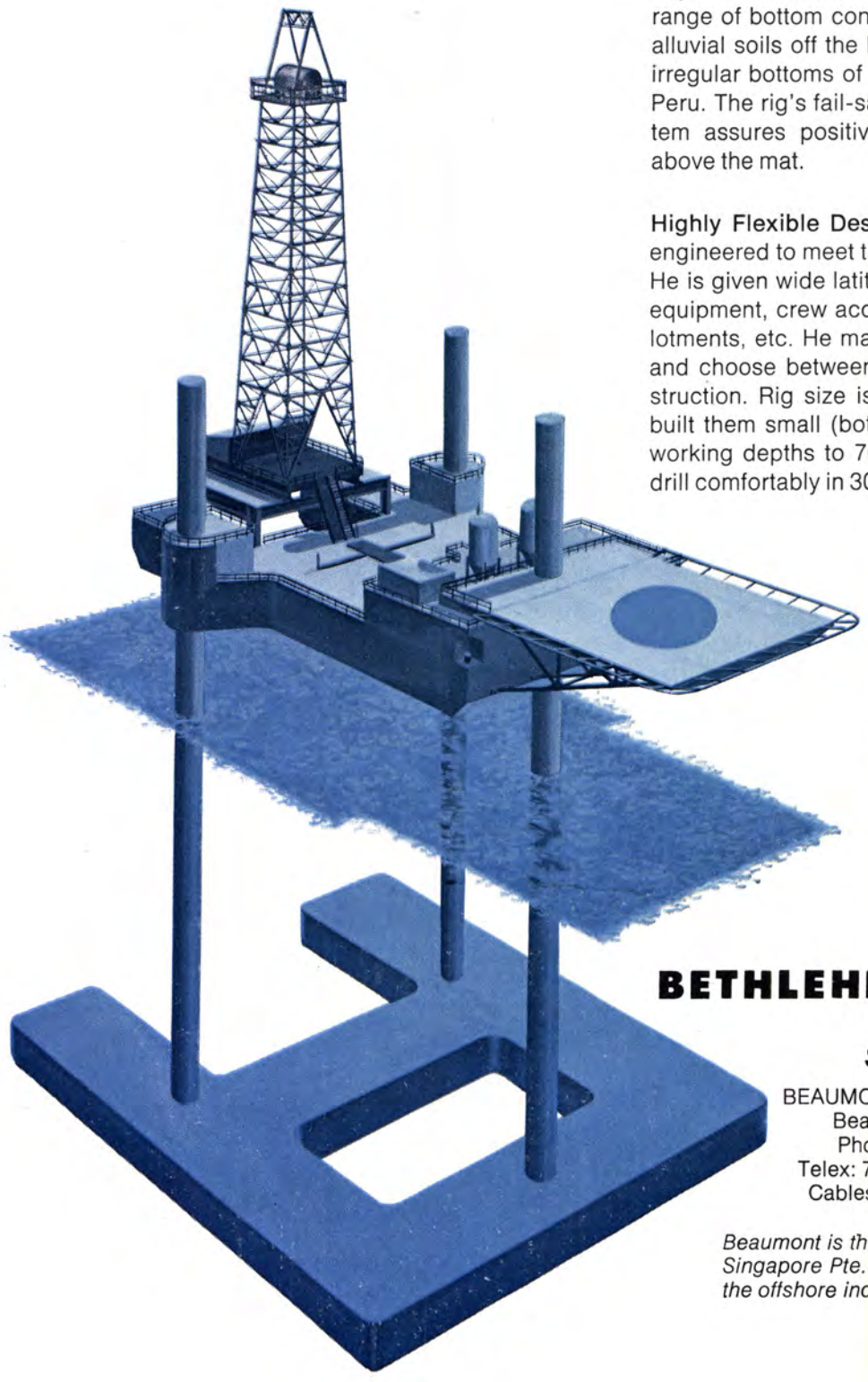
Teleflex is a multimarket manufacturer of mechanical and electromechanical controls for marine, automotive, industrial, aerospace and nuclear applications. Teleflex has plants in six states.

George J. Fanning Elected Vice President Roberts Steamship

George J. Fanning has been elected vice president of the Roberts Steamship Agency, Inc. of New Orleans, La. He will be in charge of the agency's west Gulf operations.

Mr. **Fanning** formerly held positions with the Lykes Bros. Steamship Co. and Central Gulf Line in New Orleans.

The Bethlehem JACK-UP



Outstanding Durability. We have engineered and built more than 20 drilling and workover rigs based on this successful Bethlehem design. The first of this series, built by Beaumont in 1957, is still in service; one or another of these rigs has withstood each major hurricane to hit the Gulf of Mexico since that date. Bethlehem rigs are also working off the Atlantic and Pacific Coasts of South America, in the Celebes and Java Seas, and off the West Coast of Africa.

Great Stability. Afloat, these Bethlehem rigs offer trim towing characteristics for safe, long-distance journeys. On location, the large mat is at home on a wide range of bottom conditions, from the extremely weak alluvial soils off the Louisiana coast . . . to the harsh, irregular bottoms of the Pacific shelf off Ecuador and Peru. The rig's fail-safe, semi-automated jacking system assures positive and fast platform positioning above the mat.

Highly Flexible Design. Each Bethlehem jack-up is engineered to meet the owner's precise requirements. He is given wide latitude in specifying machinery and equipment, crew accommodations, storage space allotments, etc. He may opt for propulsion assist units, and choose between tubular and structural leg construction. Rig size is another owner's choice: we've built them small (both drilling and workover rigs) for working depths to 70 ft, and others large enough to drill comfortably in 300-ft waters.

Nearly a fifth of all the jack-up rigs working worldwide today were built by Bethlehem to the Bethlehem design. And more rigs are on the way from our Beaumont and Singapore Yards—both have developed rig-production methods that save time and cut costs without sacrificing any of the top-notch quality for which our rigs are famous. The Bethlehem Jack-Up: best buy in the industry.

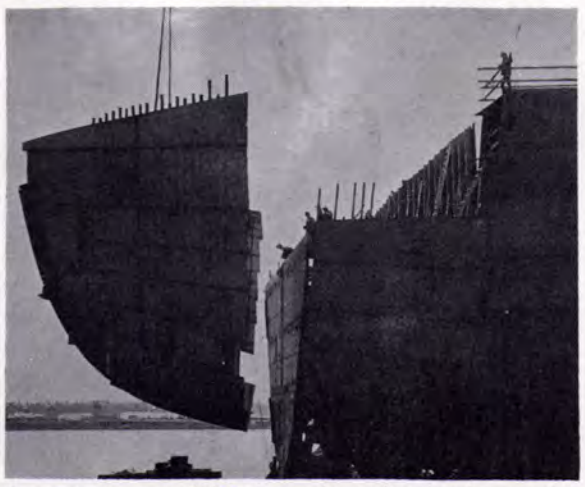
BETHLEHEM STEEL

Shipbuilding

BEAUMONT YARD: P.O. Box 3031
Beaumont, Texas 77704
Phone: (713) 832-8411
Telex: 77-9441 BETHSCO BMT
Cables: BETHSHIP New York

Beaumont is the U.S. representative of Bethlehem Singapore Pte. Ltd., our construction yard serving the offshore industry in the Far East.

FMC Shipyard Sets Complete Icebreaker-Type Bow On Gas Turbine Powered Tanker



A giant crane at FMC places the icebreaker bow and is also used to install modular units.

The hull assembly nears completion as the icebreaker-type bow is installed on a new design gas turbine-powered oil tanker under construction at FMC Corporation's Marine and Rail Equipment Division in Portland, Ore. Setting the section as a whole is typical of FMC's modular construction method, utilizing a giant crane. To further facilitate construction, modular living quarters, complete with carpets and bedspreads, will be installed in the steel deckhouse. The pilothouse will be equipped with the most sophisticated navigational equipment available today.

The first of six 35,000-deadweight-ton tankers under construction in a $102-million contract, the vessel is the largest ever built in Portland, and the first built in this area since World War II. The tankers will be chartered to Chevron Shipping Company, a wholly owned subsidiary of Standard Oil Company of California. The ships will be used to transport oil along the Pacific Coast from Alaska to California, and to Hawaii.

The FMC Division, formerly Gunderson, Inc., has incorporated new design concepts developed by the Chevron Shipping Company and FMC Corporation. The hull design and gas turbine electric power units combine to produce a safe, economical environmentally sound tanker.

The hull on each tanker is 650 feet in length, with a molded breadth of 96 feet and a molded depth at the side of 50 feet. The operational draft is 34 feet. Ship cargo will be divided into a tank layout in accordance with latest requirements of IMCO, the international maritime agency of the United Nations.

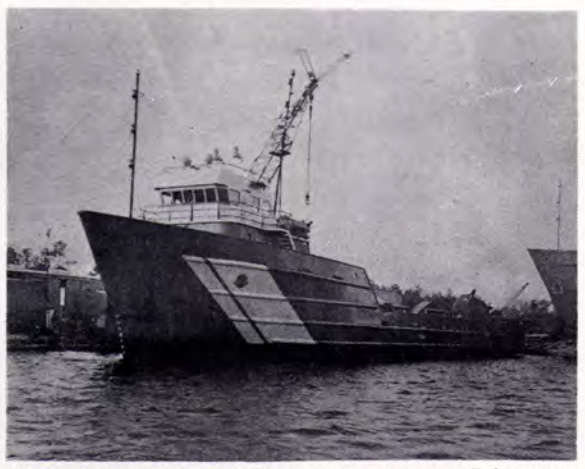
According to **C. Bruce Ward,** president of the FMC Division, construction of the six tankers will provide an uninterrupted production schedule, providing steady employment into 1977. This new shipbuilding is indicative of U.S. efforts to gain a foothold in the world shipbuilding industry.

FMC developed both hull and propulsion system details in consultation with Chevron Shipping Company, Nickum & Spaulding Associates, Inc.—the naval architects—and General Electric, the propulsion system manufacturers. The innovative design concepts, which are embodied in these vessels, are creating considerable interest in maritime circles around the world.

The unique gas turbine electric-drive system is completely designed and manufactured by General Electric Company.

To minimize the FMC yard's power plant engineering work, General Electric has designed and will have the performance responsibility for the complete system through to the output coupling of the main propulsion motor.

To handle expanded shipbuilding work, FMC acquired an additional 23 acres adjacent to its existing facility in Northwest Portland, and also invested in a $1-million 200-ton-capacity whirley crane and new types of welding equipment, including a numerically controlled burning machine for cutting metal plates.



FOR NORTH SEA SERVICE: Halter Marine Fabricators of Moss Point, Miss., recently delivered the motor vessel Rhonda Martin. The vessel was built by Halter Marine for Andrew Martin Sea Services (Mission Drilling) of New Orleans, La. The 180-foot by 38-foot by 14-foot vessel is certified by the American Bureau of Shipping for A-1 and Full Ocean and also carries a USCG Certificate of Inspection. The Rhonda Martin departed from Pascagoula bound for the North Sea, where she will service the offshore oil and mineral industry.

