MARITIME
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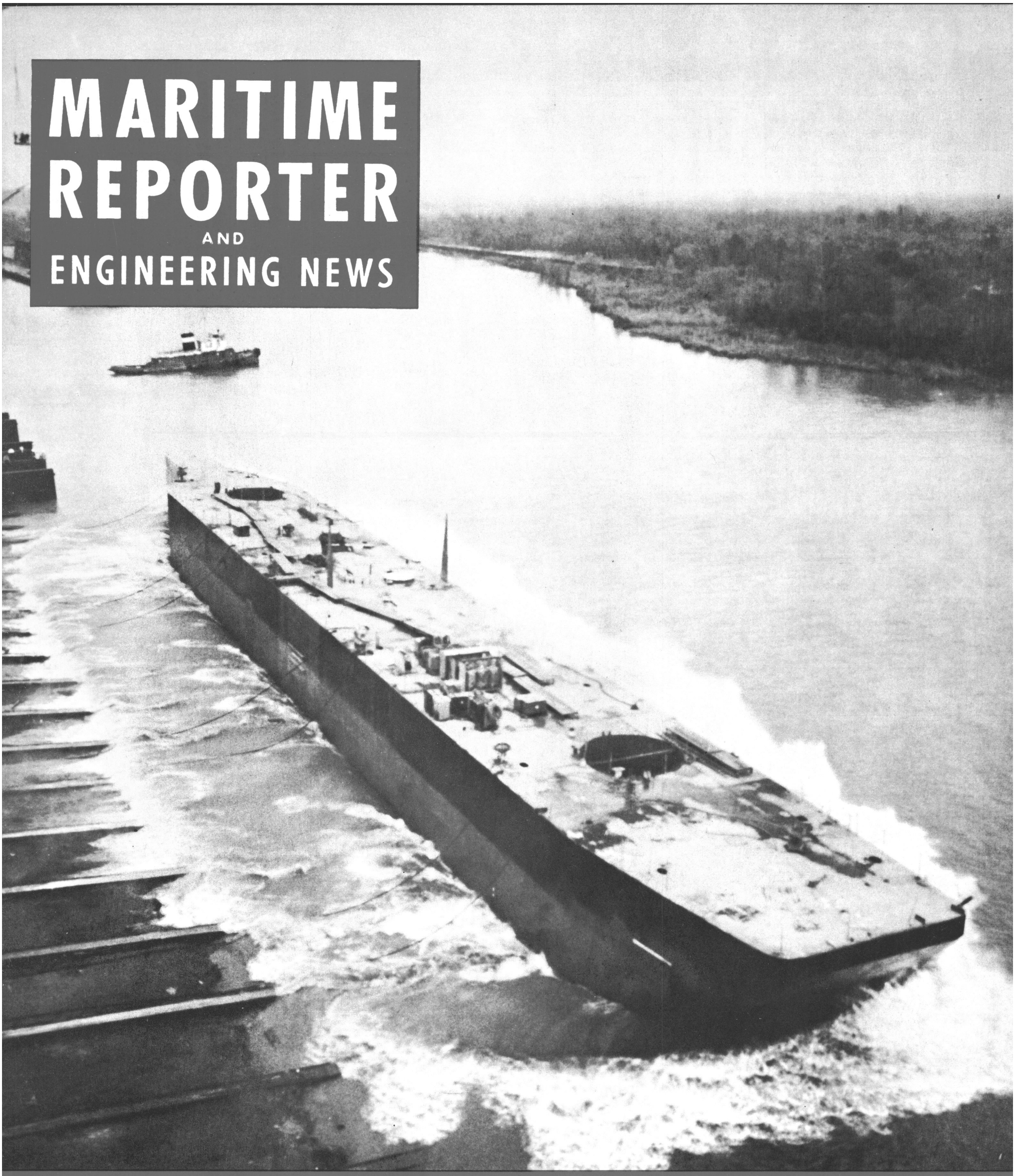
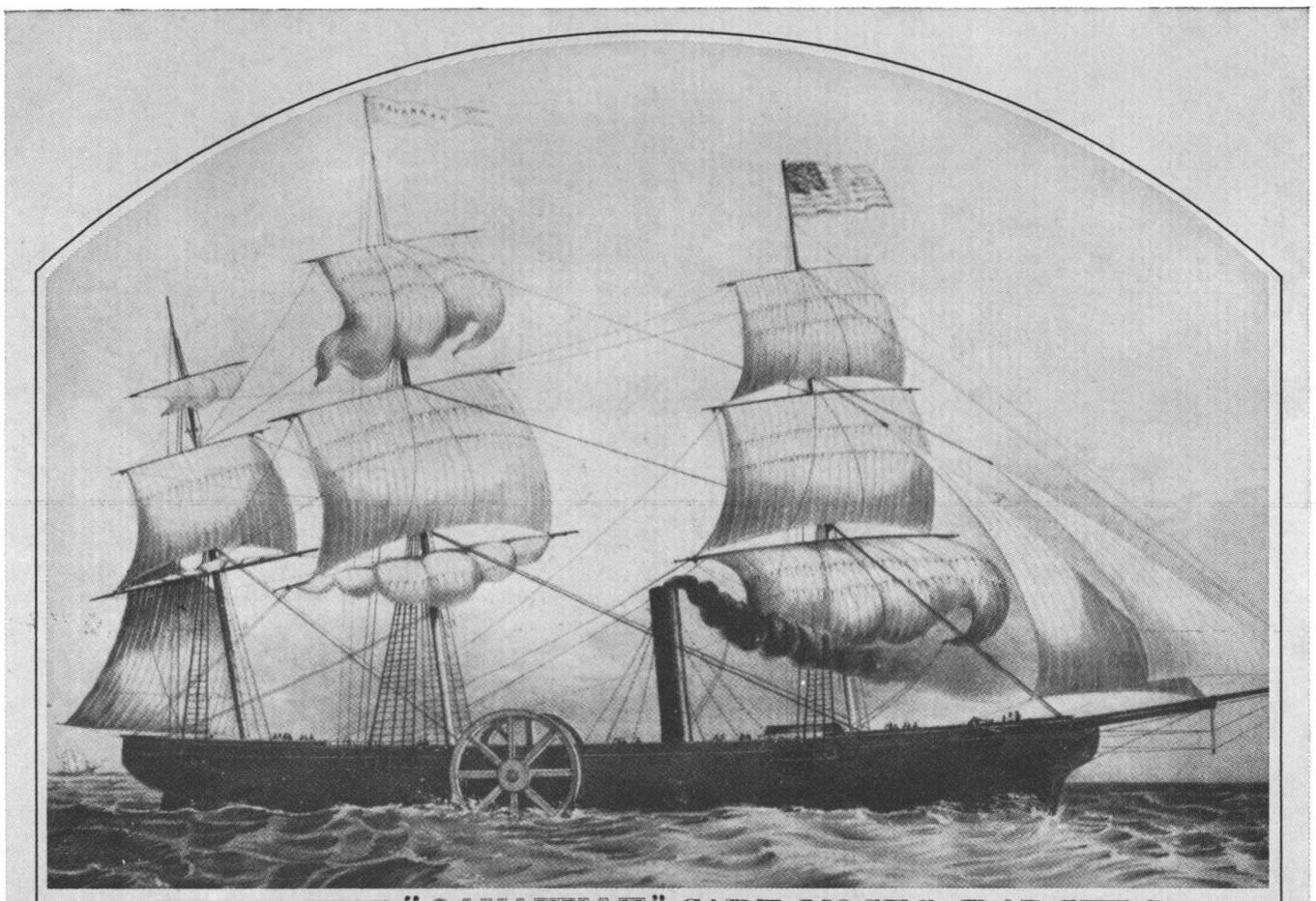
AND
ENGINEERING NEWS



Bethlehem Beaumont Launches Port Hull For $25-Million Super Semisubmersible Rig

(SEE PAGE 6)

MAY 1, 1973



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Australians To Build 100,000-Dwt Ships

A firm commitment to have Australian shipyards build 100,000-deadweight-ton ships as quickly as possible has been announced by the Australian Government.

The Australia High Commission reported that Australia's Minister for Transport **Charles Jones** had invited the country's two largest coastal carriers, the state-owned Australian National Line, and Broken Hill Proprietary (BHP), Australia's largest industrial group with a major interest in steelmaking, to cooperate in choosing a standard design for 100,000-ton bulkers, and even larger ships.

The Minister said that the Government wanted to have continuity of orders reaching Australian yards for large bulkers to carry ore and other bulk cargoes.

He added that two more foreign-flag bulk carriers would be allowed to operate on the Australian coast, bringing the number of foreign-registered vessels to four. These will eventually be replaced by Australian-built and owned tonnage.

Title XI Approved For Six Oceangoing Anchor Handling/Supply Ships

The Title XI mortgage and loan insurance application filed by the Hartford National Bank and Trust Co., Hartford, Conn., has been approved in principle by the Maritime Administration. The application is in connection with six oceangoing anchor handling/supply vessels, each to be 200 feet long, have a 40-foot beam and a 15½-foot draft. J. Ray McDermott & Co., Morgan City, La., will build four of the vessels, to be 7,040 hp each, at a total cost of $9.6 million, and Southern Shipbuilding Corp., Slidell, La., will build two of 6,600 hp each at a total cost of $4.5 million. The vessels will be operated by Offshore Logistics, Inc., Lafayette, La.

Barges Unlimited Asks For Title XI To Build 3 Hopper Grain Barges

Barges Unlimited, Inc., Portland, Ore., has again applied to the Maritime Administration for Title XI. This application is in connection with three hopper grain barges, to be built at a total cost of $1 million, that are to be used on inland waterways in Washington and Oregon. Zidell Explorations, Inc., Portland, is the builder.

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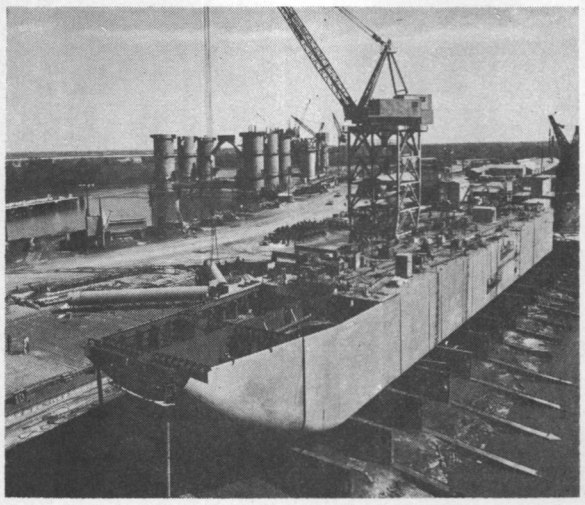
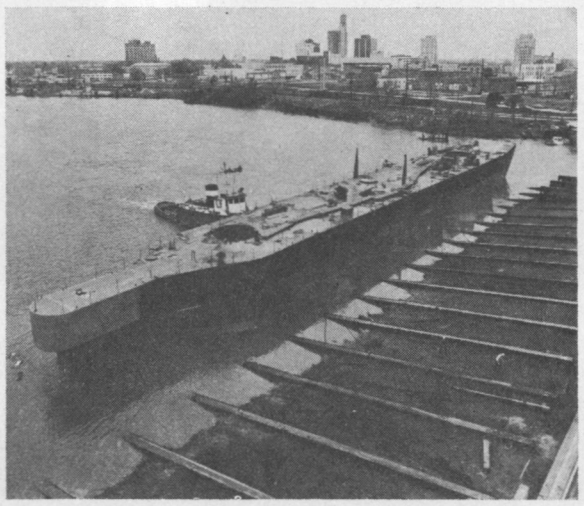
HUD

Starboard Hull Follows Port Hull Launching For $25-Million Rig At Bethlehem Beaumont





The starboard hull for the Zapata Ugland is shown above on the Beaumont yard building ways. In the left center, foreground, is the semisubmersible Pacesetter I, built for Western Company of North America. Beyond the Pacesetter I is the Zephyr I, a semisubmersible under construction for Storm Drilling Company of Houston and A.P. Moller of Denmark. Photo at right shows the port hull for the Zapata Ugland after her launching. Note contour of the stern, which houses a propulsion-assist unit. The configuration of this hull resembles a submarine in some ways.

Shown on the front cover, making a big splash as she is sidelaunched at Bethlehem Steel's Beaumont, Texas, shipyard, is the port hull for the approximately $25-million super-semisubmersible drilling rig, Zapata Ugland. Launched March 10, the hull is 350 feet long, 40 feet wide, and 25 feet deep. Her matching starboard hull was launched April 7. Being built for Zapata Off-Shore Company of Houston, Texas, and Ugland Shipping Co. A/S of Grimstad, Norway, the huge column-stabilized drilling rig has been designed by Bethlehem to operate in the extreme conditions of cold and rough weather encountered above the 60th parallel in the Norwegian sector of the North Sea.

The semisubmersible will be 350 feet long, 210 feet wide overall, and will measure 125 feet from the keel to the underside of the platform. In normal operation in water depths up to 1,000 feet, a chain and an anchor mooring system will be used.

In addition to the diesel electric-powered drilling equipment, the unit is equipped with an electrical propulsion system, and has complete navigational equipment to enable the semisubmersible to be wholly self-propelled and maneuverable.

Bethlehem's Beaumont yard, following its recent expansion and modernization program, now has on order or under construction half a dozen semisubmersible drilling rigs. An expanded fabricating shop, including a mechanized and automatic panel line, is used for the erection of steel assemblies up to 125 tons. A pioneer in the development, design and construction of offshore oil-drilling equipment, the 103-acre yard has 1,860 feet of sidelaunching ways, 155,000 square feet of fabricating platens, 4,000 feet of pier space and some of the best-equipped machine, pipe, electrical and copper shops on the Gulf Coast. Passage from the Gulf up the Sabine into the Neches River and the yard is now unimpeded since the recent removal of a nearby railroad bridge.

Meyer To Head ITEL Corp.'s Newly Formed SSI Navigation —Three Vessels Purchased

ITEL Corporation has entered the shipping business and signed an agreement for the purchase of three vessels for approximately $20 million, it was recently announced in San Francisco by **Peter S. Redfield,** president.

Mr. **Redfield** also announced the appointment of **Karl L. Meyer** as president of ITEL's newly formed SSI Navigation, Inc. division, which will be responsible for the company's shipping operations. Mr. **Meyer** was previously associated with Ogden Corporation as vice president and treasurer of Ogden Marine, Inc.

ITEL has initially purchased three modern 35,335-deadweight-ton geared bulk carriers, which were delivered last month. Favorable period charters have already been concluded on two of these vessels. The vessels are expected to transport bulk commodities such as grain, iron ore, bauxite and phosphate.

In explaining its entry into the shipping business, Mr. **Redfield** said: "The whole shipping and maritime transportation field, we believe, represents a major growth opportunity for a company that can combine the necessary operating capabilities with financial sophistication and strength. Thus, three basic factors guided the decision for ITEL's entry into the field.

"First, the demand for capabilities in maritime transportation, quite simply, are rising at an unprecedented rate. Second, ITEL has already had extensive experience in this field over recent years through its operation of the SSI Container Corp., which serves the maritime transportation industry at virtually all major ports around the world. This has been an expanding and profitable business for us. And third, the success and experience that we've put together at ITEL in capital equipment lease underwriting—including leasing of very large crude carriers and other vessels—has given us the professional financial strengths necessary to become a major factor in this business.

"We are fortunate to have obtained the services of **Karl Meyer,** who has excellent credentials in the maritime field. Under his direction, we expect to make further investments in vessels as part of an overall plan for ITEL to grow quickly in the shipping business."

Mr. **Meyer,** and SSI Navigation, will be headquartered at 277 Park Avenue in New York City. Prior to his affiliation with Ogden Corp., Mr. **Meyer** was associated in various maritime-oriented capacities with Litton Industries and General Dynamics Corporation.

He is a graduate of the Massachusetts Maritime Academy with a bachelor of science degree in marine and electrical engineering. Mr. **Meyer** also holds a master's degree in business administration from the Harvard Graduate School of Business Administration.

Norfolk Shipbuilding Names John L. Roper III President

John L. Roper II

John L. Roper III

John L. Roper II, president and chief executive officer for Norfolk Shipbuilding and Drydock Corporation, has announced his retirement as president and chief executive officer at the recent annual meeting of the corporation. He will be succeeded by his son, **John L. Roper III,** who moves to the chief executive position from the office of executive vice president and general manager, a position he has held for four years.