SNAME Philadelphia Section Discusses Marine Applications For Heavy Duty Gas Turbines

Principals shown above at the Philadelphia Section meeting, left to right: (seated) **S.M. Kaplan, F.X. Critelli, A. Caruvana,** authors; **J.M. Ballinger,** coordinator; (standing) **H.T. McVey,** Section vice chairman; **T.J. Kavanagh,** chairman; **W.G. Neal Jr.** and **A.C. Brown,** executive committee.

The subject of the February meeting of the Philadelphia Section of The Society of Naval Architects and Marine Engineers was heavy-duty marine gas turbines.

Francis X. Critelli, U.S. Department of Commerce Maritime Administration, **Saul M. Kaplan,** and **Anthony Caruvana,** General Electric Company Gas Turbine Products Division, presented their paper titled "Heavy-Duty Gas Turbine Development Project."

The paper presents a general overview of the joint General Electric Company and Maritime Administration project to marinize the industrial regenerative gas turbine as a more economically and technically competitive form of propulsion power generation for ships of the U.S. merchant marine. The overview includes the logic for the initiation of specific development efforts, present status of hardware-related developments, and future potential for marine applications.

J.M. Ballinger, Sun Shipbuilding & Dry Dock Co., coordinated the meeting for the local Section.

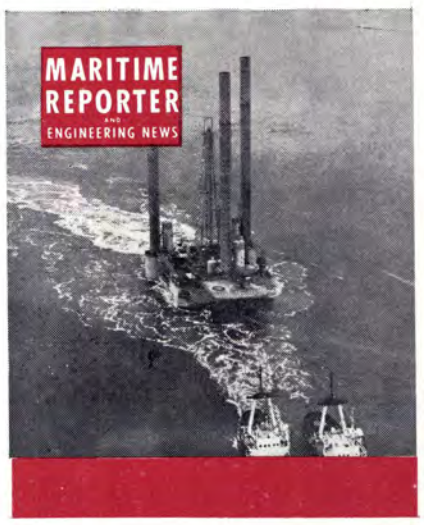
Discussers included **G.C. Swensson,** Sun Shipbuilding & Dry Dock Co.; **R.B. McFadden,** J.J. Henry Co., Inc., and **T. Radkevich,** Westinghouse Electric Corporation.

Combustion Engineering Names Six Vice Presidents

The appointment of a marketing and administration vice president and five regional sales vice presidents was announced by **John P. Tully,** vice president of sales and marketing for the C-E Power Systems Group of Combustion Engineering, Inc., Windsor, Conn.

Harold Massey Jr. was appointed vice president, marketing and administration, and **Weldon K. Combs, Russell H. Holm, Donald E. Lyons, Paul L. McGill** and **Theophilus A. Pierce Jr.** were appointed regional sales vice presidents.

Combustion Engineering's 1973 sales were $1,272,733,000. The company provides a broad range of energy equipment, including fossil fueled and nuclear steam generating systems, petroleum and gas production processing equipment, refractories, minerals, pollution control systems, screening equipment, building products, tempered safety glass, nuclear components, and designs petroleum, chemical and petrochemical process facilities.



advertise to thousands more marine buyers in the offshore market... and to the entire commercial marine field in MARITIME REPORTER/Engineering News

Let's face it... the offshore oil drilling market is a part of the marine industry. Drilling rigs, supply vessels, crew boats, research vessels, workboats, tugs, dredges, barges, etc.... are all designed by naval architects, constructed in shipyards and operated by vessel owners.

This is floating equipment... and the men who make the decisions and do the buying of all machinery and services are marine men, with marine problems and marine interests.

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The magazines referred to include... Offshore, Ocean Industry, Oceanology International and Offshore Technology, Seatrade, Marine Engineering/Log, Waterways Journal, Workboat, The Motor Ship, Marine Equipment News, Shipbuilding and Shipping Record, etc.

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MEMBER BPA
Business Publications Audit of Circulation, Inc.

Vancouver Shipyards Constructing Largest Building Berth In B.C.

By the end of this year, Vancouver Shipyards, North Vancouver, British Columbia, will have completed the largest shipbuilding berth in the province. The full size of the building berth when completed will be 600 feet by 120 feet and will give the yard the capability of building ships up to 50,000 deadweight tons, with beam mainly limited by the capacity of the Panama Canal.

The new berth and support facilities will be installed on six acres of land immediately adjacent to the present Vancouver Shipyards operations at the foot of Pemberton Avenue. The new facilities will cost approximately $3,000,000, and will increase employment by 150.

The vessels built at the yard to date have mainly been barges, tugs and small ferries. The new facilities will enable the yard to build much larger vessels, including deepsea tankers and cargoships, large ferries, large barges, and offshore oil drilling rigs.

Vancouver Shipyards moved in 1967 from a small yard in Vancouver to their new larger plant in North Vancouver. The first year, the yard was only engaged in repair work. However, a steel shop for new vessel construction was added in 1968. The first vessel constructed by the yard was completed in the fall of 1968, and the business has continually expanded since that date. On February 15, the tug Seaspan Crusader was delivered to her owners, and was Hull 47 built by Vancouver Shipyards.

Vancouver Shipyards Co. Ltd. and its associated company, Seaspan International Ltd., in the tug and barge transportation and marine salvage business, are part of the Genstar Limited Group of Companies. Genstar Limited manufactures and sells cement, building materials, chemicals and fertilizers, and is engaged in land development, housing, construction, tug and barge transportation, shipbuilding and ship repairs, and venture capital.

Sembawang Shipyard Names Ernest Ware General Manager

Ernest S. Ware

Ernest S. Ware has been appointed general manager of Sembawang Shipyard Limited, succeeding **R.A. Hooker.** Mr. **Ware** is on secondment from Swan Hunter (International) Limited of U.K., which had its management agency agreement with the Yard extended for an additional period of five years from November 30, 1973.

Prior to being appointed to this position, Mr. **Ware** was with the Cunard Steamship Company as technical manager responsible for the repair, maintenance and technical operation of passenger ships —including the Queen Elizabeth II —refrigerated cargoships, and containerships.

A marine engineer by profession, he started his career as an apprentice engine fitter in H.M. Dockyard, Portsmouth, England, in 1948. After over 10 years of seagoing experience up to chief engineer, he joined the Swan Hunter Group in 1966, and was sent to Malta Drydocks as ship repair manager.

In 1968, Mr. **Ware** was appointed marine manager with the Keppel Shipyard in Singapore—then under Swan Hunter Management—and he remained in that position until 1971, when he joined Cunard Steamship.

Mr. **Ware's** background of service in senior management positions in ship repairing establishments, as well as shipowners companies, equips him to provide a fuller service to the marine industry in Singapore.

Pott Industries Inc. Emphasizes Service To Offshore Drilling

Pott Industries Inc., St. Louis, Mo., has announced that it had disposed of its ownership in the Behm Companies of Osawatomie and Greeley, Kan., and Fab-Co Metals Limited of Sarnia, Ontario, to Gulf & Western Manufacturing Co. for an undisclosed cash sum. These companies were part of Pott's Metal Fabrication and Distribution Division.

Pott said that while these companies had combined sales and revenues of $4,961,000 in 1973 and were profitable, they did not fit into the company's long-range plan to concentrate primarily on marine-oriented businesses, with strong emphasis on marine services to the offshore petroleum industry, from which a better and more consistent rate of return on investment is expected.

Carboline Company Announces Heavy Duty Flake Glass Coating

The Carboline Company of St. Louis has announced the release of a new heavy duty flake glass polyester coating having excellent resistance to physical abuse, water and brine.

Carboglas 1678 is applied by spray in one coat at a thickness of 25 mils. The film contains a labyrinth of over 100 layers of overlapping platelets held in a tough polyester matrix. No primer is required.

The four outstanding features of Carboglas 1678 are resistance to impressed currents, abrasion and impact resistance, prevention of water penetration to the steel substrate, and low total applied cost.

Some of the uses for Carboglas 1678 are the protection of underground transformers, exterior of buried piping, tanks and other underground equipment. Also, for heavy duty marine applications such as barge bottoms, ships rudders and bulbous bows, traveling dam gates, splash zone of pilings, piers and legs of offshore drilling structures.

Technical information on Carboglas 1678 is available from Carboline Company, 350 Hanley Industrial Court, St. Louis, Mo. 63144.

Argo Marine Names Widak Houston Mgr.

Argo International Corp., Marine Division, has announced the advancement of **Michael D. Widak** from manager of operations and sales to branch manager of their Houston, Texas, warehouse and office.

Argo Marine is a prime supplier of mechanical and electrical equipment for the steamship industry, with branch offices across the United States and Europe. Argo also announced the advancement of **Edde W. Pabon** to electrical sales and **Jack A. Caravello** to mechanical sales, at their Houston office.

Crutcher Amends License Agreement With Brown & Root

Crutcher Resources Corporation, P.O. Box 3227, Houston, Texas 77001, has announced it has signed an amended license agreement with Brown & Root, Inc. on Brown & Root's rights to use CRC's automatic welding system in marine operations.

Don H. Hartmann, president of Crutcher Resources, said the amendments provided for a $200,000 minimum annual advance rental per barge and increased rental charges per weld, due to inflationary costs and increasing pipe wall thickness.

Mr. **Hartmann** said Brown & Root has committed to a six-barge program for 1974, which guarantees the company a minimum revenue stream of $1.2 million from Brown & Root. Crutcher will receive additional rental payments from each barge that generates revenues in excess of the $200,000 minimum advance.

The $1.2-million payment assures Crutcher Resources of an amount equal to approximately 200 miles of welding, which compares to 42 actual miles automatically welded in 1973.

DIESEL GENERATOR SETS

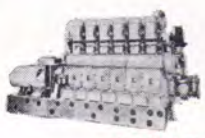
1

350 KW DIESEL GENERATOR SET

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

2

250 KW DIESEL GENERATOR SET



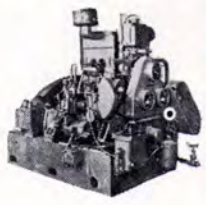
ENGINE: Enterprise 12 x 15 DSG-6 — 6 cyl. — 450 RPM crank No. 50J. GENERATOR: Westinghouse 250 KW—120/240 DC—1040 amps—450 RPM. Typical serial No. 3S-10P-913. Complete with switch gear.

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.

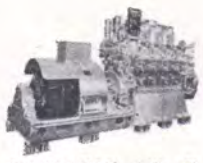
4



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.

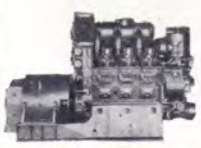
5



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. Stilll 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

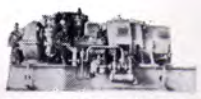
GENERATOR: 300 KW—240 VDC—1250 amps—1200 RPM. GEAR: 5286/1200—frame 6x15—serial 10A-2612-4. TURBINE: Frame C-325—225 PSI—397° TF—5286 RPM—Serial 10-A-2611-4. Wt. 16,700 lbs. —complete in original factory crate.

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.

12

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

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.

14

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

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.

16

TWO 538 KW WESTINGHOUSE T-2 AUX. GENERATORS

(COMPLETE)

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.

KNOWN 'ROUND THE WORLD

THE BOS

313 E. BALT

Main Office: (3

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

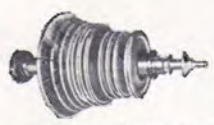
2 COMPLETE T-2 G.E. TURBINES

#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

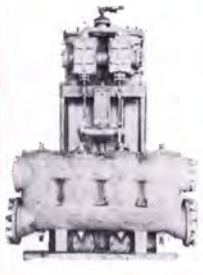
30

CARGO STRIPPING PUMPS

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 9'11½" — 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

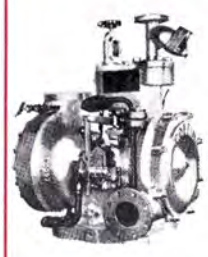
DAYTON-DAWD 2-STAGE FIRE AND BILGE PUMP

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

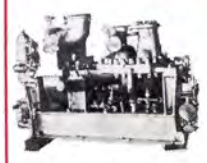
35



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**



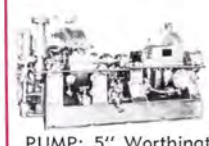
Worthington — drawing SL5043—425 GPM—1675' total dynamic head—5000 RPM 3-stage — double suction. Flanged 4½" inlet—4" outlet. Powered by Sturtevant steam turbine—282 HP—590 PSI. For Fletcher DD-445 Class Destroyers.

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.

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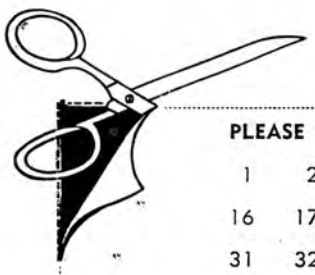

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Mobil Oil Retrofits Tankers With Coppus Inert Gas Systems

Coppus Engineering Corporation, Worcester, Mass., licensee of Fredriksstad Mek Verksted (FmV), announces the placement of an order by Mobil Oil for several FmV Inert Gas Systems to be retrofitted on Mobil ships now in operation. FmV Inert Gas Systems utilize scrubbed flue gas to maintain tank atmospheres at nonexplosive levels.

Inert Gas Systems are universally recognized as the safest method of preventing explosions on board oil tankers. IMCO (International Maritime Carriers Organization) recommends that Inert Gas Systems be installed on all ore/oil, LNG and crude oil carriers above a specified size.

Responding to this recommendation, Norwegian authorities have passed laws making Inert Gas Systems mandatory on all new major Norwegian-flag oil carriers in this class, constructed after January 1, 1974. Other nations are expected to take similar legislative action in the near future.

Mobil joined Shell, Esso and Gulf as the fourth major oil company to retrofit carriers with the FmV Inert Gas System. Fifty systems have been installed or are on order by these companies. Worldwide, FmV and its licensees have delivered or booked orders for a total of more than 250 FmV Inert Gas Systems.

In addition to representing FmV in the United States, Coppus is also the exclusive worldwide licensee for Golar-Vent Central Gas Freeing Systems. These joint arrangements have permitted Coppus to apply its years of marine engineering experience in the development of the Coppus Combined IG/GV System. Patents are pending on this Combined Inert Gas/Golar Vent System, which is available exclusively from Coppus Engineering, worldwide. The Coppus Combined IG/GV System not only assures tankers of maximum safety while loading, unloading and under way but also provides rapid gas-freeing of tanks through cargo lines. Tanks can be gas/freed for man entry—inspection, cleaning, maintenance, etc.—in hours rather than days. Savings resulting from this speedup in turnarounds can be significant when you consider per day cost for tankers in the 200,000-dwt range are estimated at $35,000 to $50,000.

During its 65-year history, Coppus Engineering has established a network of offices and representatives through the world and is now represented in more than 100 cities and 57 countries.

For further information about Coppus marine products and systems, write to Coppus Engineering Corporation, 344 Park Avenue, Worcester, Mass. 01610.

Royal Viking Line Names Oslo Director

Royal Viking Line A/S, Norwegian-flag world cruise line, has named **Erland M. Raastad** managing director in the Oslo headquarters.

Based in Oslo, Royal Viking Line A/S is the parent company of Royal Viking Line, and handles all operations for the three-vessel fleet —Royal Viking Star, Royal Viking Sky and Royal Viking Sea.

Royal Viking Line, headquartered in San Francisco, Calif., is international marketing center for the organization. It is headed by **Warren S. Titus,** president.

Mr. **Raastad,** whose appointment was effective March 1, has held management positions with several corporations in the United States and Europe, serving most recently as president of the Chrysler Corporation in Austria.

Born in Lunnar, Norway, he obtained his B.S. degree in business administration in 1962 from the University of Wyoming. He attended high school in Norway, graduating in 1952. Mr. **Raastad** is a former director of the Norwegian Track and Field Association and has been a member of the Norway-America Foundation Finance Committee, the Shipping Club of Norway and the Kiwanis Club.

Ryan & Walsh Form Stevedoring Firm For Mid-Gulf Coastal Area

Formation of a new stevedoring operation in the mid-Gulf coastal region has been announced by the two participating companies. To be known as Ryan-Walsh Stevedoring Company, Inc., it is the joint enterprise of Ryan Stevedoring Co., and Walsh Stevedoring Co., both with main offices in Mobile, Ala., and each having deep-rooted association with shipping activity in the Gulf area.

Gregory L. Leatherbury has been named president of the new company, **E.B. Peebles Jr.,** senior executive vice president, and **William D. Walsh** and **James A. Crosland** executive vice presidents.

Ryan-Walsh will maintain executive offices at Mobile, with other offices in New Orleans, La., Gulfport and Pascagoula, Miss., Pensacola and Panama City, Fla., and Georgetown, S.C.

Container Services International, Southern Steamship Agency, and Southern Marine Services, Inc., all former subsidiaries of Ryan, become subsidiaries of the newly merged company, according to the announcement.

Kings Point Reports Its Scholars Program 'Progressing Well'

After two years of operation, the Kings Point Scholars Program, which offers outstanding seniors at the United States Merchant Marine Academy at Kings Point, N.Y., the opportunity to research a subject of current interest to the maritime industry, is "progressing well," according to a status report issued by the Academy.

Under the auspices of the Maritime Administration's National Research Center, the program calls for an in-depth study to be submitted at the end of the semester by each participating midshipman.

The 1972 Scholars examined the timely topic of liquefied natural gas. Their studies were issued to interested parties in Government and private industry, where they met with favorable comment.

Specifically, the studies and their authors were **Mark E. Prose,** "Liquefied Natural Gas and World Energy Resources"; **James R. Van Langen,** "Liquefied Natural Gas Liquefaction Plants and Associated Shoreside Operations," and **Robert Curt** and **Timothy Delaney,** "Marine Transportation of Liquefied Natural Gas."

The recently issued report further revealed that the studies completed by the 1973 Scholars are presently being edited and prepared for publication by the NMRC. They will be published within the next few months.

The studies and authors are **William Bailey,** "Biological Treatment of Shipboard Sanitary Waste Water"; **Joseph Crisante,** "New Applications of Non-Metallic Matter Aboard Ship"; **David Hicks,** "Application of Super-Conducting Electrical Machinery to the Propulsion Systems of Commercial Vessels," and **Michael McCauley,** "Deep Ocean Mining in Legal Perspective."

The Kings Point Scholars are selected from a group of exceptionally capable midshipmen. They carry out a stimulating and challenging research and study program, assisted by faculty members well acquainted with the particular areas of study.

The 1974 Scholars are progressing well on their projects, according to the recently issued report. The midshipmen and their topics are **Thomas Kazusky,** "Linkage for Rough Water Tug-Barge Combinations"; **Patrick Moloney,** "Submarine Tanker Concepts and Problems," and **Jeffrey Thornton,** "Eutrophication: The Role of Chemical Nutrients in Algae Growth."

All participants in the Kings Point Scholars Program are holders of Academic Stars for Excellence and have completed a year of training aboard ship, carrying out a work-study program that brought them to ports in various parts of the world.

The United States Merchant Marine Academy is a Federal institution, part of the Maritime Administration of the U.S. Department of Commerce.

Mercantile Marine Engineering Building Graving Dock For Large Ships Calling At Antwerp

In view of the ever-growing sizes of ships and the decision of the Antwerp Port Authorities to make the river Scheldt navigable for vessels of 125,000 deadweight tons, the Mercantile Marine Engineering & Graving Docks Co. N.V. Antwerpen, with an eye to the future, is building a sixth private graving dock capable of taking the largest vessels calling at Antwerp.

The laying of concrete has reached the finishing stage, and it is hoped that the dock will be commissioned in September 1974.

This all-concrete dock with pressure-relieved floorslabs and sidewalls has a permanent drainage system which leads the soil water into a pumpwell which is emptied at intervals. All around the dock, a sheet-piling curtain has been drawn into the clay layer about 79 feet below the ground level for reducing the rate of ground water seeping into the drainage system.

Depending on the size of the ship, the new dock can be filled in approximately two hours and emptied in about two hours and 40 minutes. Six capstans, each with an 8-ton pull and two 12-ton windlasses will be installed at the dock's head to assist vessels coming in for repairs.

The new dock will be equipped with coupling boxes for ballast, high pressure and drinking water, compressed air, oxygen, acetylene, electricity and telephones.

The new dock will be lighted with 89 projectors placed in the bottom of the walls with 10 pylons around the dock for overhead lighting.

Showers and hygienic facilities will be installed for the use of the ship's crew and for the workers. A lift will be installed for material and to save worker's time in entering and leaving the facility.

The graving dock presently under construction at Mercantile Engineering & Graving Docks Co., Antwerp. It is expected the dock will be operational in September.

Temporarily, the dock will be serviced by two cranes, one of 100 tons and one of 25 tons, with heavier equipment to be installed at a later date.

The yard designed and built the dock gate, which weighs a total of 330 tons. Shoring of the vessels will be done automatically, using a system which was also designed and built by the yard and which has proven to give satisfactory service after many years of use in the company's other drydocks.

Mercantile Marine Engineering & Graving Docks Company is represented in the United States by Marine Repair and Construction Corporation—International, 17 Battery Place, New York, N.Y. 10004.

Crichton And Turnbull Named To MacGregor Centrex Board

Sir Andrew Crichton

D.E. Turnbull

Continuing the expansion of its European operations, MacGregor announces the appointments of Sir **Andrew Crichton** and **D.E. Turnbull** to the board of MacGregor Centrex Limited. Based near London Airport, MacGregor Centrex is the parent company of the Group's U.K. operating companies, which are members of the International MacGregor Organisation, world leaders in the supply of ship-access equipment.

Joining MacGregor as a non-executive director, Sir **Andrew** was chairman of Overseas Containers Ltd., from its formation in 1966 until 1973. He is a member of the U.K. Chamber of Shipping Council, vice chairman of the Port of London Authority and a member of the National Freight Corporation. His other directorships include P & O, Hodge Finance Ltd., Jessel Trust ltd., Southern Ferries Ltd., and he is a member of the Court of the Chartered Bank.

Previous to his appointment as commercial director of MacGregor Centrex Ltd., Mr. **Turnbull** was a senior executive of the P & O Group, which he joined in 1952. After working for the Group in the Far East, he returned to the U.K. in 1965, and became development manager of the P & O General Cargo Division. He has a B.A. degree in economics from St. John's College, Cambridge.