The senior Mr. **Roper** will remain as chairman of the board of the Norfolk-based ship repair firm. In stepping down, Mr. **Roper** said: "The past 16 years as president and chief executive officer have been very gratifying. During this period, Norfolk Shipbuilding has come from a small locally oriented shipyard with annual sales of $6 million to a major ship repair facility known and respected throughout the maritime industry the world over with sales in excess of $30 million. The young management team," he went on to say, "has had many years' experience at all levels of the shipyard's operations and has demonstrated completely to my satisfaction its competence over the years. I am certain that under the direction of its new chief executive officer, Norfolk Shipbuilding and Drydock Corporation will continue to grow and prosper. Its service to and influence on the national and international maritime industry will continue to increase."

Norfolk Shipbuilding and Drydock ranks as one of the largest civilian industries in the Norfolk area, currently employing some 2,000 people working in three shipyards. The yard is currently planning a major expansion program which should swell the rolls to 4,000 people by 1980, with an annual projected payroll of nearly $50 million.

In addition to the promotion of **John L. Roper III** as president and chief executive officer, the board elected **E.L. Pickler Jr.** executive vice president and general superintendent; **George W. Roper II,** vice president; **J.G. Price,** vice president and chief of production-Berkley Plant; **W.D. Payne,** assistant vice president-Brambleton and Southern Plant superintendent; **C.H. Eure Jr.,** assistant vice president and chief of engineering and special services; **R.B. Richardson Jr.,** treasurer; **E.L. Carlyle,** assistant treasurer, and **Miss M.R. Griffin,** secretary.

John L. Roper III is a graduate of the University of Virginia with a B.S. degree in mechanical engineering, and holds a B.S. degree in marine engineering and naval architecture from Massachusetts Institute of Technology. He started with Norfolk Shipbuilding and Drydock Corporation in 1951 as a junior superintendent and subsequently has held a variety of positions throughout the management structure of the company. He is a member of The Society of Naval Architects and Marine Engineers, a commissioner of the Norfolk Port and Industrial Authority, a director and president of Maritime Terminals, Inc., and on numerous business, civic and charitable boards.

Astilleros Espanoles Awarded Contracts To Build Nine Vessels

The Shipbuilding Division of Astilleros Espanoles, S.A. has recently signed contracts for the construction of nine newbuildings: four bulk carriers, four cargoliners, and one tanker.

Two 53,000-dwt bulk carriers are to be built at Astilleros's Matagorda yard, one for Cayzer Irvine (Group Finance) Ltd. (England), and the other for Aegis Shipping (London). Both vessels will have the following approximate dimensions: length overall, 678 feet; length between perpendiculars, 667 feet, and molded breadth, 95 feet. The one for Cayzer Irvine will have an output of 15,000 bhp at 122 rpm, producing a speed of 16.5 knots, and the one of Aegis Shipping will have an output of 16,500 bhp (AESA-B&W 6K84EF), producing a speed of 15.4 knots.

One 80,000-dwt bulk carrier is to be built at the Sestao yard for Damodar Bulk Carriers Ltd. (India). It will measure about 843 feet in length overall, 106 feet in breadth, with a depth of 65 feet. Propulsion will comprise a 7K84EF AESA-B&W type engine with an output of 19,250 bhp at 121 rpm, producing a speed of 17 knots.

Astilleros's New Yard at the Bay of Cadiz will build a 260,000-dwt tanker for Empresa Nacional Elcano de la Marina Mercante. Dimensions of the tanker will be about as follows: length overall, 1,086 feet; length between perpendiculars, 1,034 feet, and breadth, molded, 180 feet. The vessel will be powered by an MST-14 type General Electric Turbine totaling 36,000 shp at 90 rpm, producing a speed of 15.8 knots.

The four cargoliners, to be of 15,000-dwt, will be built at the Sevilla shipyard for Empresa Lineas Maritimas Argentinas (ELMA). They will have the following approximate measurements and principal particulars: length overall, 554 feet; length between perpendiculars, 525 feet, and breadth, maximum, 75 feet. The cargoliners will be powered by a 7RND76 AESA-Sulzer engine totaling 14,000 bhp at 122 rpm, producing a speed of 19 knots.

A 35,000-dwt bulkcarrier is to be built at the Matagorda yard for Aegis Shipping (London) Ltd. The vessel will have a length between perpendiculars of about 607 feet, a breadth of 79 feet, and a depth of 50 feet. The 15.3-knot bulk carrier will be powered by a 7RND68 AESA-Sulzer engine with an output of 11,500 bhp.

General Ship & Engine Names A.P. Bates Jr. Chief Naval Architect

A.P. Bates Jr.

General Ship & Engine Works, Inc. of East Boston, Mass., has appointed **A.P. Bates Jr.** as chief naval architect, according to general manager **George W. Dietrich.** Mr. **Bates** has held similar positions at Blount Marine Corporation, and J.E. Bowker Associates, Inc. He is a registered professional engineer.

General Ship is currently building a debris collector vessel, four landing craft for the U.S. Government, and also engages in general repair work in the Boston Harbor area.

Seatrain Appoints Costa And Chong

The appointment of **I. Joseph Costa Jr.** to the post of manager of personnel administration for the Container Division of Seatrain Lines, Inc., has been announced. Mr. **Costa** joined the firm in 1972 as employment manager.

Another manager named was **W. Jan Chong,** this time for facilities engineering in the Container Division.

A.E. Gibson, President Interstate Oil, Speaks On 'Energy Crisis'

Andrew E. Gibson

Andrew E. Gibson, president of Interstate Oil Transport Company, Philadelphia, Pa., recently called for strong industrial and civic leadership to augment the Government's efforts to meet the domestic energy problems of the United States.

He made his remarks in a keynote speech at the Sheraton Hotel in Philadelphia during a one-day symposium, "Oil, Energy, and the Delaware Valley." The conference was sponsored by the Franklin Institute, Drexel University, Delaware Valley Council, and the Delaware Valley Regional Planning Commission.

Mr. **Gibson** called for a clear formulation and implementation of an effective long-range energy policy. "Hopefully," he indicated, "in the near future such a statement will be forthcoming." He stated that the country's energy problems will occur essentially over the next 10 to 15 years. "Our domestic oil supply is critically short, and given the dimensions of the demand, we have no alternative but to import large quantities of crude oil to meet future requirements until at least the mid-80s."

Mr. **Gibson** stated that any domestic alternative requires "long developmental lead times." As an example, he noted that it required seven years for a nuclear power plant to become operational, while the development of gas and oil from coal, while technically possible, is still a good number of years away from being economically viable.

Mr. **Gibson** is the former Assistant Secretary of Commerce for Domestic and International Business. He played an active role in the United States-Soviet trade negotiations. He was formerly the Assistant Secretary of Commerce for Maritime Affairs, where he guided the long-range program to rebuild the American merchant marine.

In referring to his dealings with the Soviets, Mr. **Gibson** observed that the Soviet Union did not appear to have any energy balance problems. "Indeed, they appear to have a remarkable large energy surplus," he said.

Directing his attention to the origin of the energy problem, he indicated that the country's period of great power and prosperity which followed World War II was at the heart of the matter. "While most of the world was forced to rebuild at great cost and personal sacrifice, we were able to bound exuberantly ahead in a way that ill-prepared us for the type of problem-solving which is needed today."

Mr. **Gibson** projected a trade deficit in energy of from $15 to $20 billion for the United States, and a total deficit among major industrial nations of almost $50 billion by 1980. "Unless we are able to develop a consolidated policy among the three importing areas (Western Europe, the United States and Japan), one result will be that we will find ourselves engaged in a wild scramble for external earnings to meet these demands."

He called for effective and vigorous national action to avoid greater consequences, which will occur if the energy shortages become a national malaise," sapping "our industrial vitality and our consequent economic and political strength."

In concluding his remarks, Mr. **Gibson** indicated that while the problems are staggering, he felt the country's leadership was well equipped to solve them.

LNG 3-Ship Order For El Paso Confirmed By Newport News Ship

A $303-million contract to build three liquefied natural gas (LNG) carriers for the El Paso Natural Gas Co. has been confirmed by Newport News Shipbuilding and Dry Dock Co. The vessels will be built for the transportation of the fuel from Algeria to the Eastern United States.

El Paso, which had previously disclosed a letter of intent to order at least three of the methane tankers from Newport News Shipbuilding, will operate a fleet of nine such ships as part of a $1.7 billion system for supplying the critically needed new energy source in the United States. The nine ships will cost approximately $800 million.

Newport News Shipbuilding already has under construction a 150-acre addition to its yard, and the extension will include the largest graving dock in the Western Hemisphere for the building of LNG tankers and VLCCs, or very large crude oil carriers—tankers of over 200,000 tons.

The new yard will enable Newport News to solicit contracts for the super-sized commercial ships without interfering with its extensive backlog of Navy work. The graving dock, 1,600 feet long and 230 feet wide, will be able to accommodate one of the LNG tankers and part of another.

Size of the LNG carriers will be 948 feet in overall length and 135 feet in width. They will have a capacity of 125,000 cubic meters, and their propulsion systems will deliver 40,000 shaft horsepower. Displacement is to be 96,580 tons.

Construction of the LNG ships will be under way by the end of 1974, and they will, of course, be the first vessels built in the new yard. El Paso Natural Gas has an option to order three more of the ships from Newport News. Three are being built in France.

The Newport News yard is to deliver the first two ships in 1976, and the third in 1977.

A subsidiary, El Paso Algeria Corp., is to purchase one billion cubic feet of natural gas daily under a 25-year contract with the Algerian producers. Reduced to a liquefied state at a temperature of 260 degrees below zero Fahrenheit, the fuel will be "regasified" after discharge at Savannah, Ga., and Cove Point, Md., and distributed by three transmission companies.

Howard Boyd, chairman of the board of El Paso, said that initial deliveries of the gas will commence early in 1976 and build up to the equivalent of one billion cubic feet per day.

The LNG, he pointed out, will help reduce the U.S. energy shortage at a lower cost than that of any other foreseeable supplemental gas supply.

The Commerce Department has stated that the project "will add importantly to domestic employment, not only in our shipbuilding industry, but other basic industries, including steel and those serving the petrochemical field," and the A.F.L. and C.I.O. said that "the labor-related investments in the United States in this project alone are estimated to exceed $1.1 billion, and would generate more than 100,000 jobs over a four-year period."

El Paso has been a leader in efforts to alleviate the present shortage of U.S. energy supplies. In addition to this initial base load LNG project, El Paso is also moving forward with other supplemental gas projects including: coal gasification, reformation of liquid hydrocarbons, deliveries of Alaskan gas to the West Coast of the United States, and other LNG projects from overseas areas, including the Soviet Union.

Confirmation of the order also came from **A. Pastuhov,** president of Gazocean USA Inc., whose affiliate Technigaz developed the integrated tank system to be used in the three LNG carriers. They will be the first methane tankers of this design to be built in the United States.

The Gazocean Group has on order for its own account two 120,-

000-cubic-meter LNG tankers for delivery in late 1974 and early 1976. This order brings the total number of LNG tankers built and on order in accordance with the Technigaz design to 12.

Cryogenic Structures Corp. of Northvale, N.J., an affiliate of Baltek Corp., announced that it has received a letter of intent from Newport News Shipbuilding, under which Cryogenic will provide the balsa and plywood insulation panels used in the LNG tankers.

Total value of the insulation systems for the three tankers will be more than $20 million. Cryogenic Structures is a licensee of Technigaz to manufacture and market in this country the panels used for insulation of membrane tanks in the LNG carriers.

Meanwhile, Gotaas-Larsen, Inc. of New York, the shipping subsidiary of International Utilities Corp., announced agreement with an international group of energy companies for a 20-year charter of three LNG carriers to be built in the Stavanger, Norway, yard of Moss Rosenberg Verft. The charter period is to begin in 1976.

The three vessels will transport LNG from Das Island and Abu Dhabi in the Arabian Gulf to Japan. These will be ships of 125,000-cubic-meter capacity, 960 feet in length, and with a draft of only 37 feet. This shallow draft, unusual in vessels of such size, will enable them to call at a number of ports not accessible to deep-draft oil tankers.

Companies involved in the charter agreement include British Petroleum Co., Ltd. of London, Compagnie Francaise des Petroles, Paris; Mitsui & Co., Ltd., Tokyo, and Bridgestone Liquefied Gas Co., Ltd., also of Tokyo. The Japanese Government has approved the arrangement.

API Appoints Henry J. Luck Jr.

Henry J. Luck Jr.

Henry J. Luck Jr. has been appointed chairman of the American Petroleum Institute's central committee on transportation by water.

This committee was created in 1934 to implement industry policy and provide technical input in domestic and international developments affecting vessels and marine facilities.

Mr. **Luck** is a graduate of the United States Merchant Marine Academy and joined Mobil Oil Corporation in 1949. He had held executive positions in various functions, and was named president of Mobil Shipping and Transportation Company, and general manager of Marine Transportation on January 1, 1970.

Mr. **Luck** is also active in other industry organizations as a director of the American Institute of Merchant Shipping, a director of TOVALOP and CRISTAL, and a member of the executive committee of the American Committee for Flags of Necessity.

$19.6-Million Order For Two Cargoships To Govan Shipbuilders

According to reports from London, Govan Shipbuilders Ltd., the Government-backed company which took over the Upper Clyde Shipyard, has announced that it has received a $19.68-million order from the Kuwait Shipping Co. for two cargoships.

The company's yards now have an order book worth $146 million for 14 ships, **Archie Gilchrist,** chief executive, said.

The orders will enable Govan Shipbuilders to maintain work into the first half of 1975.

Avondale Shipyards Launches Destroyer Escort Valdez

The Valdez (DE-1096), a destroyer of a new class, is launched at the Main Yard of Avondale Shipyards.

The Destroyer Escort Valdez (DE-1096), named in honor of the late Hospital Corpsman Third Class **Phil Isadore Valdez,** was launched March 24 at Avondale Shipyards, Inc., New Orleans, La., a subsidiary of the Ogden Corporation.

Christening the vessel was **Mrs. Carlos Valdez,** mother of the late Petty Officer **Valdez.** Her maid of honor was **Miss Josie Valdez.**

Principals of the launching included **Edwin Hartzman,** president of Avondale Shipyards, Inc.; Capt. **J.W. Lisanby,** USN, Supervisor of Shipbuilding, Conversion and Repair, Eighth Naval District; Rear Adm. **Stanley S. Fine,** USN, Deputy Commander for Plans, Programs, and Financial Management, Naval Ship Systems Command, Washington, D.C., and as principal speaker, **Manuel Lujan,** Republican Congressman, First Congressional District of New Mexico. Comdr. **Sam Hill Ray,** S.J., USNR (ret.), Chaplain, Navy League of the Greater New Orleans Area, gave the invocation.

Phil Isadore Valdez was posthumously awarded the Navy Cross for conspicuous gallantry and intrepidity in action on the morning of January 29, 1967 while serving with Company "B", First Battalion, First Marines, in the vicinity of Danang, Republic of Vietnam.

The Valdez (DE-1096), a destroyer of a new class, is one of a series of 27 DEs being built by Avondale Shipyards under multiple year ship procurement contracts awarded in 1964 and 1966. This ship is designed for optimum performance in locating and destroying submarines. Integral bow-mounted long-range sonar, variable depth sonar and gyrostabilizers provide for improved seaworthiness and increased antisubmarine warfare capabilities over previous DEs. The Valdez is 438 feet in length, with a beam of 47 feet, and is capable of attaining speeds in excess of 25 knots. Her total complement consists of 19 officers and 226 men.

Principals of the launching included (left to right): Rear Adm. **Stanley S. Fine,** USN, Deputy Commander for Plans, Programs, and Financial Management, Naval Ship Systems Command; **Mrs. Carlos Valdez,** sponsor; The Honorable **Manuel Lujan,** Republican Congressman, First Congressional District of New Mexico, and **Edward Hartzman,** president, Avondale Shipyards.

Ships of her type have many traits of the swift and deadly destroyer. They can operate as a unit of a Hunter-Killer Task Group, screen amphibious or under way replenishment forces, patrol coastal waters for missile-firing submarines (continental defense), or escort military convoys. Like the destroyer, the escort ship is extremely versatile, capable of conducting search, patrol, rescue, evacuation, blockade, visit-and-search, or surveillance operations.

Avondale is a subsidiary of Ogden Corporation, which operates in the major market areas of metals, transportation, food products, leisure, real estate development, and finance. Ogden reported sales of $1.073 billion in 1972.

Ryan Enterprises Installs Oil Condition Indicator Kits

Ryan Enterprises, P.O. Box 475, La Mesa, Calif. 92041, has announced installation of its Oil Condition Indicator Kits on main propulsion diesels (645 Electro-Motive) aboard large tuna vessels in San Diego, Calif.

These kits are tied into main lubrication systems and at a glance can monitor the condition of lube oil for fuel dilution, water or any contamination which affects viscosity of oil.

Several offshore drilling companies have ordered these Ryan kits for installation on all types of diesels. Not only are they adaptable to diesels, but to any type lubrication system which has a system pressure between 10 to 100 psi.

Marine Technology Society Conference Program Announced —Sept. 10-12 In Wash., D.C.

The program for the ninth annual Marine Technology Society conference features papers on some of the most controversial issues facing the marine community today.

The questions posed by prospective offshore port development, the clash of competing interests for use of the coastal zone, pollution control demands, and the impact of current international law of the sea debate are among the topics to be covered in technical sessions. The conference will be held at the Sheraton-Park Hotel in Washington, D.C., September 10 to 12.

Other major topics to be covered at the meeting include a look at water transportation as a solution to urban congestion, discussion of recreation and travel uses of the marine environment, the economics of marine resource development, some of the uses to which marine technology is being put and the condition of the American merchant marine industry.

The Marine Technology Society is a 5,000-member interdisciplinary society for scientists, engineers, social scientists and others professionally interested in marine affairs. It was founded in 1963 to serve as a forum for oceanography debate. Principal activities, beyond sponsorship of an annual conference and exposition, include specialty meetings and publications, a newsletter and journal, support of national and foreign local sections, and professional committees and service as a clearinghouse for ocean information.

On the conference opening day, a special afternoon presentation by leading Federal officials on issues and trends will be featured. Names of the participants will be announced later. Also, a special guest speaker is planned for the conference luncheon on Wednesday.

A major innovation of this year's conference is the scheduling of a university-sponsored short course in conjunction with the annual program. "Planning for Offshore Ports" is the course title. Organized by the University of Delaware and Texas A&M University, the course runs for five days, September 10 to 14, and will be held at the conference hotel. Registration is $225, including materials.

Other features of the conference planned by the program committee headed by **Stewart B. Nelson** of the Oceanographer of the Navy's Office include:

The third annual MTS Memorial Lecture, to honor the late Dr. **William T. Pecora,** former Under Secretary of the Department of the Interior. Last year's lecture discussed the contributions of **Columbus Iselin,** one-time director of Woods Hole Oceanographic Institution, and the first MTS lecture saluted Dr. **Wilbert Chapman** and Dr. **Milner Schaefer.**

An "early bird" reception on Sunday, September 9, at 5 p.m., for early conference arrivals.

"Marine Expo" exhibit to include presentations by hardware manufacturers and suppliers to the maritime industry.

A president's reception to be held at the exhibit area on Tuesday, beginning at 4:30 p.m. This feature is one of several steps being taken to put new life into the exhibition portion of the conference.

A marine film festival, patterned after last year's successful introductory show, is again planned for Monday evening.

Following the conference, a series of special workshops are planned at the hotel. Included is a shirt-sleeve session on advanced marine vehicles which will examine progress being made with hydrofoils and surface effect ships. **J.L. Shuler** of the Naval Ship Systems Command is arranging the workshop.

Other workshops will be conducted by MTS professional committees and will deal with such topics as water-quality, oceanographic gear, and ocean economics.

Organizations which are currently participating in this year's annual event to help broaden interest and attendance are: American Association of Port Authorities, American Institute of Merchant Shipping, American Waterways Operators, National Fisheries Institute, National Ocean Industries Association, National Recreation and Park Association, The Propeller Club of the United States, and Shipbuilders Council of America.

The complete list of technical sessions includes: Development of Ports, Harbors and Offshore Facilities (two sessions); Transfer of Technology to the Marine Industry; The Role of Ocean Science: Past, Present and Future; Marine Recreation and Tourism; How the Market Place Governs the Development of Marine Resources; Education, Training and Manpower—Needs and Incentives; Coastal Zone: Methods of Resolving Conflicts Between Industrial and Public Needs (two sessions); Marine Transit Systems (Nearshore and Inland Waterways); Marine Technology: Problems and Opportunities (two sessions); Pollution Control and Abatement; The Strategic Importance of the Maritime Industry to National, Economic and Military Security; Implications of Existing and Pending Legal Regimes and Regulations on the Marine Industry; Marine Safety and Navigation; Sea Grant Contributions to the Marine Industry; Current Research in Marine Science and Current Research in Marine Technology.

Serving as conference advisors are: **Herbert Brand,** president, Transportation Institute; **Charles H. Bussmann,** publisher, Underseas Technology; **Edwin Hood,** president, Shipbuilders Council of America; **E.W. Seabrook Hull,** editor, Ocean Science News; **George H. Miller,** Naval Assistant to the Administrator, Maritime Administration; **O. William Moody Jr.,** administrator, Maritime Trades Department, AFL/CIO; Dr. **William A. Nierenberg,** chairman, National Advisory Committee on Oceans and Atmosphere; **Leon J. Weddig,** executive director, National Fisheries Institute, and **Donald Taylor,** editor, Ocean Industry.

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AquaMarine Awards $6½-Million Contract To Burton Shipyards

J.C. Garner, president of Burton Shipyards, Inc., Port Arthur, Texas, has announced the signing of a $6½-million contract with AquaMarine, Inc. of Houston for the construction of four advanced-design tug/supply vessels. The keel will be laid for the first of these vessels this month, with completion scheduled for November. The second vessel is scheduled for completion in December. Mid-1974 completions are planned for the remaining two vessels.

"These triple-engine triple-screw vessels are designed for total service to the offshore rig—towing to location, positioning, anchor handling, supply. They are well-suited to perform any type of service needed by the offshore oil industry —anywhere in the world. Fast, powerful, versatile and seaworthy, these four are the type of 'workhorse' tug/supply vessel we have a reputation for building best," stated Mr. **Garner.**

Tom Gilbert, president of AquaMarine, Inc., said that these vessels would give AquaMarine worldwide operational capabilities. On his recent visit to Europe and the North Sea area, Mr. **Gilbert** surveyed the special requirements for tug/supply activities. He expressed confidence that these new vessels will meet the challenge of service in that demanding area.

The AquaMarine vessels will have a length of 180 feet, a beam of 40 feet, and a draft of 15 feet. Seven air-conditioned and heated staterooms will accommodate up to 30 men.

Each vessel will have three 16-cylinder General Motors EMD engines developing a total of 5,400 horsepower. Maximum speed is 15 knots. For fuel economy, these vessels cruise at 12 knots, using only the two outboard engines. Baylor bow thrusters add close action maneuverability.

The four vessels are designed for a bollard pull of 60 tons. They have space for 550 tons of deck cargo. Four SMATCO "P" tanks below decks have a total capacity of 4,920 cubic feet for transport of bulk mud or cement.

Star Iron & Steel Appoints Graesser

Simon S.D. Graesser

Simon S.D. Graesser has been appointed sales manager of Star Iron & Steel Co., Tacoma, Wash. Reporting directly to Star's president, he will be in charge of international, as well as domestic sales and marketing.

Mr. **Graesser** came to Star from Rubery-Owen & Co., Ltd., in 1971, when the two firms entered a licensing agreement. He had been United Kingdom container equipment sales manager in the Contract Division at Rubery-Owen. Mr. **Graesser** has been involved in the material handling industry for 10 years.

New System Separates Oily Waste Water

Separation & Recovery Systems, Inc. has developed a new system for separating oil and water, which has proved to be highly effective in tests conducted by the U.S. Coast Guard and Navy. The system is available in three sizes for shipboard installation to remove oil and contaminates from bilge and ballast water. The SRS System combines filtration and coalescence to separate oily waste water into three phases: clean disposable water, reclaimable oil, and disposable solids. The SRS System is designed to produce dischargeable effluent to meet the most rigid antipollution standards at the lowest possible cost.

Marine Recovery Systems, an authorized representative, is located at 1735 Kaiser Avenue, Irvine, Calif. 92705.

General Electric Names Dexter H. Koopman To I&SE Department

Dexter H. Koopman

Dexter H. Koopman has been named manager, marine service programs for General Electric's Installation and Service Engineering Department (I&SE).

The appointment was announced by **Brad T. Cox Jr.**, manager, mechanical and nuclear service operation for I&SE.

In his new position as program manager, Mr. **Koopman** will be responsible for coordinating the worldwide marine service business for I&SE.

A native of Boston, Mass., Mr. **Koopman** graduated from the Massachusetts Maritime Academy in 1957 with a degree in marine and electrical engineering. After serving in the Navy, and four years with Bethlehem Steel Corporation, Quincy, Mass., he joined General Electric and I&SE in 1963 as a field service engineer. From 1965 to 1970, he was service manager for Marine and Utility Service in the New England District. In 1970, he was appointed manager, personnel and service administration for Northeast Mechanical and Nuclear and Electrical and Electronic Service Regions, the position Mr. **Koopman** held at the time of his new appointment.

Aerojet Receives $1.5-Million NATO Hydrofoil Subcontract

A $1.5-million contract to manufacture and test the waterjet propulsion pumps for the North Atlantic Treaty Organization (NATO) Patrol Hydrofoil Missile (PHM) ship has been awarded to Aerojet Liquid Rocket Company, Sacramento, Calif., by The Boeing Company. Boeing has designed and is building two PHM lead ships.

The PHM will use waterjet propulsion both while traveling on its hull and when flying on its foils. Foilborne propulsion consists of a single waterjet pump capable of handling approximately 90,000 gallons per minute (gpm). Power is supplied by a General Electric LM 2500 gas turbine. When hullborne, the craft is propelled by two waterjet pumps, each operating at approximately 30,000 gpm. Each pump is driven by an 800-horsepower Mercedes-Benz 8V-331TC80 diesel engine.

The Aerojet water pumps will be delivered in early 1974 for installation into the PHM. Launching is scheduled for late 1974.

Designed for strike, surveillance, and patrol missions, the PHM is a missile-carrying hydrofoil ship with a speed capability in excess of 40 knots (46.1 mph/74.1 km). Much of the technology employed in the PHM, including an earlier version of a waterjet propulsion system, has been proved on the Tucumcari, a U.S. Navy hydrofoil patrol gunboat built by Boeing in 1967.

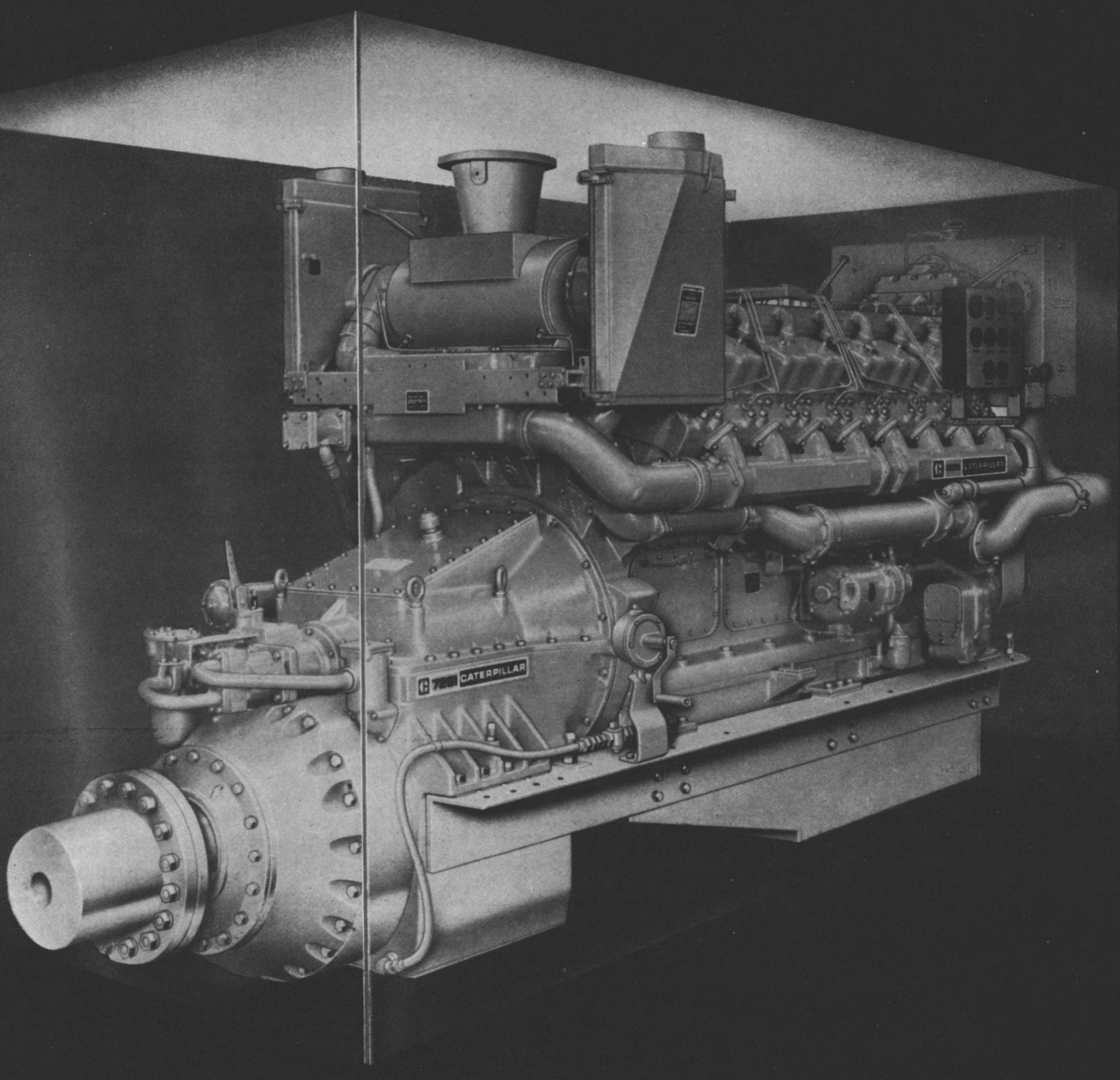
National Bulk Carriers Appoints Two VPs

D.K. Ludwig, president, National Bulk Carriers, Inc., has announced the appointment of **Bert C. Reiss** as vice president, marine operations of NBC as well as managing director of Saxon Marine Services, Ltd. In this capacity, he will be completely responsible for all marine operational matters of NBC and its affiliated companies.

Also announced was the appointment of **Frank J. Joyce** as vice president, new construction, design and research of NBC. In this capacity, he will be completely responsible for all new ship construction, design and research activities of NBC and its affiliated companies.

Both Mr. **Reiss** and Mr. **Joyce** will report directly to Mr. **Ludwig** in all operational matters and to **John L. Notter** and the finance committee in all financial matters.

MORE THAN AN ENGINE...
MORE THAN A GEAR...



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Gears and accessories matched to prime power units for your work boats!

Time saved is, in itself, enough to make a power "system" worth investigating. One source means one contact, one responsibility, with less time spent.

But time saved is only one of the advantages of a system. Coordinated components, built to one quality standard, deliver trouble-free power throughout a longer service life. Problems of vibration, torsion, noise, speed have been solved for all parts of the system in the factory, not on your boat. Installation design is for *all* units in the system instead of individual items; and identical warranty and society classification are provided for all.

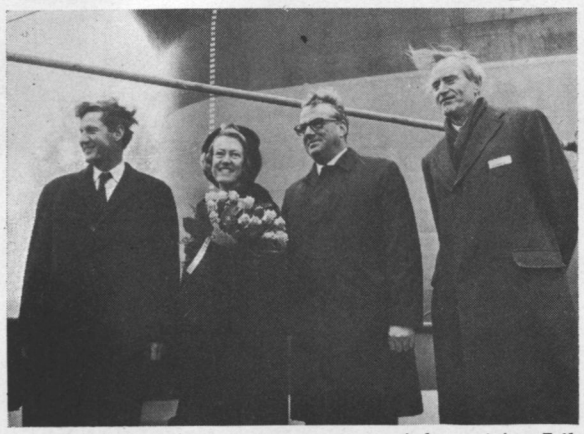
Caterpillar supplies "systems"—engines, gears, generator sets and attachments carefully mated to each other—systems that range in size to 1125 HP (continuous flywheel) in single installations. Each features moderate rpm operation . . . conservative BMEP ratings . . . four-stroke cycle dependability . . . long-life. Each is backed by the exceptional parts and service capabilities of the Caterpillar dealer network.