NYPE NEWLY ELECTED OFFICERS: Newly elected officers, directors and committee chairmen of The Society of Marine Port Engineers, New York, N.Y., Inc. attended the first meeting of the Society under this leadership at the Downtown Athletic Club on February 15. Pictured above, left to right: (seated) second vice president, **Thomas Jones Jr.,** American Export Lines; president, **Joseph Thelgie,** Marine Transport Lines; first vice president, **William P. Towner,** American Bureau of Shipping; and chairman, board of directors, **Louis V. Minett;** (standing) chairman, Program and Entertainment Committee, **Edward English,** Atlantic Repair Co., Inc.; chairman, Papers and Technical Committee, **John Antonetz,** Texaco Inc.; chairman, Finance Committee, **Harry Ottaway,** Francis A. Martin & Ottaway, Inc.; and chairman, Steering Committee, **Emory Kerr,** Marine Transport Lines.

Hellen Speaks On Finland's Future Plans To Compete For Building Of Large Tankers

Pictured during the luncheon meeting at the Hotel Biltmore in New York City, left to right: **Nils Hellen,** guest speaker; **Bo Long,** Finnair's Eastern Region's manager in the United States, and **T.I. Kala,** Consul General of Finland.

Nils Hellen, managing director of the Association of Finnish Metal, Engineering and Shipbuilding Industries, recently visited the United States by invitation of the Finnish American Chamber of Commerce.

Mr. **Hellen,** in his address as guest speaker to American businessmen and editors at the Biltmore Hotel in New York, illuminated the present position and importance of the shipbuilding and engineering industries in the economy of his country, particularly emphasizing their competitiveness on the world markets.

The structure of Finnish industrial production has changed essentially in the last two decades. Other branches of the industry have caught up with the traditional processing of wood. Shipbuilding and engineering, mechanical as well as electrical, can claim the most spectacular expansion. In regard to the number of employees and the value of production, the metal branch is now Finland's number one industry. Its share of total exports is 27 percent, second to 50 percent for forest products.

In international scope, Finnish industrial enterprises are comparatively small. Due to their limited capacity, they do not strive to compete in terms of quantity. They concentrate instead on specialization and advanced technology. Fields in which Finnish know-how has acquired a high reputation are, for instance, metallurgical processing and manufacture of a wide range of woodworking machines and materials-handling equipment.

This purposeful course of specialization is also typical of Finnish shipbuilding. Finland ranks 15th in the world's shipbuilding statistics. The size of the biggest ships so far ordered from Finnish shipyards is 150,000 deadweight tons, but many special ships have been built or are under construction which, in their own category, are entitled to the description "biggest in the world."

Large-scale expansion and conversion of major Finnish shipyards have moved the nation forward a full generation in only a few years, was Mr. **Hellen's** report.

Giant semisubmersible oil drilling rigs, operating at unprecedented depths of 1,000 meters are part of a new look in Finnish shipbuilding production. Shallow-draft oil tankers, ranging from 150,000 to 300,000 tons are going into production in 1974. And Finnish technicians are pressing research to maintain the nation's world supremacy in new types of icebreaking and Arctic vessels.

Finnish yards have strengthened their grip on the world market for luxury cruise vessels in the 1970s.

Vessels of this type recently completed in Finland include deliveries of a new fleet of three ships to the Royal Viking Lines, plus three to the Royal Caribbean Cruise Line, which operates out of Miami. All are in the over 20,000 tonnage class.

At the beginning of 1974, Finnish shipyards reported a backlog of orders for 63 vessels on their books.

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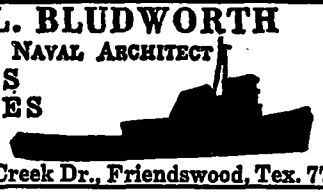

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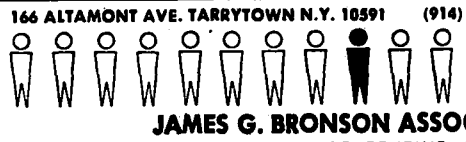

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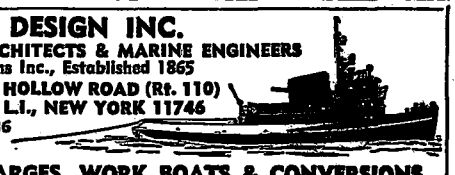

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New $30-Million Graving Dock For Electric Boat Division

General Dynamics has announced the award of an approximate $30-million contract to Morrison-Knudsen Co. Inc. of Boise, Idaho, to construct a pontoon graving dock at its Electric Boat Division's shipyard in Groton, Conn.

The new graving dock, believed to be the first of its kind ever built, was developed by Electric Boat Division engineers.

Approximately 583 feet long and 102 feet wide, the graving dock is part of a new submarine fabrication and assembly facility being built at the Groton shipyard and can be used for launching and drydocking submarines. A pontoon launching platform, within the graving dock, will be used to launch submarines.

North and south of the graving dock basin will be pier walls, each more than 100 feet wide, where ship construction can be completed prior to launching. The new facility, when fully operational in about two years, will enable General Dynamics to construct the largest submarines presently contemplated and will substantially increase its submarine production capacity.

Detailed engineering work on the new facility is being done by Ralph M. Parsons Company of Los Angeles, Calif.

In addition to the new dock, the company is also building an enclosed submarine fabrication and erection area directly east of the graving dock. That building will be 490 feet high, 260 feet wide, and will provide year-round protection for submarine construction. Work is being performed by Gilbane Building Company of Providence, R.I., under a $14-million contract.

Sectionalized construction of the submarines will be accomplished in the enclosed manufacturing areas. The sections will then be moved from the concrete assembly platform and onto the pontoon launching platform.

General Dynamics currently has contracts to build 18 of the high-speed 688 (Los Angeles) Class submarines for the Navy.

Arnessen Marine Relocates Office

Egil Arnessen, president, has announced the relocation of Arnessen Marine Systems, Inc. to 500 Fifth Avenue, New York, N.Y. According to Mr. **Arnessen,** the steady increase in the firm's business made it necessary to enlarge its staff, resulting in the need for larger facilities.

Arnessen Marine Systems, Inc., represents well-known manufacturers of marine equipment, i.e., Siemens A.G., Anschutz & Co., Hatlapa, Svenska Flaktfabriken, Kelvin Hughes, A/S Atlas, Demag-Lauchhammer, as well as representing the Blohm & Voss Shipyard for new construction and turbines. In addition, Fuji Electric Co. recently appointed Arnessen to represent their Marine Division for the purpose of marketing their equipment for installation on board ships being built in Japan.

Arnessen Marine Systems, Inc., a member of The Arnessen Corporation Group of Companies with affiliated offices in London and Tokyo, is managed by **Joachim Werner,** vice president.

Rothschild Washington Stevedoring Company Appoints P.C. Bradfield

Rothschild Washington Stevedoring Company has announced the appointment of **Peter C. Bradfield** as resident manager, Tacoma, Wash,. for Rothschild.

Mr. **Bradfield** has been with Rothschild Washington Stevedoring Company for approximately five years and has been stationed in Tacoma for the past four years. Prior to joining Rothschild, Mr. **Bradfield** sailed as a deck officer with Lykes Bros. and American Mail Line. He is a graduate of California Maritime Academy, having graduated at the top of his class.

Mr. **Bradfield** is a local resident of Tacoma and active in the Tacoma Propeller Club.

Rothschild is the pioneer stevedore in Tacoma, having operated an office in the port for over 75 years.

H.O. Penn Machinery Appoints Roy Johnson

Roy Johnson

Roy Johnson has been appointed advertising and promotion manager for the H.O. Penn Machinery Co., Inc. and its Pennco Industrial Division, according to an announcement by **Robert Cleveland Jr.**, president. Mr. **Johnson** formerly held the position of assistant advertising and promotion manager.

In his new position, Mr. **Johnson** will be responsible for all of H.O. Penn's and Pennco Industrial's advertising and promotional campaigns.

H.O. Penn Machinery Co., Inc. is the Caterpillar dealer for southeastern New York State, Long Island, and all of Connecticut. Pennco Industrial is the dealer for Towmotor lift trucks.

Levingston To Build Another Drilling Rig For Norwegian Group

K/S Norway Jackup, a group which includes Odfjell Drilling & Consulting Co., Fearnley & Eger Chartering Co., and Skips A/S Kim, has awarded a contract valued at more than $18 million to build a second Class III drilling platform to Levingston Shipbuilding Co., Orange, Texas.

The group recently ordered another such rig from Levingston.

Santa Fe International Reports Earnings Up

Santa Fe International Corporation, Orange, Calif., has reported earnings for 1973 of $10,871,691 or $1.28 per share.

Comparable earnings in 1972, excluding an extraordinary gain of $458,081, were $7,713,876 or 99 cents per share, fully diluted.

President **E.L. Shannon Jr.** said 1973 revenues amounted to $199,150,685, compared with $166,148,273 the preceding year.

The fourth quarter produced earnings of $3,415,051, or 40 cents a share, on revenues totaling $58,737,637. Comparable earnings in the 1972 quarter were $2,381,130 or 29 cents per share, fully diluted, on revenues of $41,904,020.

Earnings per share have been adjusted to reflect a 100 percent stock dividend paid November 1, 1973, to shareholders of record October 1, 1973. They are based on an average of 8,481,748 shares outstanding in 1973, and 7,429,010 in 1972.

Both drilling and construction operations contributed to the increase in company earnings. Mr. **Shannon** stated. In both, he said, rising profits resulted from greater utilization of equipment, as well as an increase in the number of units operated.

During the past year, nine new land rigs and a new offshore unit were responsible for a large share of the increase in drilling revenues. The reel barge and associated vessels in the Gulf of Mexico acquired by the company last May contributed to an increase from construction operations.

Mr. **Shannon** said the current growth trend is expected to continue as additional new equipment starts producing revenues. Drilling division units scheduled for delivery in 1974-75 represent an added investment of approximately $46,000,000. A further increase in revenue will come from the $22,000,000 Choctaw II, new semisubmersible pipelaying barge nearing completion in a West German shipyard. This vessel is scheduled to start laying pipe in the North Sea in April.

Backlog of work for the company's construction division on December 31, 1973, totaled approximately $130,000,000 as compared with $76,000,000 a year earlier.

President Appoints Adm. Rea Commander Third USCG District

President **Nixon** has nominated Rear Adm. **William F. Rea III** to command the Coast Guard's Atlantic Area and Third District, headquartered on Governors Island, N.Y., with the rank of vice admiral. Pending Senate confirmation, Admiral **Rea** will relieve Vice Adm. **B.F. Engel,** who will retire in June after 36 years of service. Admiral **Engel** has been the Area and District Commander since June 1970.

Admiral **Rea,** 55 years old and a specialist in enforcing Coast Guard shipboard and personnel safety standards for the U.S. merchant marine, was in charge of the New York Coast Guard Marine Inspection Office at Battery Park from 1964 to 1967. He is now Chief of the Merchant Marine Safety Office at Coast Guard Headquarters in Washington, D.C.