Before you invest in parts for a propulsion system . . . investigate a complete system. Your nearby Caterpillar dealer has details or write Caterpillar, Industrial Division, Dept. 682M, Peoria, Illinois 61602.

Model	Cyl.	Disp. (cu. in.)	RPM (Cont.)	SHP (Cont.)	BHP (Cont.)	Marine Gear	Ratios Fwd.	Ratios Rev.
D399	V-16	3928	1225	1091	1125	Cat 7261	2.89:1 to 4.22:1	3.18:1 to 3.84:1
D398	V-12	2946	1225	825	850	Cat 7251	2.95:1 to 4.34:1	3.24:1 to 3.95:1
						Cat 7261	2.89:1 to 3.50:1	3.18:1 to 3.84:1
D379	V-8	1964	1225	548	565	Cat 7241	2.00:1 to 5.88:1	2.00:1 to 5.88:1
						Cat 7251	2.95:1 to 5.11:1	3.24:1 to 5.11:1
D353	I-6	1473	1225	412	425	MG 521	2.19:1 to 4.09:1	2.19:1 to 4.09:1

CATERPILLAR

Odense Lindo Yard Completes 286,000-Dwt VLCC For Knut Knutsen O.A.S., Norway



Pictured during the naming ceremony, left to right: **Erik Quistgaard,** managing director of the Odense Lindo shipyard; **Mrs. Gjertrud Pande,** sponsor; **Thor M. Pande;** and **Maersk Mc-Kinney Moller,** chairman of shipyard's board.

The ninth VLCC in the 286,000-dwt class ordered by Knut Knutsen O.A.S., Haugesund, Norway, from Odense Staalskibsvaerft A/S (Odense Steel Shipyard Ltd.), Odense, Lindo, Denmark, was named on March 10. The ceremony was performed by **Mrs. Gjertrud Pande,** daughter of shipowner **O.A. Knutsen,** who named the ship Torill Knudsen.

The classification society (Det norske Veritas) was represented by its Copenhagen principal surveyor, **Knut Johannesen;** the Danish Ship Credit Fund by **Viggo Norby;** the shipyard by its board members **Maersk Mc-Kinney Moller** (chairman), **N. Bronton-Jensen,** and its managing director **E. Quistgaard,** along with directors and representatives for the various departments.

The approximate measurements and main characteristics of the T/T Torill Knudsen are as follows: length, 1,140 feet; breadth, 167 feet; depth, 92 feet, and draft, 72 feet. The cargo tanks have a capacity of 353,500 cubic meters. Propulsion machinery develops 32,450 shaft horsepower to provide a speed of 15.25 knots.

Curtiss-Wright Receives $3-Million For Marine Power Transmission Systems

Curtiss-Wright Corporation, Wood-Ridge, N.J., has announced receipt by its Power Systems operation of a letter contract for the second phase of the development, fabrication and testing of high horsepower marine planetary gear transmission systems from the Maritime Administration. The new phase of the ongoing contract has a value of $3,051,025 and will be equally funded by MarAd and Curtiss-Wright. It will require 26 months to complete, involving work in 1973, 1974 and 1975.

Curtiss-Wright stated that the aim of this project is the development of advanced technology transmission systems, capitalizing on the advantages which planetary gears enjoy over the transmission systems. The standardized compact modular form, lightweight and lower cost make planetary gears attractive for a wide variety of ship types, sizes and engine room arrangements. The first phase of this contract, which was successfully completed late in 1972, involved the design, engineering and preparation of manufacturing drawings.

Two types of transmission systems are being developed under the contract. The first system is a second stage planetary module designed for ships requiring 30,000 to 50,000 shaft horsepower. The second system is also a second stage planetary module, but with contra-rotating propeller shafts designed for ships in the 45,000 to 75,000-shaft-horsepower range.

For vessels up to 60,000 tons deadweight

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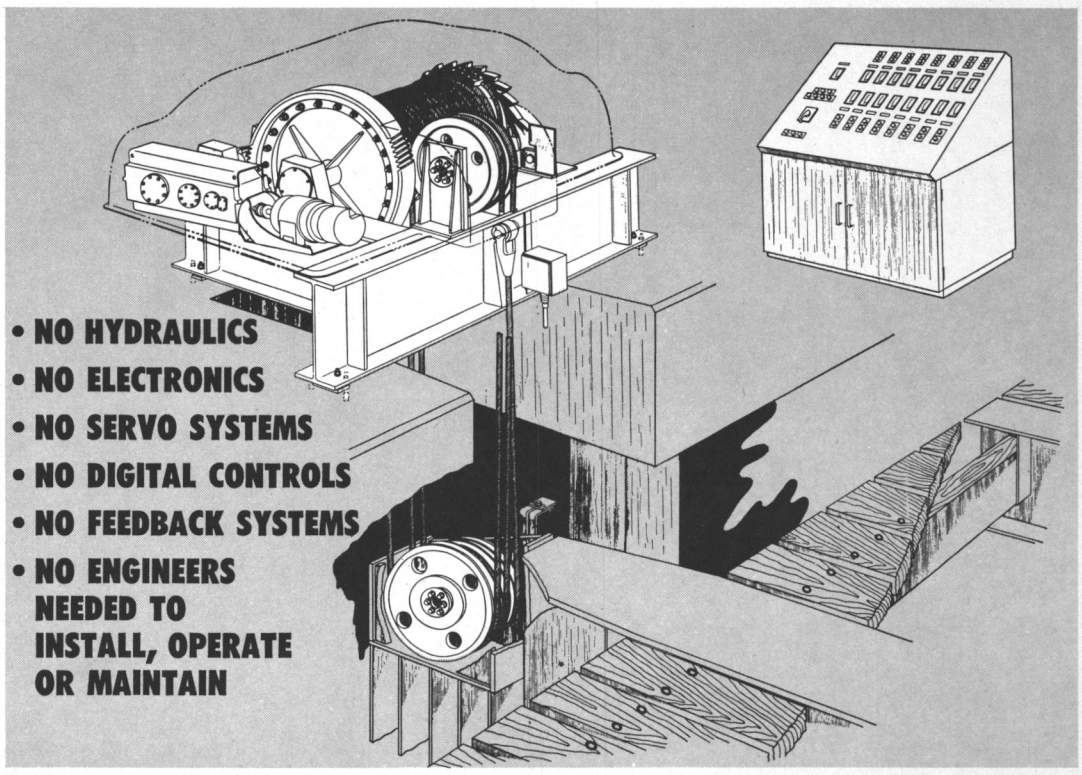

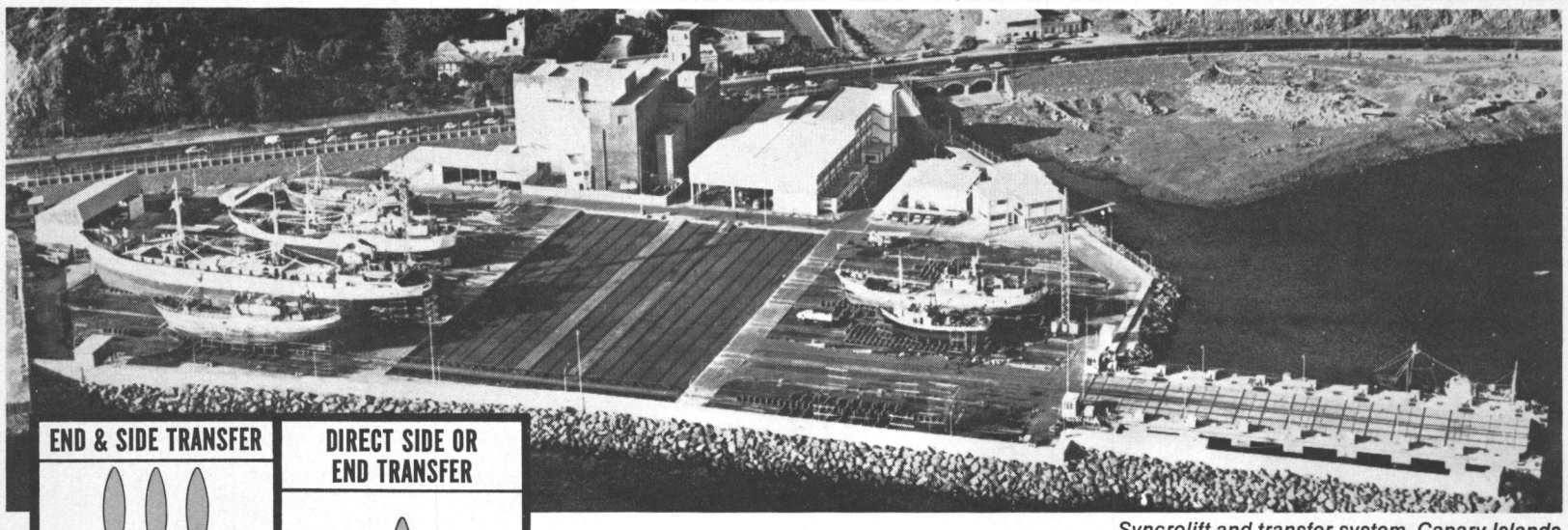

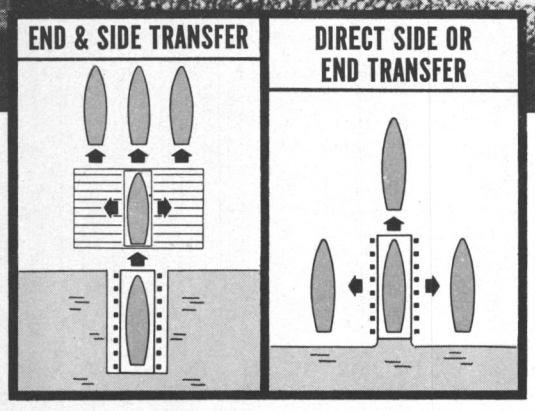

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Esso SALM System Licensed To IMODCO

Esso Research and Engineering Company has licensed its Single Anchor Leg Mooring (SALM) technology to IMODCO, Inc., Los Angeles, Calif.

IMODCO is a leader in the offshore buoy mooring terminal field, with some 41 facilities of its own design installed worldwide over a 14-year period. Such offshore terminals are for the loading and unloading of cargo, principally petroleum products.

An IMODCO spokesman stated that Esso-developed SALM technology and patents will be utilized to complement its own system, mostly in deepwater areas.

The first SALM was installed in 1969 by Esso Standard Libya, Inc. at Brega, Libya, to load tankers up to 300,000 deadweight tons in water 140 feet deep. A second SALM was installed at Okinawa in 1971 to unload tankers up to 250,000 deadweight tons.

Research and development was conducted by Esso Research and Engineering Company's Marine and Engineering Section, Florham Park, N.J., and by the affiliated Esso Standard Libya, Inc. Model basin tests of the SALM were conducted, simulating tankers up to 500,000 deadweight tons in 20-foot-high seas.

Safety is one of the principal advantages of the SALM system. The possibility of serious damage to either the buoy or the tanker as a result of a collision is minimized, since the SALM buoy is small and ruggedly built. The SALM cargo and anchor swivels are submerged below the tanker's keel, and the hose rises to the surface some distance from the buoy.

Tankers can maneuver close to the SALM and drop anchor without fear of fouling the mooring, because its single-anchor chain is located directly beneath the mooring buoy. The SALM is also economic in deep water because of its relatively short anchor leg.

Marcona Corporation Names Chisholm VP

Robert E. Chisholm

Robert E. Chisholm has been elected vice president-marine operations for Marcona Corporation, San Francisco, Calif., according to an announcement by **C.W. Robinson**, president of the shipping, mining and resource development concern.

Mr. **Chisholm** joined Marcona in June 1970 as assistant general manager, marine group and subsequently served as general manager, ocean transportation. He was formerly manager of the Chartering and Traffic Division of Texaco, Inc., New York. Prior to that time, he served 19 years with the Caltex organization in a variety of managerial positions.

In his newly created position, Mr. **Chisholm** will be responsible for the operation and administration of Marcona's expanding fleet of dry cargo vessels which currently totals nearly 3-million deadweight tons and which in 1972, lifted 16.5-million tons of cargo a total of 127.5 billion ton-miles.

Mr. **Chisholm** is a graduate of the United States Merchant Marine Academy, Kings Point, N.Y. He also completed the Advanced Management Course at Harvard University.

Brazilian Yard Building Tankers

Reports out of Brazil indicate that Ishikawajima Do Brasil-Estaleiros S.A. will build five 131,000-deadweight-ton ore-oil carriers for Petrobras and for the Vale do Rio Doce Co.

To be built at the new drydocks Ishibras is constructing at its yards near Angra dos Reis, the vessels are scheduled for delivery in about two years.

Also being negotiated are two tankers, each of 260,000 tons, for Petrobras and for Vale do Rio Doce.

ANOTHER PLUG FOR THE TRADE DRAIN.

For U.S. vessels to compete successfully with foreign-flag ships for the carriage of U.S. foreign trade, they've got to be highly productive.

Converting break-bulk freighters into containerships is an effective way of making them more productive.

And that's exactly what Lykes Lines asked Todd to do for 13 of their freighters.

Hull-cutting, plug construction and reassembly add 97 feet to each vessel, enabling them to transport 166 containers in addition to break-bulk cargo.

The Lykes awards bring to 62 the number of freighters for which Todd has received conversion contracts from U.S. flag operators during the past decade. Which is kind of a nice "plug" for Todd.

Talk to TODD

TODD SHIPYARDS CORPORATION: New York • Brooklyn • New Orleans • Galveston • Houston • Los Angeles • San Francisco • Alameda • Seattle.
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Sea Bulk Tankers, Ltd. Applies For Title XI For A CATUG ITB Unit

The Maritime Administration has received an application from Sea Bulk Tankers, Ltd., Fort Lauderdale, Fla., for Title XI mortgage and loan guarantee to assist in financing the building of one CATUG integrated tug-barge unit. As yet no contract has been awarded. The unit has an estimated cost of $13.6 million, based on the same type ITB now being built by Kelso Marine, Inc. of Galveston, Texas.

It is planned to use the catamaran tug and 41,500-dwt oil barge in both domestic and foreign trade.

Marine Container Study Forecasts New Records Over Next 10 Years

Containerized marine cargo will continue to set new annual records throughout the next decade, according to an analysis of the industry released recently by Flexi-Van, Inc., one of the largest international lessors of container equipment and a subsidiary of Gilbert Flexi-Van Corporation, whose shares are traded on the New York Stock Exchange.

The study, titled "The Marine Container Industry 1972-1975," also indicates that the leasing of marine container equipment will expand at an even greater rate than the container industry in general, and will more than double its present volume by 1975.

Leo L. Mellam, chairman of the parent company, described the report as "the first analysis of the industry based solely on documented fact in place of guesses, hunches and crystal balls.

"This new and objective study," he said, "should help mark an end to the statistical vacuum that has surrounded every segment of the container industry since its inception eight years ago. It should also silence those few pessimists who have used totally invalid yardsticks to forecast an end to the industry's growth."

According to the study, the world container fleet in 1975 will have a slot capacity of 609,530 containers (20-foot equivalents), and be able to transport during a one-year period a total of 45,257,595 short tons of containerized cargo.

To operate at that level, the study shows, the industry will have to succeed in containerizing 39 percent of the 116,464,250 tons of general liner cargo officially forecast for 1975.

To indicate the possibility of such tonnage being containerized, the study cites statistics for the first 11 world ports that have responded to queries regarding actual tonnage handled in 1972. Of the 11 ports, eight are in the United States and three in Western Europe. Of all general liner cargo moving through the 11 ports in 1972, a collective average of 33½ percent was containerized.

With international trade growing at a rate of 6½ percent annually, the study concludes that containerization need only maintain its present share of cargo to achieve the 1975 forecast. However, the study also cites 1972 statistics for various ports to demonstrate that containerization is growing at a far faster rate than international trade. It credits New Orleans with a 174 percent increase in container tonnage from 1970 to 1972. It also reports that Le Havre in 1972 had only a 25 percent increase in general liner cargo but a 43 percent increase in containerized cargo. Similar increases are quoted for other ports.

The study fixes the industry's container needs in 1975 at 1,097,184 containers. Since 28 percent of all marine containers were leased in 1971, merely maintaining that percentage would result in 307,212 containers on lease in 1975. For Flexi-Van, which is credited with having 25 percent of the leased market, this would represent an increase in the number of containers it leases of more than 100 percent over 1972. However, the study also cites factors which point to leasing attaining as much as 50 percent of the container market in the near future.

Copies of the full study are available from Flexi-Van, Inc., 330 Madison Avenue, New York, N.Y. 10017.

New England Section Discusses Paper On Floating Nuclear Plants

A large gathering of members and guests of the New England Section of The Society of Naval Architects and Marine Engineers met on March 16 to hear **Clinton Dotson** present his paper entitled "Some Design Aspects of Floating Nuclear Plants." Mr. **Dotson** is the naval architect for Offshore Power Systems, a joint venture of Westinghouse and Tenneco Corporations for the design and manufacture of nuclear power plants for offshore siting.

The concept described by Mr. **Dotson** utilizes a floating platform 400 feet long, 377.5 feet wide, and 40 feet deep, with a total plant displacement of 150,000 short tons. The platform supports a totally integrated nuclear power station producing a net output of 1,150 MWe. The plant is designed to stay afloat for its lifetime, and remains moored in the basin formed by a breakwater constructed at the site.

A lively discussion period followed the formal presentation. **Keatinge Keays,** Section chairman, served as moderator. Questions addressed the areas of safety, ecology, breakwater construction, trade-offs between sunk and floating platforms, crew size, and transport of the crew back and forth to the station.

Copies of the paper are available at $2 each from the Section Editor, **Robert W. Baseler,** New England Section, SNAME, General Dynamics Corporation, Quincy, Mass. 02169.

Jacuzzi Advances Jack Seastrom To Service Manager

Jack Seastrom

Jack Seastrom has been promoted to service manager for the marine products department of Jacuzzi, Bros., Inc., Little Rock, Ark.

Mr. **Seastrom,** who joined the company about a year ago, had held the position of industrial sales representative covering Jacuzzi's marine jet propulsion systems market in commercial, industrial and Government boat applications.

Mr. **Seastrom's** advancement to this new position is part of Jacuzzi's current expansion program of providing more extensive service facilities and technical assistance to serve the rapidly growing market for its products.

Jacuzzi is the only major manufacturer of marine jet systems with nationwide parts and service facilities. The company makes an extensive line of "JacuzziJet" jet propulsion systems in 12-inch to 36-inch stock sizes, and larger units to customers' specifications.

Midland-Ross Corp. Introduces Tami-Lift Mobile Straddle Crane

A Tami-Lift mobile straddle crane for handling containers has been introduced by the RPC Division of Midland-Ross Corporation.

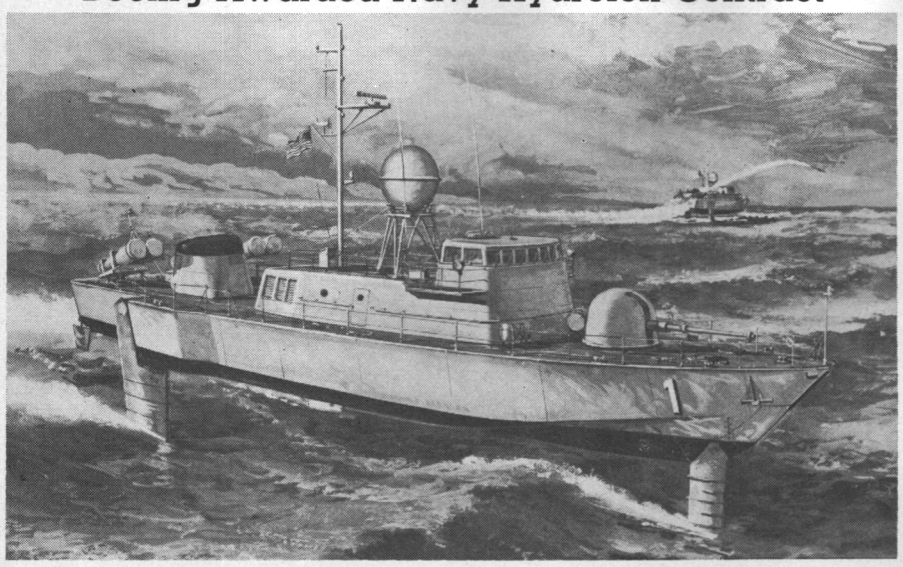
The unit, which has a lifting capacity of 95,000 pounds, is equipped with a Universal spreader for handling 20-foot containers. The Tami-Lift is capable of stacking containers three-high. The division is the largest supplier of container-lifting spreaders in the marine industry.

The diesel-powered crane's hoist, propulsion, and steering units are all hydraulically operated. A 90-degree steering capability permits easy maneuverability throughout the terminal.

Because of the low initial cost, the Tami-Lift gives the low-volume container terminal or port an economical mobile crane, and it can be used as an inexpensive backup crane in high-volume container terminals.

Additional information can be obtained by contacting RPC Division, Midland-Ross Corporation, P.O. Box 490, Roxboro, N.C. 27573.

Boeing Awarded Navy Hydrofoil Contract



Artist's concept of the NATO PHM, a high-speed missile-carrying hydrofoil patrol boat being built by Boeing Aerospace Company, Seattle, Wash.

The U.S. Naval Ship Systems Command has awarded The Boeing Company a $42,607,384 contract for the design and development of North Atlantic Treaty Organization (NATO) missile-carrying hydrofoil ships, known as NATO PHMs. Under the terms of the contract, Boeing will build two lead ships for the U.S. Navy.

Italy and the Federal Republic of Germany, the other NATO participants at this time, have provided a share of the funds to develop the NATO PHMs. Participating NATO countries are expected to purchase Boeing-built PHMs for their own navies. The PHM offers the advantages of high-speed maneuverability and platform stability for missile launching, even in rough water.

F.L. Coenen, Boeing PHM program manager, stated that the company will employ about 600 people as a result of the contract when construction peaks during the second half of this year. Approximately 400 workers are presently involved.

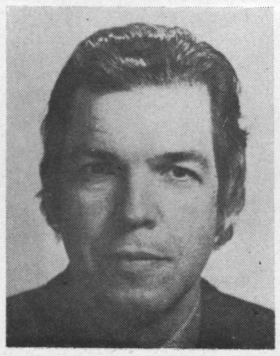
The ships will be built at Boeing's Renton facility south of Seattle.

Boeing has been working on the PHM since November 1971, under a preliminary design contract. The first PHM will be launched in late 1974 and the second will follow three months later. Delivery of the two hydrofoils to the Navy is scheduled for the summer of 1975.

Although larger, the PHM is patterned after the successful Boeing-built Tucumcari, a 58-ton hydrofoil delivered to the U.S. Navy in 1968. Dimensions on the PHM are 132.8 feet (40.5 meters) long, 28.2 feet (8.6 meters) wide, and 231 long tons (235 MT) displacement.

Propulsion will be by a waterjet system pioneered for hydrofoils by Boeing. A gas-turbine-driven water pump propels the craft at speeds in excess of 40 knots (46.1 mph - 74.1 km/h).

J.J. Henry Appoints Thomas As Manager Cohasset, Mass. Office



Wm. duBarry Thomas

William duBarry (Barry) Thomas of Scituate, Mass., has been appointed manager of the J.J. Henry Co.'s Cohasset, Mass., office. He was resident supervisor in charge of the Quincy, Mass., field inspection office of the New York City-based firm of naval architects and marine engineers since August 1969.

In his new position, Mr. **Thomas** is responsible for directing the development of detailed plans and technical / purchase specifications for merchant and naval ships, special studies, and other projects assigned to the Cohasset office, **J.J. Henry,** president and founder of the 25-year-old company, said.

While stationed at Quincy, Mr. **Thomas** and his staff inspected the construction of three J.J. Henry Co.-designed SEABEE barge carriers built by the Quincy Shipbuilding Division of General Dynamics Corp. for Lykes Bros. Steamship Co.

Since joining the J.J. Henry Co. in 1958, Mr. **Thomas** has specialized in inspecting the construction of liquefied gas tankers designed by the company. These include the world's first liquefied natural gas (LNG) tankers— Methane Pioneer, Methane Progress, and Methane Princess—and the first low-temperature liquefied petroleum gas (LPG) tanker, the Bridgestone Maru.

Mr. **Thomas** was graduated from Webb Institute of Naval Architecture in 1951 with a bachelor of science degree in naval architecture and marine engineering.

Genstar Plans To Buy Dillingham Interest In Seaspan International

Dillingham Corporation and Genstar Limited have announced that negotiations were in progress for the purchase by Genstar of the 50 percent interest in the Vancouver, British Columbia-based Seaspan International Ltd., owned by a wholly owned subsidiary of Dillingham.

Seaspan is a major tug and barge operation on the Canadian West Coast, which has been jointly owned by Genstar and the Dillingham subsidiary since the two firms merged their respective subsidiaries, Island Tug & Barge Limited and Vancouver Tug Boat Co., Ltd. in 1970, to create Seaspan.

If agreement is reached, the proposed purchase will be subject to approval by the Canadian Transport Commission under the provisions of the Canadian National Transportation Act.

AIMS Publishes Updated Version Of 'All About AIMS'

The American Institute of Merchant Shipping (AIMS) has announced the publishing of a revised edition of its booklet, "All About AIMS."

The updated version tells comprehensively the story of this major American shipowners' association which represents about 70 percent of the active, privately owned U.S.-flag tankers and dry cargo vessels operating in the foreign and domestic trades.

The booklet covers all facets of AIMS, including its activities, objectives and goals, its member lines and principles, a description of its various councils, the functions of its committees, and AIMS's active role in numerous national and international organizations in support of the American merchant marine.

Copies of the revised edition are available by writing to the American Institute of Merchant Shipping, 1625 K Street, N.W., Washington, D.C. 20006.

St. Lawrence River Container Operators Association Formed

Three major shipping firms—Furness Withy & Co. Ltd., Cast North America Ltd., and CP Ships—have formed the St. Lawrence River Container Operators' Association.

The joint announcement said the head office of the new association will be Montreal, Canada.

The association was formed to deal with problems of mutual interest to container operators in St. Lawrence River ports.

Rea Towing Integrated Into Cory Ship Towage

Rea Towing, which operates nine tugs on Merseyside, has now been fully integrated into Cory Ship Towage, the towage operating company within Wm. Cory & Son, a division of the Liverpool, England-based Ocean Group. Rea Towing was formerly part of Rea Limited, the balance of whose shares was acquired by Ocean last year.

For the present, Merseyside towage services will continue to be operated in the name of Rea, although they are now an extension of Cory Ship Towage's other services at Bristol, Avonmouth, Cardiff, Barry, Newport, Milford Haven, Plymouth, Clyde, Belfast, Londonderry, Cobh, and Bantry.

Capt. **W.M. Fleming** is manager of the Liverpool operations. **R. Anderson** of Rea Limited has been transferred to Cory Ship Towage, London, as assistant chief engineer superintendent, and **A.P. Taylor** has been appointed superintendent engineer of Rea Towing.

Jan C. Uiterwyk Co. Appoints John J. Lynch General Sales Manager

Jan C. Uiterwyk Co., Inc., with offices in Tampa, New Orleans, New York, Houston and Chicago, has announced the relocation of its New York office to 90 West Street, New York, N.Y. 10006.

The company has also announced the appointment of **John J. Lynch** as their general sales manager. Mr. **Lynch,** who has had a broad background in both breakbulk and container services, will be located at Jan C. Uiterwyk's New York office.

CODOG System On Icebreaker Will Double Ice Penetration Power

The new U.S. Coast Guard icebreaker Polar Star, which is now being built, will have a "100 percent increase in ice penetration capability over that of current Coast Guard 'Wind' class icebreakers," it was reported on April 10 at the International Gas Turbine Conference and Products Show.

In a paper delivered by **A.F. Finizio** of Turbo Power and Marine Systems, Inc., it was stated: "The Polar Star, under construction at Lockheed Shipbuilding and Construction Company, represents a major departure in U.S. icebreaker propulsion plant design. Employing a CODOG system (combined diesel or gas turbine) and three controllable reversible pitch propellers, the icebreaker will have one and a half times the power of the Soviet Union's Lenin, presently the most powerful icebreaker afloat."

In describing the propulsion system, Mr. **Finizio** said: "The CODOG system, in itself, is a departure from standard design, using a combination of diesel electric propulsion drive with a mechanical gas turbine-reduction gear drive system. The diesel electric AC generated, rectified to DC drive system, is the icebreaker base load or cruise plant, while the gas turbine boost plant is used to power the icebreaker in thick ice fields. The two independent systems drive common shaft lines with CRP propellers. The propulsion motor armature becomes a part of the line shafting during gas turbine operation."

Bandrowski Named Kaiser Sales Rep For Offshore Construction

Alex W. Bandrowski has been named senior sales representative, offshore construction, for Kaiser Steel Corporation, it was announced by **J.A. Fabian,** the company's general sales manager, fabricating.

As part of the company's northern district sales staff, Mr. **Bandrowski** will be responsible for Kaiser Steel's marine construction sales for barges, offshore platforms, marine terminals, and other related marine work.

A member of the Kaiser Steel organization since 1956, Mr. **Bandrowski** most recently served as manager, estimating and planning, at the company's Napa, Calif., fabricating facility.

Mr. **Bandrowski** is located at the company's headquarters at Kaiser Center in Oakland.

$1.3-Million Contract Awarded To Dravo For Traveling Ship Loader

A $1.3-million contract for an advanced design, traveling ship loader to serve the export coal market has been awarded Dravo Corporation by Alabama State Docks, Mobile, Ala.

The rail-mounted ship loader— to be designed, manufactured and erected by the Pittsburgh, Pa.-based firm —will be located at a new coal-handling facility under construction at McDuffie Island in Mobile Bay. It will be capable of loading ships up to 100,000-deadweight-ton size at a peak rate of 5,000 tons per hour.

Metallurgical coals from Alabama mines will be the primary material shipped from the new facility when completed. Delivery and operational checkout of the ship loader are scheduled for completion by Dravo in February 1974.

An existing dockside facility located five miles away on the Mobile River will continue major loading and unloading operations for ore, bauxite, and other bulk materials handled by the Alabama State Docks.

Advanced design features of the Dravo ship loader include a counterbalanced tubular boom, and a telescoping load-out chute with a rotating spoon. These features represent advances in the state-of-the-art from standard shuttle-boom truss structure ship loaders.

The 95-foot boom will be buffed by means of hydraulic cylinders. The boom movement, coupled with the hydraulically actuated telescopic chute, gives the ship loader the capability to work with vessels of a wide variety of sizes and configurations.

Consulting engineer for installation of the new Alabama dock facility is R.L. Reid, Inc., Houston, Texas. David Volkert and Assoc., Mobile, Ala., is the consulting engineer for adjacent storage yard facilities.

Kockums Net Profits Increase 40% In 1972

Kockums Mekaniska Verkstads AB more than doubled its gross earnings in 1972 and increased its net profits by 40 percent as against 1971 results, according to the official report issued in Malmo, Sweden, by managing director **Nils-Hugo Hallenborg.**

Principal contribution to Kockum's banner year was made by its shipyard operations—Sweden's largest—which specialize in the very large oil tankers and the LNG carriers. Kockums and Swedish shipyards in general operate without Government subsidy.

Although overall sales of $245.7 million in 1972 were $16.3 million less than those of 1971, gross earnings totaled $26.3 million, as against $12.7 million the preceding year.

Net profit for 1972 amounted to $1.54 million after taxes, depreciation, writing off $13.5 million in extraordinary costs for liquidation of unprofitable industrial subsidiaries, and setting aside substantial funds for employee benefits and company reserves.

The board of directors, pleased with the 1972 result and the outlook for the next few years, recommended distribution of $1.32 million to shareholders.

Magnavox Research Announces Underwater Color TV Systems

The Marine Electronics Division of Magnavox Research Laboratories announced the availability of a shallow-depth and a deep-depth underwater color television system.

Both systems are specifically designed for applications in petroleum, scientific, and oceanograpic industries.

The shallow-depth system is capable of being operated by a single diver with complete safety while under water. The deep-depth system is capable of being operated totally from the surface. Both systems feature the single-tube technique which eliminates registration problems normally associated with color television cameras.

The Magnavox underwater color televisions are priced starting from $13,500 and up, depending on depth and options.

For additional information, send inquiry to Marketing Manager, Marine Electronics Division, Magnavox Research Laboratories, 2829 Maricopa Street, Torrance, Calif. 90503.

Hudson's Penco Div. U.S. Rep For Howden Inert Gas System

Penco Division, Hudson Engineering Company of Hoboken, N.J., has been appointed U.S. representative for the Howden Inert Gas System. They will manufacture the system in New Jersey for U.S. installations and will also market it to their domestic customers who are having ships built abroad.