A 1941 graduate of the Coast Guard Academy in New London, Conn., Admiral **Rea's** career highlights include a one-year stint in South Korea, training that country's Coast Guard; a two-year assignment as Commander of the Ninth Coast Guard District on the Great Lakes, for which he won the Meritorious Service Medal, and his present job, for which he was awarded the Legion of Merit in December of last year.

RAdm. William F. Rea III

The Atlantic Area Command spans some 2.4-million square miles of land and water stretching from the Canadian border to the Gulf of Mexico and westward to Grand Teton National Park in Wyoming. Some 19,000 men are on duty within the Area's 39 states. The District covers about 42,000 square miles of land and water in all, or parts of seven mid-Atlantic states from Vermont to Delaware, with some 3,700 men assigned. Normal duties include search and rescue at sea, offshore fishing patrols, combating water pollution, oceanographic research, maintaining aids to navigation, and others.

American-Standard Power And Controls Names Ronald Gaylord

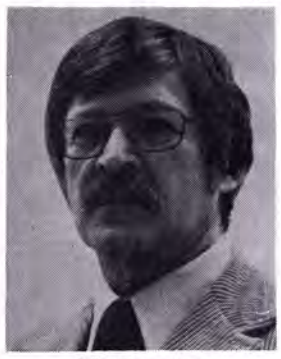
Ronald L. Gaylord has been named director of the general sales force of the American-Standard Power and Controls Group, headquartered in Dearborn, Mich., according to **H.J. McBride,** vice president of the Group. He was formerly field sales manager of the organization.

The general sales force, also headquartered in Dearborn, is responsible for sales to general industry of the full line of pneumatic and hydraulic cylinders, valves and related devices made by the WABCO Fluid Power Division in Lexington, Ky. It also handles sales to general industry of all models of standard and custom-designed heat exchangers produced by the American-Standard Heat Transfer Division in Buffalo, N.Y.

Mr. **Gaylord** has an extensive background in industrial selling, and prior to his association with the general sales force, had served as Western regional manager for the WABCO Fluid Power Division. Prior to that, he held West Coast sales management positions with Bellows-Valvair and the Parker Hannifin Corporation. He attended Kent State University and is a native of Akron, Ohio.

In addition to the Heat Transfer and Fluid Power Divisions, the American-Standard Power and Controls Group includes the American-Standard Industrial Products Division in Dearborn, and Industrial Products, Ltd., Bramalea, Ontario.

Alco Engines Division Promotes Three



J.R. Donovan

V.E. Varno

E.T. Mosley

The promotions of **J.R. Donovan** to unit and parts representative, **V.E. Varno** to application engineer, and **E.T. Mosley** to manager of technical publications were announced by **John V. Sylvester**, president, Alco Engines Division, Auburn, N.Y.

Alco Engines Division, White Industrial Power, Inc., is a subsidiary of White Motor Corporation. The company manufactures heavy-duty diesel engines, now marketed under the name Power Boss, and used extensively as marine propulsion units, stand-by and primary power sources, railroad locomotive traction units, and a variety of commercial and industrial applications.

SNAME Los Angeles Section Hears Paper On 'Carbon Fiber For Marine Structure'

Shown above during the February meeting of the Los Angeles Metropolitan Section of SNAME, left to right: **Robert E. Apple,** chairman public relations for the Section; **Harry Levy,** secretary-treasurer; **Charles K. Pollock,** vice chairman; **Frank Nickels,** chairman of the Section, and **Richard Dougherty,** author.

The fourth meeting of the season for the Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers was held on February 14, 1974, at the Princess Louise Ship Restaurant in the Port of Los Angeles. The meeting was well attended and was preceded by a dinner and social hour.

An extremely interesting paper was presented by **Richard H. Dougherty** of the Elec-Trans Co. The paper was entitled "Carbon Fiber for Marine Structure."

Carbon fiber is made from a yard fiber of a hydrocarbon compound such as rayon, nylon, etc. The method of fabrication is to pyrolize the yard under vacuum, remove the hydrogen constituents, leaving the carbon as a filament. The problem now is to find a suitable matrix material for the carbon fiber. Glass composites are common in boat construction, and the common matrix is polyester resin. Another commercial field that is successfully producing a cheap and superior matrix material is the electrical insulation field. The material is plastic impregnated hydraulic cement and the impregnant is a modified polyester. The cement is a compounded one and the aggregate is ceramic.

The successful application of this material in a maritime vehicle would completely change naval tactics and make a good forward step in international trade, commerce and travel.

FMC Appoints Barkan Director Atlantic District Office

Joseph G. Barkan, a veteran of more than 25 years in various segments of the maritime industry, has been appointed Director of the Federal Maritime Commission's Atlantic District, it was announced by Commission Chairman **Helen Delich Bentley.**

A native of New York and a licensed public accountant, Mr. **Barkan** has held management positions with American steamship companies and marine-related industries. He has served as president of Universal Terminal Stevedoring Company and American Export Isbrandtsen Lines, Inc. (now American Export Lines, Inc.), and as the executive vice president of Prudential Lines (now Prudential-Grace Lines, Inc.).

In addition to his management experience, Mr. **Barkan** worked for approximately 10 years as Comptroller of the Atlantic Coast District of the U.S. Maritime Administration.

A graduate of New York University, where he majored in accounting and finance and received his B.S. degree, Mr. **Barkan** worked as an accountant in private industry until February 1943, when he took a position with the General Accounting Office (GAO). At GAO he was placed in charge of marine auditing and was later promoted to Director of Audits, serving in that capacity until 1951, when he left GAO to accept a position with the Maritime Administration.

British Shipowner Organizations Merge

The Chamber of Shipping of the United Kingdom and the British Shipping Federation are to unite to form one national organization representing the interests of British shipowners.

The new organization will be called the General Council of British Shipping. Final approval for its creation was given by the annual meeting of the Chamber of Shipping. It had already been endorsed by the BSF's annual meeting.

The intention is that the General Council of British Shipping will, in due course, take over the functions of the Chamber and the Federation. But it will take some time for the details of its organization and constitution to be worked out. Meanwhile, both the Chamber and the Federation will continue to operate in their present form. In the coming months, the General Council will be primarily concerned with the evolution of the new structure and with major issues affecting the industry as a whole.

The target date for it becoming fully operative is March 1, 1975.

J. Lindsay Alexander, chairman of Ocean Transport & Trading Ltd., newly elected president of the Chamber of Shipping, will be the first president of the new organization.

Six Offshore Supply Vessels To Be Built In Rhode Island Yard

Blount Marine Corporation of Warren, R.I., has been awarded a contract by National Boat Corporation of Wilmington, Del., and Houston, Texas, to build six 190-foot by 38-foot Support Ships to be used primarily in the offshore oil industry. Ships of this type are employed for supplying and servicing the full scope of offshore oil activity from submerged oil field exploration to anchoring and shifting producing oil rigs. Each vessel, for instance, can carry 600 tons of drilling pipe, 850 tons of drilling mud and cargo, or 6,000 gallons of water. Each vessel will be powered with two 1,200-hp diesel engines, two 75-kw diesel electric generators and a 300-hp bow thuster. Air-conditioned quarters for 12 men will be furnished. The vessels will be built to U.S. Coast Guard and American Bureau of Shipping inspection for ocean service.

The first vessel is scheduled for a late fall delivery, with the others following at 75-day intervals. A production line is being set up at the Warren shipyard for the progressive construction and outfitting of three vessels simultaneously. It is planned to construct each vessel upside down, to be launched deck down, and after righting, the prefabricated superstructure and machinery will be positioned.

A training program is being planned in conjunction with the Governor's Office for Manpower to instruct 25 new employees in the use of automatic welding techniques and related skills. Training for these positions will be available to women as well as men. Tests conducted at Blount Marine show excellent welding aptitudes for women. In World War II, it was "Rosie the Riveter." At Blount Marine, in the crusade for more energy, it will be "Wendy the Welder."

Blount Marine has, in the past 10 years, emerged as a predominant builder of passenger and ferry vessels in the United States. One year, this Rhode Island yard designed and built 60 percent of all such craft over 65 feet turned out in the entire United States. The energy crunch, however, prompted company officials to turn its engineering and production toward the increase of energy. At the same time, increasing its gross product and job potential.

Some 15 years ago, Blount pioneered a series of smaller offshore oil vessels for major oil field operators which are now in service off Louisiana, Texas, and California.

It is anticipated that the sixth supply ship may well be the 200th vessel in the Blount roster. A value of the National Boat contract is set at $8,000,000.

At the present time, the Blount shipyard is in the last stages of completing the $3,000,000 hospital ship for Saint John's Guild of New York.

Lockheed Oil Recovery Device Passes Tests Off California Coast

Another step to control the effects of major open-seas oil spills was taken recently when a Lockheed-built experimental oil skimmer and its Coast Guard escorts rode through a storm off the northern California coast.

This demonstration of survival capability may have been the final open-sea test for the High-seas Oil Recovery System protoype built by Lockheed Missiles & Space Co., Sunnyvale, Calif., under U.S. Coast Guard contract.

The successful demonstration points the way for the Coast Guard to control significant oil spills, such as the Torrey Canyon tanker grounding on the English Coast, the Santa Barbara oil-well blowout, and the 1970 collision of two tankers in San Francisco Bay. With an effective oil-containment barrier and a rapid oil-recovery device such as the Lockheed-built unit to work inside the barrier, a major portion of the spilled oil could have been picked up before it could damage beaches, marine life, and water craft.

Environmental protection is a Coast Guard primary mission today, and the service is devoting much time, money, and many men to this difficult task. A device like the High-seas Oil Recovery System can provide it with another effective tool to keep the environment clean.

Based on Lockheed's patented commercial Clean Sweep oil-water separator, the high-seas unit is designed to clean up oil spills in offshore waters and to do so under adverse sea conditions.

During the survival test, the unit was towed for four hours at speeds to 10 knots in a sea state five—imposing conditions well above the test requirements. The test flotilla experienced winds up to 40 knots, swells to 12 feet and waves to four feet. Observers said the machine rode the storm-stirred seas like a water bug.

Lockheed test manager **Charles F. Scharfenstein Jr.** said the high-seas Clean Sweep wave response was excellent, and the machine was a stable platform with a dry deck except for spindrift from breaking seas.

First sea trials to test maneuverability, durability and stability of the machine began in September, when it was trucked to the Coast Guard base on San Francisco Bay and successfully put through its paces inside the bay and outside the Golden Gate. However, the waters outside the bay were unusually calm through the fall months, and the survival testing finally was shifted to the fishing and lumber port of Eureka.

The bay tests included work with a Coast Guard-developed barrier system designed to contain and concentrate oil spilled in offshore areas.

Coast Guard specifications called for the air-transportable high-seas unit to work effectively in seas with average waves of five feet, random waves to 10 feet, and a two-knot current and in winds up to 20 knots.

The machine's oil-recovery capability was successfully tested last summer in a huge wave-generating tank at Battelle Northwest at Richland, Wash. The machine recovered up to 1,000 gallons of oil per minute under some conditions.