The Howden System provides tanker protection by reducing the oxygen to a level that is insufficient for an inflammable mixture whatever the hydrocarbon concentration might be. This is accomplished by taking low content flue gas from the boilerplant, cleaning and cooling it and then distributing it to the cargo compartments.

The system consists of a scrubber that cleans and cools the gas, fans that draw the gas from the uptakes and supply it at a positive head to the tanks, and a positive dry liquid seal that prevents backflow of hydrocarbon gases. In addition, there are valves to isolate uptakes and fans, and to control output; controls to govern pressure to the tanks; alarms to warn of low gas pressure and fault conditions, and instruments to monitor the gas and pressure.

Penco is also the manufacturer of the PrimaVac System which converts any centrifugal pump to an automatic self-priming pump.

Carboline Announces Three Appointments

The Marine Division of Carboline Company, St. Louis, Mo., has announced the following personnel changes:

Herbert Wiseheart has been transferred to the St. Louis headquarters office and will assume duties as assistant marine manager. Mr. **Wiseheart** was formerly in charge of Carboline's marine coating sales on the East Coast from New Jersey to Virginia.

Robert Brinkman, who has considerable experience in the application of marine coatings to ships, will handle marine sales for the area previously covered by Mr. **Wiseheart.**

Carboline also announced the appointment of **Dale Lawson,** Voyager Marine Services, San Francisco, Calif., as representative to handle Carboline marine sales in California, Oregon and Washington.

Mr. **Lawson** has many years of experience in the sales and servicing of marine protective coatings to West Coast shipowners and shipyards and is well-known throughout the area.

Carboline Company manufactures and markets a wide range of corrosion resistant protective coatings, marine coatings and linings, adhesives, paints, industrial finishes, fireproofing products and waterproofing materials.

The main offices are located at 350 Hanley Industrial Court, St. Louis, Mo. 63144.

C-E Names Gormley Manager, Int'l Activities For Industrial Group

Combustion Engineering, Inc., Windsor, Conn., has appointed **Thomas P. Gormley** to the position of manager of international activities for the company's Industrial Group. Mr. **Gormley** will assist in developing and coordinating the international policies and activities of the Industrial Group.

Prior to his appointment, he was a senior contract administrator with C-E's Industrial Boiler Operations. He holds a BBA degree in business administration from St. Bonaventure University, and an MBA degree from American International College. Before joining C-E, Mr. **Gormley** held administrative assignments in the procurement field with United Aircraft and the General Electric Co.

Combustion Engineering's 1972 sales were $1,179,883,000. 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.

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Marine sales managers agree . . . shoreside management, executive and engineering personnel in vessel operations, shipbuilding, ship repair and naval architecture have the authority to specify, order and buy all types of marine equipment, products and services.

MARINE ENGINEERING/LOG

OCCUPATIONAL BREAKDOWN OF TOTAL CIRCULATION

		BUYING POWER
SHIPBUILDING & SHIP REPAIR COMPANIES		
Companies, Presidents, Vice Presidents, Secretaries, Treasurers, General Managers & Purchasing Agents		1,981
Works Managers & Superintendents		229
Naval Architects, Marine Engineers, Chief Draftsmen		907
Shipbuilding & Ship Repair Personnel (Draftsmen, Foremen, Inspectors & Others) not included in above classification	551	
SHIP OPERATING COMPANIES, OWNERS, AGENTS & BROKERS:		
Companies, Presidents, Vice Presidents, Secretaries, Treasurers, General Managers, Purchasing Agents, Passenger & Freight Agents		2,842
Marine Superintendents, Port Captains, Port Engineers, Port Stewards		1,265
Deck Captains, First, Second & Third Mates Only	2,491	
Engine Room Chiefs & Licensed Assistants	3,649	
Ship Operating Personnel Ashore & Aboard not included in above classifications	406	
PROFESSIONAL MEN:		
Naval Architects & Marine Engineers		1,386
Admiralty lawyers	25	
Insurance Companies, Agents & Brokers	55	
NAVY	359	
MARINE SUPPLIES & EQUIPMENT: Manufacturers	1,707	
Ship Chandlers, Dealers & Agents	73	
Bunkers (Coal & Fuel Oil)	14	
ALLIED MARINE INDUSTRIES:		
Freight Agents & Forwarders	1	
Exporter & Importers	8	
Stevedoring Companies not owning Floating Equipment	20	
Government Schools, Libraries, Students & Commercial Organizations	928	
Miscellaneous	834	
Awaiting Classification by Business & Industry	28	
NON BUYING POWER	11,149	

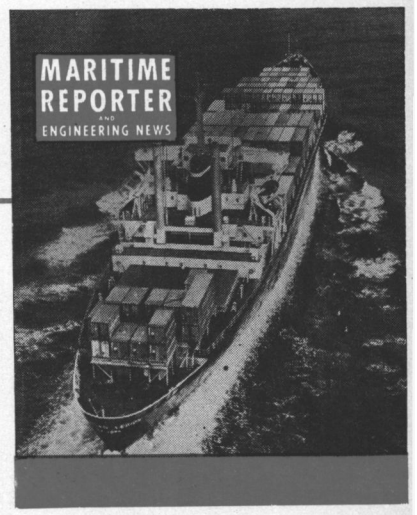
WORLD WIDE BUYING POWER TOTAL 8,610

Why settle for less . . . . . MARITIME REPORTER/Engineering News WORLD WIDE . . . INCLUDING . . .

Source—Each publication's own official circulation statement—Available July, 1972.

HAS THE LARGEST WORLD WIDE REACH WITH YOUR '73 ADVERTISING.

With all due respect, sales managers tell us the man aboard ship does not specify or buy. You be the judge. Compare both magazines . . . for the one you feel reaches the largest number of men with the authority to give business to your company.



MARITIME REPORTER/Engineering News

OCCUPATIONAL BREAKDOWN OF TOTAL CIRCULATION

	BUYING POWER
SHIPBUILDING & SHIP REPAIR (Commercial, U.S. Navy and U.S. Coast Guard):	
Companies, directors, owners, presidents, vice-presidents, secretaries, treasurers, superintendents, managers and purchasing agents	3,757
Naval architects, engineers and chief draftsmen	1,141
Other employees (draftsmen, inspectors, foremen and others employed by shipbuilding and repair companies) not included in above classifications	99
VESSEL OPERATING COMPANIES– OCEAN, RIVERS, HARBORS, OFFSHORE OIL DRILLING AND RELATED OPERATIONS	
(Owners, Agencies & Brokers) Companies, directors, owners, agents, presidents, vice-presidents, managers, secretaries and treasurers	5,429
Port engineers, superintendents, purchasing agents, port captains, port stewards, naval architects and engineers shoreside	1,637
Other employees ashore not included in above classifications	43
PROFESSIONAL MEN:	
Naval architects, engineers and consultants shoreside	1,595
Admiralty lawyers and insurance	18
MARINE SUPPLIES & EQUIPMENT:	
Manufacturers, dealers and agents	1,616
Ship Chandlers	172
Allied marine industries	295
GOVERNMENT:	
U.S. Maritime Administration, U.S. Senators, U.S. Congressmen and others in official capacities	36
SCHOOLS, LIBRARIES AND ORGANIZATIONS	47
NON BUYING POWER	2,326

OUR ENTIRE CIRCULATION IS OVER 97% **READER REQUEST** IN WRITING.

WORLD WIDE BUYING POWER TOTAL **13,559**

REACHES THOUSANDS MORE SHORESIDE BUYERS THOUSANDS MORE IN THE BIG AMERICAN MARKET.

MARITIME REPORTER AND ENGINEERING NEWS

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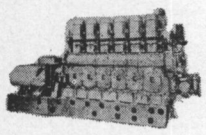
DIESEL GENERATOR SETS

1



250 KW DIESEL GENERATOR SET

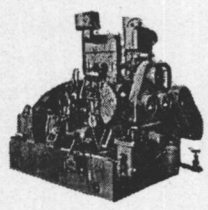
ENGINE: Enterprise 12 x 15 DSG-6—6 cyl.—450 RPM crank No. 50J. GENERATOR: Westinghouse 250 KW—120/240 DC—1040 amps—450 RPM. Typical serial No. 3S-10P-913. Complete with switch gear.

2

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.

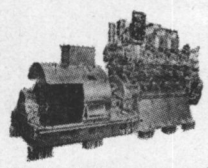
3



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.

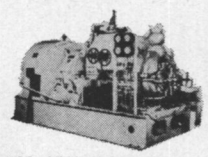
4



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.

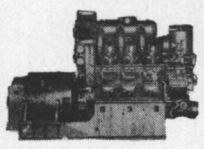
5



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.

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

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.

8

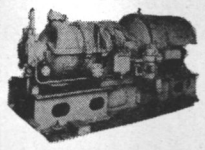
WESTINGHOUSE 440/3/60 200 KW UNIT

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.

9

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.



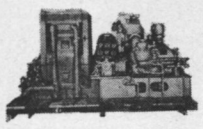
10

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.

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

11



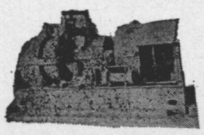
1962—DeLaval. Very little use. Completely preserved with rotors and diaphragms crated separately. TURBINE: DeLaval—585 PSI—840°TT—6-stage—6391 RPM—class CD—Also suitable 440 lbs.—740°TT—25" vac. GEAR: 6391/1200 RPM. GENERATOR: Allis-Chalmers—450/3/60. Totally enclosed, with static exciter and voltage 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.

12

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.

13



VICTORY 300 KW WESTINGHOUSE TURBO GENERATOR SET

440# — 740°F — 5930 RPM — 2A-9794-15-16-17 — coupling non-recessed on steam end of pinion—5¾". GENERATOR: Westinghouse 300 KW—120/240 DC—1250 amps—1200 RPM—C.B. 208.4.

14

UNUSED

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

FOR USE ON NEWPORT NEWS VESSELS—HULLS 480 to 541 CLASS—SIMILAR TO ESSO LIMA CLASS

400 KW WESTINGHOUSE TURBO GENERATOR

TURBINE

835 lbs—840°TT—9018 RPM—instr. book 1430 CI—serial 5A-7090-7 and 5A-7090-8—6-stage.

REDUCTION GEAR

9018/1200 RPM

A.C. GENERATOR

400 KW—450/3/60/1200 RPM—rise 40°C—100% and 58°C—125%. In book 5442. Serial 3S-35P792 and 4S-35P792.

EXCITER

5.5 KW—125 volts—shunt wound—frame 6-83—44 amps.

KNOWN 'ROUND THE WORLD

THE BOST

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TURBINES & ROTORS

MAIN PROPULSION

16

BETH CLASS SERIES TURBINE—13,600 H.P.

SPARROWS POINT 4400-4500 SERIES
QUINCY 1600 SERIES HULLS

28,000 GT/29,000 GT
ONE H.P. TURBINE—BUILT 1949
600 LBS.—860°F—SHAFT
HORSEPOWER 6150 AT 4773
RPM—SERIAL #1630-H-4

17

6690 H.P. HIGH PRESSURE 7-STAGE TURBINE

ORIGINALLY BUILT FOR ESSO CHRISTOBOL—NEWPORT NEWS
6690 H.P. AT 7862 RPM
PRESSURE 835 LBS GAUGE
TEMP. 840°F—SERIAL 83343

FOR EMERGENCY USE

In an emergency, this HP turbine could substitute for Newport News built HP with piping and foundation change.

18

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.

19

8500 H.P. G.E. TURBINE

G.E. Instruction book GEI16263—from ex-Navy Victory. L.P.—8-stage—3509 RPM—77943 H.P.—8-stage—6159 RPM—77942.

WILL INTERCHANGE WITH INGALLS C3 HULL—442 CLASS AND SUN-BUILT C4 VESSELS

20

NEW L.P. BLADE RINGS
for large 8500 H.P. Victory

Joshua Hendy Westinghouse

21

SPECIAL!

1 WESTINGHOUSE COMPLETE T-2 MAIN TURBINE

PROFILE (UNSHROUDED)
6600 HP—435 PSI—750°F
28" VAC.—3720 RPM

Instruction Book 6893—Serial #2A-9361-21. The turbine rotor blades, stationary blading, diaphragms and nozzles are all in unusually good condition.

IMMEDIATE DELIVERY—WITH ABS

ON METALS CO.

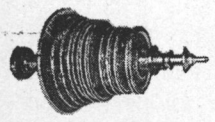
RE ST. • BALTIMORE, MD. 21202

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

22 **NEW 8500 H.P. G.E. TURBINES**

H.P. & L.P.

L.P.—8-stage—3509 RPM
H.P.—8-stage—6159 RPM
Interchange Ingalls C3

23 

T2-SE-A1 MAIN PROPULSION ROTOR — G.E.

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

24 **2 COMPLETE T-2 G.E. TURBINES**

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

ROTOR WILL INTERCHANGE WITH ELLIOTT MAIN TURBINE

25 **9500 H.P. G.E. — C-3 OR VICTORY**

H.P.—8-stage—6159 RPM—serial 62043
L.P.—8-stage—3509 RPM—serial 62042
G.E.I. 16263

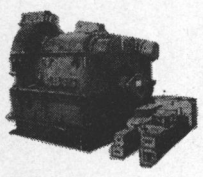
26 **6000 H.P. G.E. — NORTH CAROLINA C-2**

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

27 **VICTORY SHIP AP2 H.P. & L.P. TURBINES**

NEW — UNUSED — 6000 HP SETS

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

28 

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

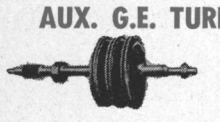
MD-48A—8500 HP—6159/3509/763/85 RPM.

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

Westinghouse 4A-1640.

T-2 TANKER
UNUSED—4 UNITS AVAILABLE

30 **AUX. G.E. TURBO GEN. ROTORS**



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

PUMPS

31 **INGERSOLL-RAND BRONZE CARGO PUMPS ONLY**

Bronze Ingersoll-Rand 10GT cargo pumps only—without turbine. 4500 GPM at 125 lbs—2-stage—14"x12".

CARGO PUMP TURBINES

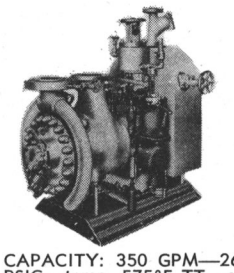
32

WHITON

Direct drive—type BDS—500 HP—835 lbs at 0° superheat. Exhaust 12" Hg. Will operate at 455 PSIG—599°TT—4 PSI exhaust. Can be used with 10GT Ingersoll-Rand pumps.

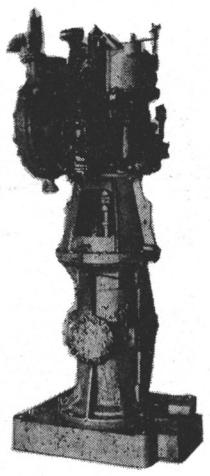
WESTINGHOUSE

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

33 

COFFIN TYPE D.E.B. TURBO FEED PUMP

CAPACITY: 350 GPM—2600' total head. Steam 845 PSIG—temp. 575°F TT—exhaust 42 PSIG—HP 396—RPM 8030—rated design 10,000 RPM. Serial #51-143-37. Suitable for Tankers 25,000 GT and up.

34 

UNUSED DELAVAL 24.5 H.P. LUBE OIL PUMP

Turbine-driven main lubricating oil pumps — vertical rotary with horizontal worm geared turbine drive. 575# Steam pressure—5000 RPM—15# back pressure. GEAR: 5000/1035 RPM. PUMP: 550 GPM at 50 PSI—suction lift 10.0". Suitable for Fletcher Class Destroyer. DD 445 Class.

35 

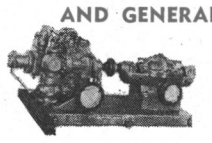
UNUSED SIZE 4 BUFFALO FEED PUMPS

Terry Turbine—BM—273 HP—550 RPM—exhaust 15 lbs—590 PSI—superheat 0°—425 GPM Buffalo Pump—discharge pressure 750 lbs—5" x 4"—built for USN DD destroyers. DD 445 Class Fletcher.

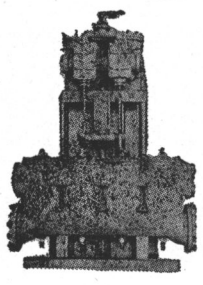
36 **FIRE & BUTTERWORTH PUMP**

Warren Pump—450 gallons Per Minute—449 ft—71 HP—type 3-TL-2 TURBINE: 71 HP—545 PSI—540°TT—15 lbs G exhaust—3500 RPM. Reconditioned.

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



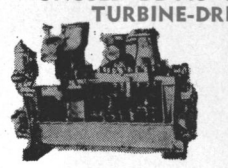
Allis - Chalmers 6x5 pump, type SKH—1200 GPM—125 PSI—3500 RPM. Coppos turbine type TF-22-2½ — 3500 RPM. 273#—50° superheat.

38 

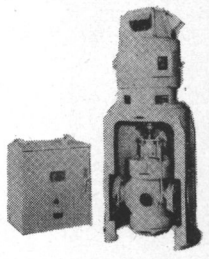
WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

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

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



Worthington — drawing SL-5043—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.

40 

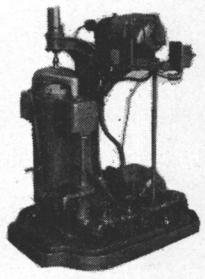
UNUSED DELAVAL IMO ROTARY PUMP

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.

MISCELLANEOUS

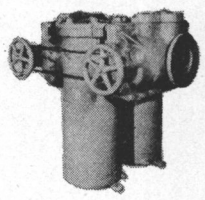
41 **ANCHOR WINDLASS**

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

42 

SHARPLESS LUBE & DIESEL OIL PURIFIERS

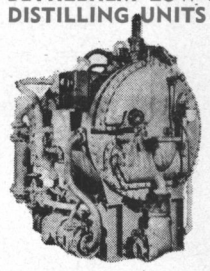
Type M-34-W22-UM—15,000 RPM. BOWL MOTOR: 2 HP—230 volts DC—8.5 amps—3450 RPM—250 to 300 GPH. Originally built for C-1-A diesel vessels.

43 

DUPLEX MAGNETIC OIL STRAINERS

4"—5"—6" sizes immediately available.

44 **BETHLEHEM LOW-PRESSURE SINGLE EFFECT DISTILLING UNITS WITH AUTOMATIC FEED WATER CONTROL**



Model S-1-10E—10,000 gallons per day clean tube capacity. Tube nest steam pressure 5 PSI. With brine pump and distillate pump. Units have Weir automatic feedwater controls—salinity indicator, etc.

45 

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

20" Ex. inlet—⅝" Cu-Ni tubes—with or without air ejector.

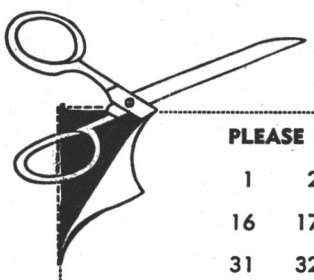
46 

DOUBLE INPUT—SINGLE OUTPUT DIESEL REDUCTION GEARS

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.

INQUIRE FOR ALL OTHER ITEMS

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



PLEASE SEND INFORMATION ON THE FOLLOWING: (Please circle items) 5/1/73

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46														

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

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

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

MTS Offers Short Course On Planning For Offshore Ports

In conjunction with the Marine Technology Society's Ninth Annual Conference to be held in Washington, D.C., the week of September 10, 1973, a short course will be offered on Planning for Offshore Ports. The Oceanography Department at Texas A&M University, and the College of Marine Studies at the University of Delaware will co-sponsor the course. A series of guest lecturers from Government, industry and academia will provide an integrated program of study concerning offshore port facilities.

Sessions will cover the following aspects of deepwater port planning: (1) Oceanographic and Environmental Factors, (2) Engineering, Construction and Design Criteria, (3) Economic Aspects, (4) Political, Legal and Sociological Factors, and (5) Case Studies: Upper East Coast, Gulf Coast, Bantry Bay, Mobile Ocean Basing, etc.

The course will provide anyone interested in future offshore port development a comprehensive look at the technical, political and legal problems involved. The question of offshore port development is likely to be one of the most controversial issues of the next few years, involving as it does energy supply questions, environmental considerations, technical problems and political-legal debates. The course is a unique opportunity to become quickly acquainted with the range of issues and to examine some of the questions in-depth with leaders in the field.

Lecturers will come from organizations such as the following: Army Corps of Engineers, Bechtel Corporation, U.S. Coast Guard, University of Delaware, Delaware River Port Authority, Gulf Oil Corporation, M.I.T., Maritime Administration, University of Miami, National Oceanic and Atmospheric Administration, U.S. Navy, Soros Associates, Sun Oil Corporation, and Texas A&M University.

This course will extend over a five-day period and will be integrated with appropriate technical sessions of the conference. Attendance at the course will be limited to 50 people, and therefore, early enrollment is advised. The course will cost $225 for MTS members, $250 for nonmembers, which includes course materials and conference preprints.

The Office of Naval Research has accredited the course for members of the Research Reserve. A certificate of completion will be awarded to participants in the course.

Further information can be obtained by writing to MTS Headquarters, 1730 M Street, N.W., Suite 412, Washington, D.C. 20036.

Shortt And Karfs Promoted At Bethlehem San Pedro Yard

David L. Shortt

Carl B. Karfs

Two promotions in the general manager's office at Bethlehem Steel Corporation's San Pedro, Calif., shipyard, were announced by **A.J. Maloney**, general manager.

David L. Shortt, formerly sales engineer, was promoted to assistant general manager and **Carl B. Karfs,** also a former sales engineer, was advanced to the position of assistant to general manager.

A native of San Diego, Calif., Mr. **Shortt** is a graduate of San Diego high school, and the U.S. Merchant Marine Academy at Kings Point, N.Y., where he majored in marine engineering.

From 1947 to 1954, he served with the U.S. Navy in the Western Pacific-Korean Theater. His rank upon discharge was lieutenant commander, U.S. Naval Reserve. He was employed at the San Pedro yard in 1954 as a coordinator in the production department, and in 1963 was promoted to sales engineer, the position held prior to his present promotion.

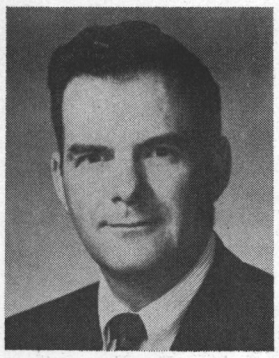
Mr. **Shortt** is a member of The Society of Naval Architects and Marine Engineers, and The Propeller Club of the United States, Port of Los Angeles-Long Beach.

Mr. **Karfs** was born in East St. Louis, Ill. He attended high school in Illinois and is a graduate of the U.S. Merchant Marine Academy at Kings Point, where he majored in marine engineering.

He received his chief engineer's license in 1966, and retired from the United States Naval Reserve as a lieutenant in 1966. That same year, he was employed as an estimator at the San Pedro yard. A year later, he was promoted to sales engineer, the position held at the time of his present advancement.

Mr. **Karfs** is a member and past president of The Society of Port Engineers, Los Angeles-Long Beach; The Propeller Club of the United States, Port of Los Angeles-Long Beach, and The Society of Naval Architects and Marine Engineers.

Miller And Nivin Promoted To Vice Presidents At ACBL



D. Ray Miller

James E. Nivin

D. Ray Miller and **James E. Nivin** have been elected vice presidents of American Commercial Barge Line Company (ACBL). Mr. **Miller** has also been elected vice president of Commercial Transport Corporation (CTC), an affiliate of ACBL.

Announcement of the new positions for Messrs. **Miller** and **Nivin** was made in Jeffersonville, Ind., by **Floyd H. Blaske,** president of both companies, and chairman and chief executive officer of the Inland Waterways Services Division of Texas Gas Transmission Corporation, their parent company.

Mr. **Miller,** who has been director of distribution services for ACBL, will continue to head that phase of the company's operations.

Mr. **Nivin** has responsibility for engineering under his ACBL assignment. In addition, he will continue as vice president, engineering, for Jeffboat, Inc., shipbuilding affiliate of ACBL in the Inland Waterways Services Division.

Following his 1949 graduation from the University of Pittsburgh with a degree in transportation, Mr. **Miller** joined the organization that evolved into the Inland Waterways Services Division of Texas Gas Transmission Corporation. In 1960, he became chief dispatcher for American Commercial Barge Line Company, and since that time has also served as assistant manager of operations, director of terminals, and director of distribution services.

Mr. **Nivin,** holder of a degree in naval architecture and marine engineering from the University of Michigan, from which he was graduated in 1951, joined Jeffboat in 1965 as manager of special projects. He became director of engineering in 1967, was elected vice president of Jeffboat—operator of one of the nation's largest and busiest inland shipyards—in 1968, and was made engineering vice president in the Inland Waterways Services Division on January 1, 1972.

Taylor Diving & Salvage Announces Three Appointments

Hugh W. Gordon Jr., has been elected president of Taylor Diving & Salvage Co., Inc., an affiliate of Brown & Root, Inc., succeeding **Mark P. Banjavich,** who has resigned.

Ken W. Wallace will remain as senior vice president in charge of operations, and **Jerry J. Jones** has been elected vice president-administration of Taylor, a New Orleans, La.-based subsidiary of the Halliburton Company. Taylor is one of the largest international underwater engineering, construction and salvage companies in the world.

Mr. **Wallace** served in the U.S. Navy from 1943 to 1945 and from 1950 to 1964, when he joined Taylor. He was graduated from the Naval Deep Sea Diving School in 1952, and was designated a Master Deep Sea Diver, U.S. Navy, in 1961, and appointed master driver of the First Nuclear Submarine Squadron. In 1962, he was assigned to the Naval Experimental Diving Unit as master diver in charge.

Upon joining Taylor, Mr. **Wallace** was involved in the company's research and development work pertaining to diving. He was elected vice president-special assignments in 1970, and senior vice president in 1972.

Mr. **Jones** comes to Taylor from Brown & Root, Inc. of Houston, Texas, where he was manager of the company's Electronics Division. Mr. **Jones** joined Brown & Root, one of the largest engineering and construction firms in the world, in 1968 doing research and development work for the Microwave Survey System and computer controlled systems for dynamic positioning of offshore construction barges.

Prior to joining Brown & Root, a Halliburton subsidiary, Mr. **Jones** attended Washington State University, served in the U.S. Air Force from 1957 to 1965, and worked as engineering supervisor of Welex Electronics doing underwater sonar development and testing, serving as test director of the Seneca Lake (N.Y.) Experimental Test Facility for the Navy.

Mr. **Gordon** is executive vice president-marine, and a director of Brown & Root, and is in charge of the worldwide marine activities of the company. A graduate of the University of Texas at Austin, Mr. **Gordon** joined Brown & Root in 1951 as an engineer, and later served as project engineer in various locations. He was named vice president-foreign marine operations in 1968, senior group vice president in 1970, and executive vice president-marine in 1970.

Optimum Ship Routing Described In Brochure By Bendix Subsidiary

Bendix Commercial Service Corporation, a subsidiary of The Bendix Corporation, has published a brochure titled "Optimum Ship Routing" which describes the Bendix Marine Science Services organization's technological and manpower resources.

Optimum Ship Routing (OSR) is a proven and accurate worldwide routing technique serving container, bulk, OBO, tanker, and general cargo vessels and oil rig movements.

Some of the benefits of Optimum Ship Routing are: reduces transit time; reduces fuel consumption; provides greater crew and passenger comfort; makes possible better operational planning; avoids hull and cargo damage, and ultimately reduces marine insurance premiums.

Further details or a copy of the brochure can be obtained by contacting **Joel Brafman,** Marketing Engineer, Bendix Commercial Service Corporation, Marine Science Services, P.O. Box 2205, South Hackensack, N.J. 07606.

Maritime Fruit USA Subsidiary Elects Board Officers

The election of **John Chafee** as chairman of the board of directors and **Sol M. Linowitz** as chairman of the executive committee of General Martime Corporation, a United States subsidiary of Maritime Fruit Carriers Limited, was recently announced.

General Maritime Corporation was recently organized to engage in the transportation of energy resources and the shipment of oil in very large crude carriers.

Mr. **Chafee,** former Governor of Rhode Island, served as Secretary of the Navy from 1969 to 1971. He is now associated with the law firm of Edwards & Angell, Providence, R.I.

Mr. **Linowitz,** a senior partner of Coudert Brothers, is former chairman of the board of Xerox Corporation and was United States Ambassador to the Organization of American States from 1966 to 1969.

Also joining the board of directors of General Maritime is **Willard Wirtz,** Secretary of Labor under Presidents **Kennedy** and **Johnson.**

Other members of the board of directors are **Yaacov Meridor,** chairman of MFC, **Mila Brener,** co-chairman of Maritime Fruit Carriers, and **H. Struve Hensel,** Coudert Brothers partner, former Assistant Secretary of the Navy for Procurement, and Assistant Secretary of Defense under President **Eisenhower.**

General Maritime expects shortly to announce the selection of its president.

Maritime Fruit Carriers is a worldwide organization specializing in refrigerated shipping and oil transportation. A series of orders for new supertankers has been placed by Maritime Fruit Carriers with shipyards around the world. Maritime Fruit has announced that it intends to concentrate all of its activities in this area in General Maritime Corporation, and several of its supertanker orders have already been assigned to General Maritime.

Great Lakes Towing Publishes Brochure

The Great Lakes Towing Company of Cleveland, Ohio, has just published a new brochure describing its complete services for towing anywhere on the Great Lakes. The brochure describes the company's barge towing services, including specifications for the tug fleet which is specially designed for the unique conditions prevailing on the Great Lakes. It also includes descriptions of the company's harbor towing, icebreaking and other services.

Several maps are included showing Great Lakes Towing's barge pickup services in the Chicago and St. Lawrence areas, plus the company's service locations throughout the Great Lakes region.

The new brochure is available free from The Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, Ohio 44113.

Large And Small Pipe Bends Available From New Company

A new company known as Pipe Benders, Inc. has begun commercial pipe-bending operations in Duluth, Minn., with capacity to supply industries worldwide with single, compound, large and short radius bends in pipe from 6 inches to 60 inches in diameter.

According to company president **Robert M. Meierhoff,** the company will employ the largest and most sophisticated automatic pipe-bending equipment in the world. Bends in both heavy and light wall thicknesses can be made in a wide range of pipe materials, including carbon, stainless and chrome-moly steels and aluminum, copper, and nickel alloys.

In addition to its pipe-bending operations, the company will provide complete physical and metallurgical testing facilities to test bending procedures and to assure that quality requirements meet the specifications as demanded in industries where pipe bends are most commonly used, such as gas and oil transmission, power generation, pulp and paper processing, chemical processing, shipbuilding and refining.

According to Mr. **Meierhoff,** the company was formed by parties long associated with pipe fabrication and mechanical construction in response to the need for pipe-bending facilities to handle the increasingly popular large-diameter pipe.

Consideration for the Duluth location included not only immediate rail and interstate freeway access, but also Duluth's status as a St. Lawrence Seaway port for receiving and shipping of pipe and pipe bends.

Further information may be obtained from **Robert Meierhoff,** Pipe Benders, Inc., P.O. Box 396, Duluth, Minn. 55801.

Army Engineers Ask For Proposals On One Steel Derrick Boat

The Army Engineers have asked for proposals for one welded steel derrick boat with the following dimensions: maximum length, 150 feet; width, 82 feet, and a loaded draft of 7 feet 6 inches. The vessel would have a 90-foot boom crane test load of 270,000 pounds, and a 130-foot boom crane test load not under 112,-500 pounds.

Requests, which must be submitted by May 15, 1973, should be sent to U.S. Army Engineer District, Louisville, 600 Federal Place, Louisville, Ky 40402. Reference: DACW 27-73-R-0010.

Elpac Inc. Subsidiary Bludworth Shipyard Buys Three Drydocks

Bludworth Shipyard, Inc., marine repair and construction subsidiary of Elpac, Inc., located on the Houston Ship Channel, has purchased three drydocks which will provide additional marine repair service to the Houston area. Two sections have been joined and are in service, and the third one is expected to be in service by June 15, 1973.

The three sections measure 150 feet long, 100 feet wide and 24 feet high, with 76 feet between the wing walls. The lifting capacity is approximately 1,700 tons.

The drydocks were towed to Houston from Port Lavaca, where they were purchased from B-R Dredging Company.

Bludworth Shipyard's 22 acres on Brady Island in the Ship Channel includes 10 work stations, two marine railways capable of handling two vessels each at a time, and six dockside work stations.

The yard has just completed 1,000 feet of bulkheading adjacent to its existing railways and on the Ship Channel. Also in the finishing stages is an enclosed 16,000-square-foot fabricating building and a new office building.