Heart of the recovery unit is a paddle-wheel disc-drum, mounted crosswise between four inflatable pontoons that form a catamaran and support the aluminum hull. Within the hull is the diesel engine that powers the disc-drum, the oil transfer pumps, the air pump to inflate the pontoons, and the electrical control system. For assured flotation each inflated pontoon has a backup inside that is inflated simultaneously.

As the disc-drum revolves in the oil-water mix, oil adheres to the discs (while the free water runs off) and is carried past wipers that direct the oil to the hollow axle. Then the oil is pumped from the machine to storage containers.

The machine is designed to be carried to an airport near an oil-spill site, be assembled (requires about an hour) and be towed or carried on a buoy tender to the work area. Through use of a 300-foot umbilical, the unit can be operated and refueled from the support vessel.

First Offshore Oil Discovery Made In Canadian Arctic Sea

Imperial Oil Ltd., 70 percent owned by Exxon Corp., has announced the first oil and natural gas find in the Beaufort Sea of the Canadian Arctic.

The company said it has a three-zone oil and gas discovery from a drilling platform on a temporary artificial island offshore from the Mackenzie Delta area. It is about 300 miles east-southeast of the major oil fields at Prudhoe Bay, Alaska.

Imperial did not disclose flow rates or the thickness of the zones. But it said it will plug and abandon the discovery and will build a permanent artificial island as a base for future drilling to delineate the oil and gas accumulation. This is a normal procedure when an apparent commercial discovery is made offshore.

Canadian oil analysts were enthusiastic about the discovery. One said the find "increases the probability of more oil offshore the Mackenzie Delta."

An earlier well drilled by Imperial in the Beaufort Sea at a cost of more than $9 million was abandoned last December because of abnormally high formation pressures that made further drilling dangerous. That well, the Immerk B-48, had been intended to go to 15,000 feet, but reached only 8,883 feet before abandonment. Only minor gas shows were encountered at that depth, the company said.

Imperial said earlier that the latest well, the ADGO F-28, has turned up a "significant thickness" of gas-bearing sands at 7,000 feet. The well has reached a depth of 10,528 feet.

The well flowed oil in two drillstem tests conducted in a sandstone reservoir at about 5,650 feet, Imperial said. It added that the well also flowed oil on a drillstem test from the lower part of another sandstone reservoir at about a depth of 4,130 feet and flowed gas on two drillstem tests in the upper portion of the same reservoir.

Gas flowed to the surface in two final drillstem tests in a third reservoir at about 3,400 feet, Imperial said.

Israel To Upgrade Container Handling At Cost Of $7 Million

The Israeli Ports Authority plans to spend around $7.05 million during the coming fiscal year on additional container-handling equipment, according to reports from Tel Aviv. A total development budget of $21.15 million also calls for expansion of facilities at Haifa for bulk loading and discharging of chemicals, the construction of new deepwater piers at Ashdod, an increase in handling capacity at Eilat, and general adaption of the ports to the container and roll-on/roll-off (ro/ro) ships.

The Ports Authority also sees a rise of one-million tons in the volume of cargoes moved this year, and consequently intends to increase total handling capacity from 8.89-million tons to 10-million tons during 1974-75.

Central Marine Names Pilcher And Williams

Killian Huger, president of Central Marine Service, Inc., New Orleans, La., has announced the recent election of **Nelson M. Pilcher** as vice president, operations, and the appointment of **Wesley L. Williams** as sales engineer.

Mr. **Pilcher** will be responsible for the company's three towboats and numerous chemical barges operating on the lower Mississippi, its barges and tugs in oilfield wireline service, and its large fleet of oil, deck and spud barges available for lease to the oil and construction industries.

The position of sales engineer is a newly created one in which Mr. **Williams** will assist oil and construction industries in fulfilling their requirements for leased marine equipment. Formerly with Camco, he is an engineering graduate of Northwestern Louisiana University.

Lufkin Industries Transfers Elliott To New York Area

Ben Elliott

Lufkin Industries, Inc. has announced the transfer of **Ben Elliott,** chief experimental engineer at the home plant in Lufkin, Texas, to the New York City area sales office in Edison, N.J. He will be a sales representative for Lufkin's commercial and marine gears.

Mr. **Elliott** joined Lufkin in 1946 after receiving his B.S. degree in mechanical engineering from Texas A&M University in 1940 and then working in the aircraft industry for five years.

He is a member of NAPE, TSPE, SESA, ASTM and ASLE professional organizations.

MarAd Approves Sale Of Constitution

The sale of the 1,000-passenger vessel Constitution—idle since 1968—to a foreign owner has been approved by the Maritime Administration. The transfer application stated that the ship will go to Atlantic Far East Lines for operation under the Panamanian flag. The 23-year-old vessel was purchased for $2.5 million and, under terms of the approval, American Export Lines must deposit this sum in its capital reserve fund for future construction.

The Independence, also owned by American Export Lines and laid up since 1968, was sold to Atlantic Far East Lines, a subsidiary of the C.Y. Tung Group. However, the transfer cannot take place without legislative clearance. The sale price would be $2.9 million if the legislation permitting operation of the Independence under foreign flag is passed, or $2.5 million if the legislation is not passed and the passenger ship must be sold for scrap. The sale of the two American Export liners would leave only the United States—in lay-up at Hampton Roads—to be disposed of, which would bring American-flag passenger service on the Atlantic to an absolute end.

The United States was acquired by the Government more than a year ago from United States Lines. Efforts to reactivate the vessel have failed, and signs were increasingly clear that the ship would wind up in the Government's reserve fleet.

The active U.S.-flag passenger fleet is now down to the Mariposa and the Monterey off the West Coast.

Olga Kottmeier Named To Drew Chemical's New Greek Subsidiary

A.G. Giudice, executive vice president, Drew Chemical Corporation, 701 Jefferson Road, Parsippany, N.J., a subsidiary of United States Filter Corporation, has announced the formation of Drew Ameroid International, with a regional office located in Athens, Greece.

This office will be responsible for all the overseas marine administrative operations of Drew Chemical Corporation. It occupies a five-story building on Makka Street, which contains a major computer system to expedite the worldwide accounting functions of the subsidiary. It will be supervised by **Olga Kottmeier,** who has been appointed administrative vice president of Drew Ameroid International.

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 wastewater treatment markets and also provides management, engineering, design and planning services for energy and environmental systems.

65-Foot USCG Workboat Uses JacuzziJet Propulsion

The new 65-foot workboat shown on trials attained a speed of 26 mph.

A new 65-foot Coast Guard vessel has been developed as a prototype workboat for such navigational work in U.S. harbors as tending buoys.

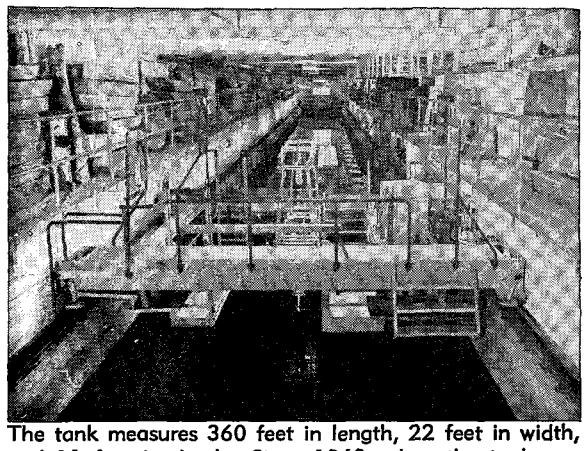
The craft, built by Alumnaship, Inc. of Jeanerette, La., is powered by three 12V-71T Detroit Diesels and JacuzziJet 20YJ propulsion systems. It is the first of a contemplated fleet of such vessels for the U.S. Coast Guard. The boat is equipped with a two-ton crane, and has attained a trial speed of 26 mph.

The continuing trend toward water-jet propulsion is a result of extensive military experience with the JacuzziJet, as it has proved itself as a propulsion system which is reliable under difficult conditions. The Jet drives have been used in all types of workboat applications as they have not only demonstrated savings in maintenance, but have provided efficient propulsion, maneuverability and shallow water capabilities.

For additional information, write to Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Ark. 72203.

Threescore And Ten And Doing An Excellent Job

The ship model towing tank at the University of Michigan is 70 years old this year. It is one of a very few in the world built that long ago and still in use. During its 70 years' history it is conservatively estimated that from 1,500 to 2,000 models were built and tested. Since 1960, when the tank was extensively modernized, more than 400 models have been tested. Most of this work was done for private industry and includes hundreds of seagoing and river barges, tugboats, yachts, containerships and tankers. Seakeeping tests of drill rigs, dredges, and tug-barge combinations have been carried out as well.



The tank measures 360 feet in length, 22 feet in width, and 11 feet in depth. Since 1960, when the tank was extensively modernized, more than 400 models have been tested.

The development of large bulbous bows for tankers and full-bodied ships was originated at the Michigan tank in 1963. Special skegs for seagoing barges to provide directional stability in hawser tow were developed in this tank. Model tests of the new Delta Queen propelled with a stern paddle wheel were accomplished at Michigan. It is interesting to note that the actual model paddle wheel used in these experiments was built and tested here in 1910-15.

Models are normally constructed of wood; however, both glass and wax models have been used. Models up to about 25 feet in length are constructed for resistance and propulsion tests.

This tank, 360 feet long by 22 feet wide by 11 feet deep, is equipped to do resistance, propulsion, seakeeping and maneuvering tests of many types of craft.

During its long history, many hundreds of students have been educated and trained in ship model experimentation, as well as being employed on projects in the tank as research assistants.

Syncrolift Elevator Drydock Expansion Completed At Singapore Shipbuilding Facility

The Singapore Shipbuilding and Engineering Ltd. Syncrolift is shown prior to its recent expansion. At 3,600-long-tons capacity, it is one of the largest marine elevator drydocks in Southeast Asia. The vessel at right is berthed on the direct-side transfer area, part of the yard's extensive transfer network.

Expansion has been completed on one of Southeast Asia's largest marine elevator drydocks at the Singapore Shipbuilding and Engineering Ltd. facility.

Pearlson Engineering Co. of Miami, Fla., designers of the original dock which has been in operation for a year, said the 100-by-20-meter enlarged platform became operational in December, with a new lifting capacity of 3,600 long tons.

The original design for the Syncrolift marine elevator drydock and ship transfer facility at Singapore had provided for expansion to its present size, according to **Raymond Pearlson,** inventor of the system now in use or under construction at 93 shipyards in 41 countries.

The overall shipyard complex at this natural deepwater shelter was coordinated by Singapore Shipbuilding and Engineering Ltd. The four-year-old 30-acre yard employs 1,000 designers, engineers, technicians and workers in its ship-repair and new construction complex.

The firm specialized in building fast-strike Naval craft in the 350-ton-displacement range and has launched 96 vessels to date. The yard fabricates subassemblies under cover, which are erected on rolling cradles. When ready for launch, the vessel is transferred to the Syncrolift platform for "controlled" launching.

The yard reports that the risks involved in sliding ships downhill on old-styled timber tracks are no longer necessary, and the expense and maintenance of launch ways has been eliminated.

For drydocking, the platform is lowered much like an elevator by electrically powered and synchronized mechanical hoists to a predetermined depth. The vessel is floated over the submerged platform and cradle, which are then raised to meet the hull. Remote-controlled blocks are then moved into position, after which the platform is raised to yard level.

The hull is then inspected and work to be done is evaluated. If extensive, the ship on its rolling cradle—equipped with special seawater submersible, sealed bearing wheels—can be moved ahead or to either side on the rails of the transfer network to an open or covered shore berth, as required.

This transfer technique immediately frees the lifting platform for the next drydocking. With the Syncrolift, vessels can be raised or lowered at a speed of 30 centimeters per minute. This, combined with an efficient transfer system, permits the yard to handle several vessels in the course of a day.

The docking platform, as originally installed, was 60 meters long and 20 meters wide, with a lifting capacity of 2,230 long tons. Its original eight main lifting beams, which were retained, are of fabricated steel, averaging two meters in depth. Total weight of the original platform was about 500 tons.

Expansion was designed into the Syncrolift and provided for the addition of 10 hoisting units to the original 16, and the subsequent lengthening of the platform to 100 meters.

To keep the original as well as the expansion construction and installation costs to a minimum, local materials and labor were used whenever possible. The hoisting equipment and electrical controls for this installation were manufactured in the United States by Pearlson Engineering Company, which provided all necessary design drawings and construction plans.

Special Syncrolift hoisting units, electrical control center and components designed by Pearlson Engineering, comply with the standards of the American Bureau of Shipping and Lloyd's Register of Shipping, and are manufactured in both the United States and Europe. Applying maintenance procedures recommended by Pearlson, the life expectancy of the system should exceed 40 years.

Marine Square Club To Hold 46th Annual Dinner-Dance In New York On April 20th

On Saturday, April 20, 1974, the Marine Square Club will hold its 46th Annual Dinner-Dance in the Grand Ballroom of the Hotel Roosevelt at Madison Avenue and East 45th Street, New York, N.Y.

The reception starts at 7:30 p.m., with dinner following at 8:30 p.m.

Dress is formal, and the tickets are $25 per person, including gratuities.

The net proceeds for this dinner-dance will be used for the scholarship fund of the New York State Maritime College.

The chairman for the dinner-dance is **James Bergstrom,** who can be reached at (212) 953-6258. Tickets for the dance may also be obtained from **Wilbur Stiles,** (212) 532-9414.

UNDER WAY AT JEFFBOAT: The bow of the new overnight passenger steamboat being built by the Delta Queen Steamboat Co. as a sister ship to the Delta Queen is taking shape at Jeffboat, Inc., Jeffersonville, Ind. The $15.5-million steamboat will go into operation in 1975. It will include 220 staterooms and will accommodate 400 passengers in lower berths. Features of the boat include a swimming pool on the top deck, a sauna, four restaurants, a cinemascope movie theater, individually controlled sound and communications facilities in each room and four passenger elevators. The all-steel boat will be 379 feet long, with a breadth of 68 feet. It will rise 52 feet above the waterline, and it will carry a crew of 125. The boat will be powered by two 1,000-hp steam engines which will turn the boat's paddle wheel on the stern. Yes, it will have a steam calliope.

Phila. Section SNAME Annual Dinner-Dance To Be Held May 11th

The Philadelphia Section of The Society of Naval Architects and Marine Engineers will hold its 24th Annual Spring Dinner-Dance on May 11, 1974, at the Marriott Motor Hotel on City Line Avenue, Philadelphia, Pa.

The affair will be held in the luxurious Commonwealth Ballroom, part of the Marriott's Convention Center. Featured will be the big band sound of **Al Raymond** and his orchestra.

Members and guests of the maritime industry and SNAME are invited to attend. The cost is $15 per person.

A block of rooms is being set aside for out-of-town visitors. For reservations to be guaranteed, arrangements should be made two weeks prior to the scheduled date by contacting the Marriott Motor Hotel, City Line Avenue, Philadelphia, Pa. 19131, Attention: SNAME Reservations Desk.

Tickets are available by contacting **John Hofstetter**, c/o I.T.E. Imperial 1900 Hamilton Street, Philadelphia, Pa. 19130.

A.P. Moller Appoints C. Rentz-Petersen Managing Director

A.P. Moller, Copenhagen, has announced the appointment of **C. Rentz-Petersen** as managing director.

Mr. **Rentz-Petersen** joined A.P. Moller in 1933 and worked in various departments. In 1942, he was appointed charterer in the tanker department. In 1968, Mr. **Rentz-Petersen** was named to head the tanker department, and a year later was appointed assistant director.

The new position involves frequent business trips to large international oil and shipping companies, and to various organizations and unions where he is a board member.

Mr. **Rentz-Petersen** represents Danish Shipping and A.P. Moller in INTERTANKO, TOVALOP, IMCO, and the International Chamber of Shipping.

SNAME Chesapeake Section Hears Paper On MarAd Pollution Abatement Program

Pictured at the SNAME Chesapeake Section February meeting, left to right: (standing) **John Nachtsheim,** moderator, MarAd; **Patricia McGovern,** George G. Sharp, Inc.; **John Horton,** general chairman, 1974 SNAME Annual Spring Meeting; **Phillip Eisenberg,** president, SNAME; **Mrs. George Steinman;** Captain **Steinman,** author, MarAd; (kneeling) **Donald Roseman,** discusser, Hydronautics, Inc.; **Seth Hawkins,** Section chairman, and **Walter Chappel,** author, MarAd.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers held the fifth meeting of its program on February 7, 1974, at the Walter Reed Hospital Officers' Club, Washington, D.C.

Following the social hour and dinner, which were enjoyed by approximately 106 members and guests, chairman **Seth Hawkins** opened the meeting by welcoming those in attendance and especially noting that the president of SNAME, **Phillip Eisenberg,** was also in attendance. Next, he commented on the "incredible success" of the Sailing Yacht Symposium at the Naval Academy on January 19, 1974, sponsored by the Chesapeake Section under the leadership of Capt. **Richards Miller,** USN (ret.). Reports indicated that over 650 persons attended the meeting.

A special program was provided by **John Horton,** general chairman of the SNAME Annual Spring Meeting which will be held May 22-24, 1974, in Chicago. Mr. **Horton** presented a slide show describing the theme of the meeting, "Domestic Shipping Program," and in addition described a special and distinct "Woman's Program," which will be provided to all the ladies in attendance.

The moderator for the technical program was **John Nachtsheim,** Assistant Administrator for Operations, Maritime Administration, who described the technical paper "The MarAd Pollution Abatement Program" as an outstanding compilation of information on all facets of the pollution abatement program. He also commended the entire MarAd Environmental Activities Group for this excellent overall coordination effort they provided in support of MarAd's tanker shipbuilding program. He introduced the co-authors, Capt. **George Steinman,** USCG (ret.), and **Walter Chappel,** of the Environmental Activities Group, Maritime Administration.

Captain **Steinman** presented the first half of the program and one of his first comments was that the title of the paper will be changed to "MarAd Pollution Abatement Program in Relation to the 1973 IMCO Marine Pollution Convention." The paper presents an overview of the Maritime Administration basic goals and missions in the measures taken to abate and control pollution from ships, especially tankers. The main thrust of the agency-wide program is in the prevention of oil pollution through cost effective measures which would maintain the competitive position of the U.S. merchant fleet. The MarAd pollution abatement program is based on the achievement of our national goals of the elimination of the intentional pollution by ships by 1975, and the minimization of accidental pollution by the end of the decade. Emphasis is placed on reaching these goals through international agreements. The impact of the 1973 IMCO Marine Pollution Convention is analyzed for economic and environmental factors.

Prepared discussions of the paper were presented by **D. Roseman,** Hydronautics; **E. Scott Dillon,** MarAd (ret.); **J. Mackenzie,** J.J. Henry Co., Inc.; **W.O. Gray,** Exxon; Capt. **H. Bell,** USCG; **R. Kiss** and **A. Landsburg,** MarAd.

As a result of this meeting and discussion, the membership gained a considerable insight into the international pollution abatement program and its far-reaching effects.

Kings Point Sponsors Guest Lectures On Offshore Oil Drilling

A special elective course related to the burgeoning offshore oil-drilling industry and featuring guest lectures by prominent members of the field, will be offered at the U.S. Merchant Marine Academy, Kings Point, N.Y., on April 8, 1974.

The offshore field has undergone rapid growth in the last year, with Kings Point graduates in demand as mates and engineers aboard drilling ships and their supply vessels. The Academy's Department of Nautical Science is sponsoring the elective course to help interested midshipmen train for this field, which remains a viable means of offsetting the effects of a depleted supply of land-based oil reserves.

The schedule of topics and speakers is:

April 8—"History of the Offshore Industry," Comdr. **P. Nazzaro,** USMMA.

April 22—"Design and Operation of Jack-Up Rigs," **Del McCord,** Penrod Drilling Co.

April 29—"Design and Operation of Semi-Submersible Rigs," **Enoch Dawkins,** ODECO, Inc.

May 6—"Building Offshore Platforms and Pipe Laying," Capt. **A. C. Peters,** Brown & Root.

May 13—"Diving for Offshore Work," **J. Johnson,** Oceaneering, Inc.

May 20—"Tug Requirements for Offshore Rigs," Capt. **L. Westdyck,** Smit International.

June 3—"Logistic Support Vessels," Capt. **William Mayberry,** OMSA.

June 10—"Personnel Requirements and Job Descriptions," representative of Reading & Bates Co.

MMA Receives Surplus Navy Tug And Exxon Education Grant

Maine Maritime Academy recently became the recipient of a tugboat which was released as surplus by the U.S. Navy. The 600-ton tug arrived at MMA from Newport, R.I., and will be incorporated into the Academy's training program after some overhauling and refitting in preparation for Coast Guard inspection.

The tug is in the YTM Class (Yard Tug Medium), which is most commonly used in docking operations in harbors. The vessel measures 100 feet in length and 26 feet in width, and has a 1,000-horsepower single-screw diesel electric engine. It has a maximum cruising speed of 12 knots, although normal speed would be around 8 knots.

The Academy plans to use the tug as a replacement for the Pathfinder, a yard patrol boat which the Academy has used the past few years in the small boat, piloting and marine training program.

The addition of the new tugboat to the Academy's program should help to open new areas of study, training and operations in the small boat and tug-towboat practical training.

The tug will be docked in Castine across from the T/V State of Maine.

Maine Maritime Academy was also a recent recipient of a $1,500 education grant from the Exxon USA Foundation, Houston, Texas. The grants, awarded to selected educational institutions throughout the nation, are designed to support a variety of programs such as scholarships, research, purchase of equipment and other projects to promote excellence in education.

The $1,500 check from Exxon was presented to Adm. **E.A. Rodgers,** Academy Superintendent, by **E.W. McNeil Jr.,** administrative manager of Exxon's marine department in Houston, at MMA's recent annual Faculty and Staff Symposium. Mr. **McNeil,** who was one of several oil company executives who addressed the gathering, also visited with several senior midshipmen about possible employment placement with Exxon.

Admiral **Rodgers** stated that the money will be used to support the Academy's Tanker Simulator Training Program, and in the general development fund.

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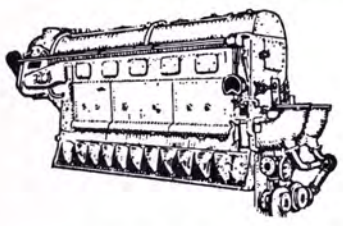

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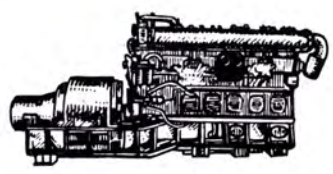

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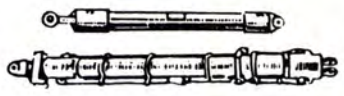

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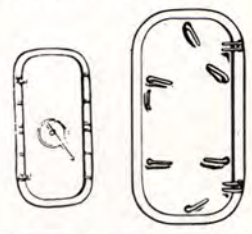

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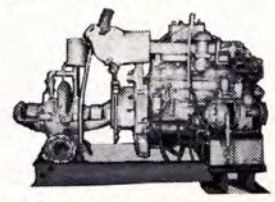

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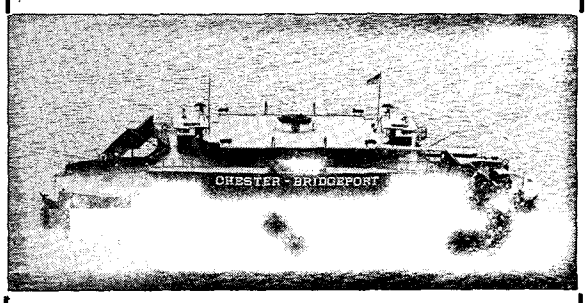

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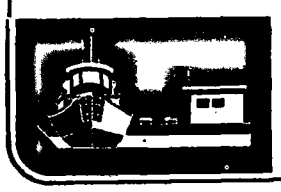

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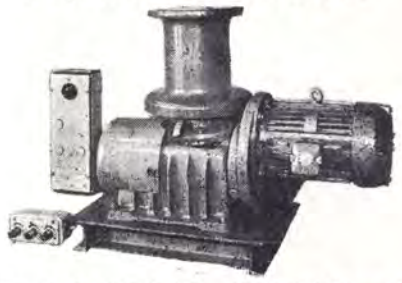

10 H.P.—220/440/3/60—1750 R.P.M.—Marine type reversing controller. Barrel diameter—10"—2½" Flange. Height between flanges 12".

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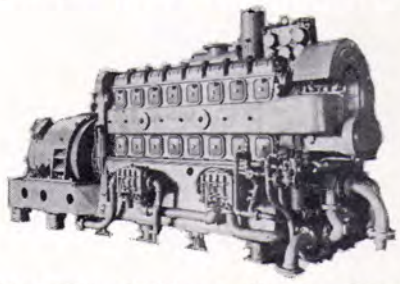
G.M. 8-268A
200 KW A.C.
DIESEL GENERATOR SETS



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

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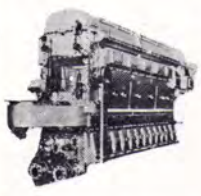
38D8-1/8
OP DIESEL



1800 HP @ 800 RPM—2-cycle—8½ x 10—air starting. Complete with operating gauge board. Very clean condition.

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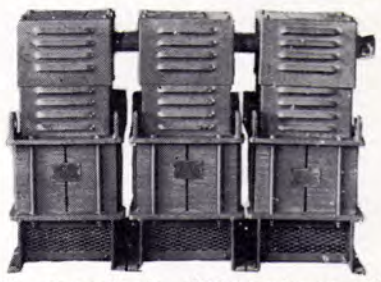

15 KVA—3 per bank—450 V primary—177 volt secondary. $295.00 PER BANK

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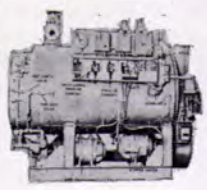
OUTPUT
2600 LBS/HOUR



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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26"x66"	320 lbs.
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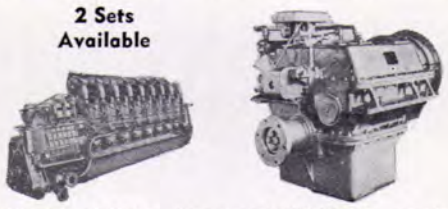

ENGINE: GM 16-278A—Vee type 8¾"x10½"—air starting—heat exchanger cooled and complete with filters, strainers, engine operating panel board and all accessories. GEAR: Falk—3.05:1 ratio—vertically offset in line.

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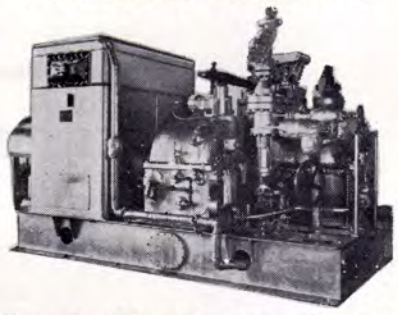
GEARED TURBO GENERATOR SET

Type FN3-FN20—565#—850°G



We offer with ABS or Lloyd's certificate. Our reconditioning of this unit is fully guaranteed on a money-back basis. Has been through G.E. Engineering and the last stage has been rebladed with new style blading. All diaphragms re-machined.

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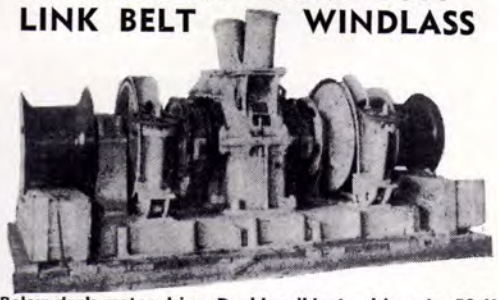
LINK BELT WINDLASS



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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
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721

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
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

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

PUMPS
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
Columbian Rope Company, 309 Genesee Street, Auburn, N.Y. 13022
Du Pont Co., Room 31H1, Wilmington, Delaware 19898
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Wall Rope Works, Inc., Beverly, N. J. 08010

RUBBER BEARINGS
Johnson Rubber Co. (Marine Div.), 111 Vine Street, Middlefield, Ohio 44062

RUDDER ANGLE INDICATORS
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

SANDBLASTING EQUIPMENT
Pauli & Griffin Co., 285 Lawrence Avenue, South San Farncisco, Calif. 94080

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

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

SHAFT REVOLUTION INDICATOR EQUIP.
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913

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., 691 New Dock St., Terminal Island, Cal. 90731
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

SHIP BROKERS
Agemar, P.O. Box 1465, Maracaibo, Venezuela
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
Oakamith 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

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
Bellard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Bellard 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 Bazan, 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
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
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
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
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
Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

SHIP STABILIZERS
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SHOCK CORD
Wm. B. Bliss, Jr. & Co., Inc., 381 Park Avenue So., New York, N.Y. 10016

STEAM GENERATING EQUIPMENT
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Combustion Engineering, Inc., Windsor, Connecticut 06095

STEERING SYSTEMS
Wm. E. Hough Co., 1125 P N.W. 45th St.. Seattle, Wash. 98107

SWITCHBOARDS
Hose McCann Telephone Co., Inc., 524 West 23 St., N.Y., N.Y. 10011

TOWING—Vessel Chartering, Lighterage, Salvage, etc.
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, West End Ave., Oyster Bay, N.Y. 11771
James Hughes, Inc., 17 Battery Pl., New York, N.Y. 10004
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
Moran Towing & Transportation Co., Inc., One World Trade Center, Suite 5335, New York, N.Y. 10048
Puerto Rico Lighterage Co., P.O. Box 1072, San Juan, P.R. 00902
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y. 11214

VALVES AND FITTINGS—Hydraulic—Safety Flanges
Dover Corp. / Norris Division, P.O. Box 1739, Tulsa, Okla. 74101.
Fabri-Valve Co., 2100 N. Albina Ave., Portland, Oregon 97208
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn, N.Y. 11231
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027

WATER POLLUTION CONTROL
Babcock & Wilcox Co., 161 East 42nd St., New York, N.Y. 10017
Colt Industries, Water & Waste Management Operation, Beloit, Wisc. 53511
Keene Corporation, Fluid Handling Div., Cookeville, Tenn. 38501
Koehler-Dayton, Inc., P.O. Box 309, New Britain, Conn. 06050

WEATHER ROUTING
Weather Routing Inc., 1415 Boston Post Road, Larchmont, N.Y. 10583

WELDING EQUIPMENT
Unitor Ships Service, Sorligaten 8, P.O. Box 2814 K, Oslo 5, Norway

WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Bethlehem, Pa. 18016

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

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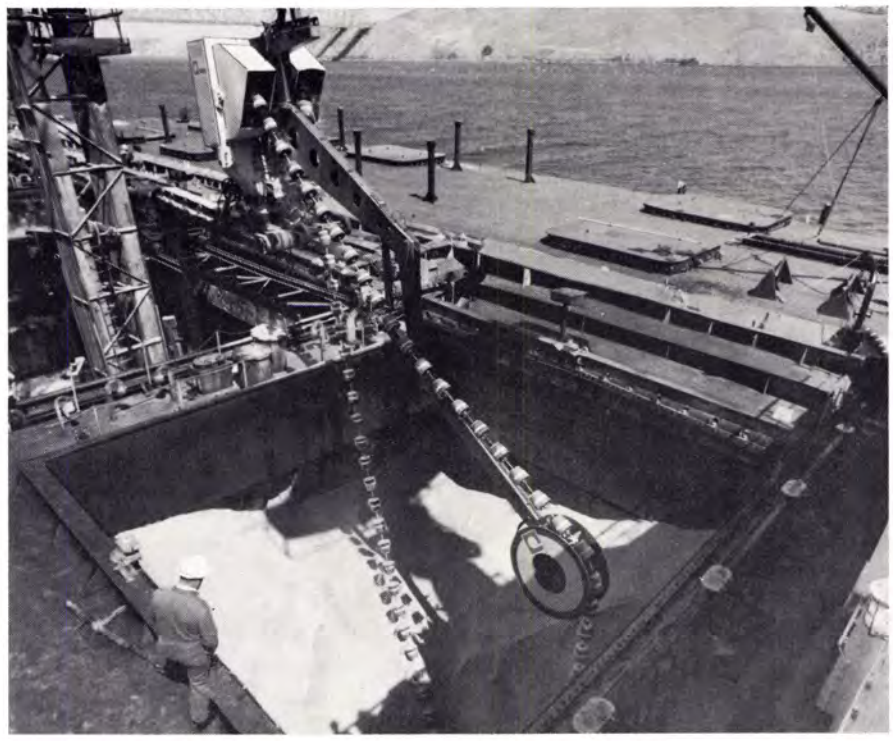

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* PATENT NO. 3,653,930

International sales offices and plants: Amercoat Europa N.V., The Hague, Holland; Amercoat of Canada Limited, Burlington, Ontario, Canada; Amercoat Mexicana S.A., Mexico City, Mexico; Amercoat Japan, Ltd., Yokohama, Japan; Amercoat Do Brasil, Sao Paulo, Brazil.