Capital improvements at Bludworth Shipyard since October 1972 total approximately $1,500,000. This yard is rapidly developing into one of the most modern and best equipped marine repair and construction facilities in the West Gulf area.

Elpac, based in Houston, has California operations in both electronic component manufacturing and road resurfacing, but is heavily concentrated in oil and gas services, as well as oil and gas production. The stock is traded over-the-counter.

Speer To LNG Post At Brown & Root's Allied Industries Div.

Grant W. Speer, formerly general manager of General Dynamics Corporation's commercial products division in San Antonio, Texas, has assumed the position of product manager-LNG for Allied Industries' liquefied natural gas program at Houston, Texas.

Mr. **Speer** brings to his new position more than 20 years of experience in operating and management fields. In addition to his General Dynamics post, Mr. **Speer** has served as assistant director of operations for Twin Industries Corp. in Buffalo, N.Y., and he held supervisory and operating positions with Lockheed Propulsion Company for 11 years. His experience includes three years of employment with Northrop Aircraft of Hawthorne, Calif., and four years of aerodynamics work while attending college.

A native of San Bernardino, Calif., Mr. **Speer** holds the bachelor's degree in aeronautical engineering from the University of California at Los Angeles. He has also completed special business training courses at the University of Southern California's graduate school of business.

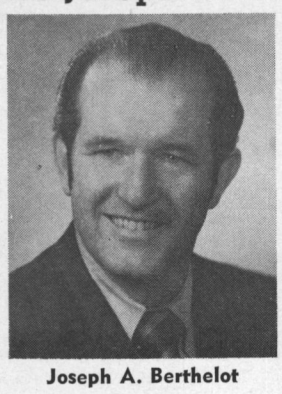
Allied Industries, a division of Brown & Root, Inc., a Halliburton Company, is headquartered in Houston. The company fabricated the cargo tanks for the United States' first oceangoing LNG barge, and two license agreements have strengthened the firm's LNG capabilities.

Allied's background in specialized metals fabrication recently resulted in the signing of an agreement with TEAL Cryogenics, Inc., whereby Allied will manufacture spool-wound cryogenic heat exchangers of the French TEAL design in the United States. The heat exchanger is the heart of the liquefaction process, and exchangers of the TEAL design have been installed in base-load plants throughout the world.

The company has also signed a license agreement with Technigaz of Paris, France, for fabrication in the United States of cargo tanks to be installed in oceangoing LNG tankers. These tanks represent about 20 percent of the capital investment required of an LNG tanker.

Allied was organized in 1944. The company specializes in sophisticated plate and vessel fabrication for the petrochemical and other industries. In addition, the company's Flo-Tronics Division offers design and installation of total air-conveying systems, blenders, and component equipment for the petrochemical and other industries.

American Mfg. Co. Names Joseph Berthelot



Joseph A. Berthelot

American Manufacturing Company, Inc. of Brooklyn, N.Y., has named **Joseph A. Berthelot** as Southern territory manager. This is a newly created post resulting from the combination of Southeast and New Orleans territories, and including North and South Carolina, Georgia, Florida, southern Alabama, southern Mississippi and Louisiana.

Mr. **Berthelot** is a native of New Orleans and a member of The Propeller Club of that port. He joined American in 1958 as a sales representative and now headquarters at 1523 St. Ferdinand Street, New Orleans, where the company maintains one of the largest stocks of rope in the Gulf area.

Neil Marquette, based in Jacksonville, will continue to represent American in the Southeast, reporting to the New Orleans office where **Walter F. Wellman** is manager.

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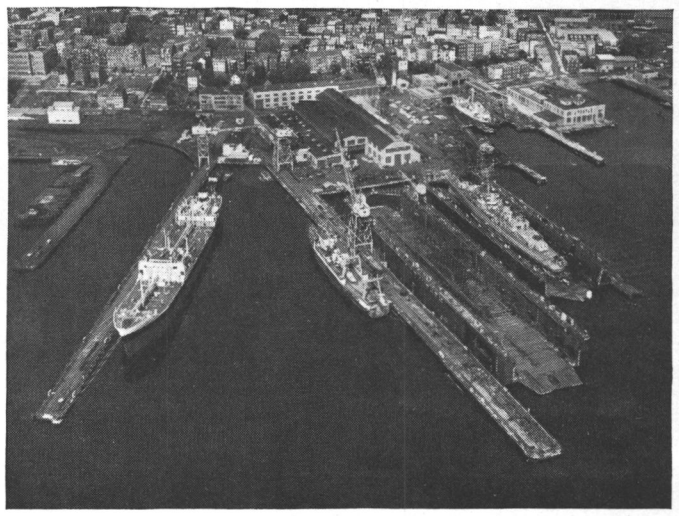


In East Boston Harbor, our Boston Yard maintains the largest and most complete ship repair and conversion plant in New England. With three dry docks (to 20,000 tons' capacity), nearly 4,000 ft of pier berthing space, eight major shops, floating equipment for pierside and anchorage repairs and tank cleaning—and a skilled, experienced staff—this yard handles the full range of ship repair and reconditioning work. Marine engine overhaul and repair service is one of the yard's specialties.

Boston is also active in non-marine work, handling such items as large steel fabrications, weldments, and piping and machining.

Peter A. Holzer Elected President Of TTT

Peter A. Holzer has been elected president and chief executive officer of Transamerican Trailer Transport Inc., it was announced in New York City, following the resignation of **R.D. Carter.**

Mr. **Holzer,** who is the son of the late **Eric K. Holzer** who founded TTT, in early 1967, said: "We are all deeply grateful to Mr. **Carter** for his contribution, as TTT has been a very successful operator in the highly competitive Puerto Rican trade since it introduced the world's largest and fastest roll-on trailerships five years ago."

While TTT has just completed its most successful year since the corporation's inception of operations, TTT anticipates that its growth will accelerate impressively following the recent introduction of its newest roll-on vessel, the S/S Fortaleza, Mr. **Holzer** said.

"With the three sister ships, we are giving a much improved coverage to the entire shipping market east of the Mississippi and, of course, we feel that Puerto Rico, her customers and suppliers, are much better served by this expanded operation," the new TTT president said.

Mr. **Holzer** has already established his new office at the line's Staten Island, N.Y., headquarters and will concentrate on improving TTT's service and on expanding it in the future.

Noting that TTT celebrated its fifth anniversary of operations last month serving the Puerto Rican trade, Mr. **Holzer** said: "Our confidence in Puerto Rico and our bullish attitude toward its future is verified by our large investment in the most modern vessels and equipment available anywhere in the world."

Peter A. Holzer

TTT, universally regarded as one of the most successful U.S.-flag carriers because of its innovative roll-on technique, currently operates three 25-knot trailerships between the East Coast and San Juan, providing 58-hour nonstop service. Two vessels, the S/S Ponce de Leon and the S/S Eric K. Holzer, service Puerto Rico twice weekly from New York. The S/S Fortaleza operates weekly from Baltimore, Md.

Ever since his graduation from the University of Colorado in 1963, Mr. **Holzer** has been in the maritime industry and, until this announcement, has been president of American Union Transport Inc., which is a leading international freight forwarder, charter broker and ship operator.

Safety/Environmental Special Committee Named By AWO

A special committee to deal with Inland Waterways Safety and Environmental Protection as they relate to American Waterways Operators matters was recently named by **Robert J. Hughes** (James Hughes, Inc.), chairman of the board of the Association.

H.G. Noland (Union Carbide Corporation), former chairman of the board of AWO, was named chairman of the new committee. Other members are **James P. McAllister** (McAllister Lighterage Line, Inc.), chairman of the AWO Maritime Administration Liaison Committee; **Ralph W. Hooper** (Interstate Oil Transport Co.), chairman of the AWO Coast Guard Liaison Committee; **John M. Donnelly** (Ingram Barge Co.), chairman of the AWO Corps of Engineers Liaison Committee; **John Kern** (Simms Brothers Towing Company, Inc.), chairman of the AWO Safety Committee; **G.W. Gladders** (G.W. Gladders Towing Company, Inc.), chairman of the AWO Public Relations Committee, and **H.G. Williams** (Gulf Atlantic Transport Corporation), chairman of the AWO Environmental Control Committee.

George H. Shaver Appointed President Shaver Transportation

George H. Shaver

The directors of Shaver Transportation Company have announced the appointment of **George H. Shaver** as president. Mr. **Shaver** replaces Capt. **Homer T. Shaver,** who has assumed the duties of chairman of the board.

Prior to his appointment as president, Mr. **Shaver** was executive vice president of Shaver Transportation Company. He has served in the marine transportation company with Shaver and its affiliates since 1948. He is a graduate of the University of Washington, majoring in transportation.

Mr. **Shaver** is a past president of The Portland Propeller Club, Portland Merchants Exchange and the Columbia River Towboat Association, and is active in other business and community oriented organizations. He has served as a national vice president of The Propeller Club of the United States and is currently the West Coast vice president of the American Waterways Operators.

Shaver Transportation, the West Coast's oldest towboat firm, is a diversified river, coastal and deep-sea company specializing in tug and barge operations in the Pacific region. The company is headquartered in Portland, Ore.

DESCO Announces Three Appointments

DESCO Marine, St. Augustine, Fla., a subsidiary of Whittaker Corp., has announced the appointments of **Richard H. Bennett** as DESCO Marine Division president and general manager, **Robert D. Crane** as Material Control manager, and **Jack B. Butler** as Division controller.

Mr. **Bennett** was formerly vice president of Kiekhaefer Aeromarine Motors, Inc., Fond du Lac, Wis. Previously, he was general manager of the Fisher-Pierce Company, Inc., builders of Boston Whaler boats; and before that, he was vice president of operations for Head Ski Company, Inc. For the previous 20 years, he was with the Brunswick Corporation, starting as an industrial engineer and ending as president of Owens Yacht Division.

Mr. **Bennett** is a graduate of Northeastern University in electrical engineering and has a master's degree from Massachusetts Institute of Technology in business and engineering administration.

Mr. **Crane** joined DESCO from North American Rockwell, Pittsburgh, where he was director of special purchasing. He was formerly vice president of Purchasing and Traffic for North American Rockwell's Commercial Products Group, and director of material for Dresser Industries' Pacific Pump Division. He is a graduate of the University of Pennsylvania.

Mr. **Butler** has moved from Whittaker's corporate office, where he was Special Projects Audit manager. Before joining Whittaker, he was cost accounting manager for Hoffman Electronics in California. He is a graduate of Dyke College, with advanced studies at Fenn College and UCLA.

Matson Appoints Anthony D. Haydon

Matson Navigation Company, San Francisco, Calif., has appointed **Anthony D. Haydon** regional manager, marine operations for Southern California.

Mr. **Haydon** has been assistant regional manager, marine operations in Honolulu since he joined Matson four years ago.

Gas Turbine-Powered LNG Tanker Discussed At Turbine Conference

New marine applications of the heavy duty gas turbine, including design features of the power plant for the world's first gas turbine LNG carrier, now under construction, were discussed in a report recently released at the International Gas Turbine Conference and Products Show in Washington, D.C.

The gas turbine and its associated systems are inherently simple to operate, and have been shown to be readily adaptable to marine service, according to the report presented by **N.A. Svensen** of General Electric Company's Gas Turbine International Department.

"We have found gas turbine installations eminently well suited for simple single-level no-man-watch automation. The ability to utilize virtually any fuels in almost any combination certainly will prove its economic merits," states Mr. **Svensen** in the report.

Moss-Rosenberg Hull #177—the Hilmar Reksten vessel now under construction in Norway—is the world's first gas turbine LNG carrier.

The power plant for the ship is a GE MS 5002A gas turbine with dual fuel system which can operate on liquid and gas fuels simultaneously. This gas turbine is a two-shaft regenerative machine designed to develop 20,000 shp for a CRP propeller operating at full load at 125 rpm. "The power plant occupies a rather small area," Mr. **Svensen** said.

The tanker will carry 29,000 cubic meters of LNG in four spherical tanks.

The report discussed in detail the tanker's dual fuel combustion system examined with respect to the use of LNG boil-off gas fuel, the liquid and gas fuel processing systems, control system, and classification requirements.

The Reksten vessel will be classed by Det norske Veritas for Class EO, periodically unmanned engine room. In addition, the power plant is designed to meet U.S. Coast Guard LNG boil-off fuel regulations. For these and many other reasons discussed in the report, which was given at the large meeting of international gas turbine specialists convened in Washington, the "keel-laying" of this vessel "represents a fairly significant event to the shipbuilding and shipping industries."

Pactow Buys 5 Tugs —Opens Ship Docking Office In San Diego

Pacific Towboat & Salvage Co., a subsidiary of Dillingham Corporation (NYSE), has announced that it has acquired the five tugs and two barges of Star & Crescent Investment Co. and will now provide ship-docking service in San Diego Harbor under the Pactow name. The purchase became effective April 2, 1973.

J.J. Turner, president of Pactow, said his firm had established a new division with offices in San Diego. **Gary Coslett** has been named Pactow manager in San Diego. He was formerly at the company's headquarters in Long Beach.

Pacific Towboat & Salvage Co. was founded in Long Beach in 1928 and now has one of the largest fleet of tugs and barges in southern California. It became a wholly owned subsidiary of Dillingham Corporation in 1970.

Dillingham Corporation is headquartered in Honolulu. Its maritime, construction, property development, and resource activities are concentrated in the Pacific Basin.

RPC Division Midland-Ross Corp. Appoints Deane Adams

Deane L. Adams has been named product manager for Tami-Lift mobile straddle cranes manufactured by the RPC Division of Midland-Ross Corporation for marine and industrial use.

Mr. **Adams** joined the company a year ago as sales manager for Tami-Lift cranes and allied equipment. He is headquartered at the RPC Division in Roxboro, N.C.

New Defense Features For Merchant Vessels Planned By MA & Navy

Robert J. Blackwell, Assistant Secretary of Commerce for Maritime Affairs, has disclosed that the Maritime Administration and the Navy plan jointly to develop new criteria for defense features to be built into new merchant vessels at Government expense. In recent years, defense features have played little or no role in new ship construction. The broadening of the construction subsidy program, since 1970, to include all types of vessels, not just breakbulk and containerships, has raised new problems in this area.

Mr. **Blackwell**, speaking before a recent meeting of the Navy League of the United States, related the enlarging areas of cooperation he sees between the MA and the Navy. One of these was the impending formation of a "joint MA-Navy ship design team which will be charged with developing criteria for the national defense features to be included in future merchant ships built with construction subsidy," he said.

Richard T. Soper Rejoins Sea-Land

Richard T. Soper has rejoined Sea-Land Service, Inc., as vice president-marine operations, according to **Paul F. Richardson,** Sea-Land president.

Mr. **Soper** has been president of Columbus Line, Inc., for the past four years. He had been with Sea-Land from 1962 through 1964, serving in his last two years as assistant director-marine operations.

North Sea Sun, And TransOcean Oil (U.K.) Lease New Platform

North Sea Sun Oil Co., and Trans Ocean Oil (U.K.) have signed a contract to lease a new semisubmersible drilling platform now being built.

North Sea Sun and TransOcean signed up the platform for two years with a further one-year option. Each company receives one year of drilling time over the life of the primary two-year period. North Sea Sun and TransOcean are not associated with each other in any North Sea concessions.

The giant platform, being built by Penrod Drilling Co. of Dallas, Texas, will be used to drill Sun and TransOcean's separate prospects in the North Sea.

The platform, being constructed at Brownsville, Texas, will be towed to the North Sea and is scheduled to be on location there in September 1973.

The drilling platform will be 136 feet high, 295 feet long, and 216 feet wide. Equipped with a cantilevered mast, two 110-ton cranes, engines and generators, it is designed to drill to depths in excess of 30,000 feet.

The platform will have a drilling draft of 70 feet and can operate in 35-foot waves. Studies show that the platform can maintain its mooring in severe sea conditions, including winds of 138 miles per hour and 85-foot waves.

The platform will consist of two parallel hulls with cylindrical sides joined by two parallel and four diagonal cross members. Its upper watertight hull will be supported by six tapered stability columns. It will have eight 30,000-pound anchors and can be moored in waters 1,000 feet deep. Four thruster engines of 2,000 horsepower each will assist mooring.

When being towed, the lower hull arrangement provides for the two lower cylindrical cross members and the four diagonal cross members to be out of the water. A speed of seven knots per hour will be attainable in calm waters.

Quarters for 92 people will be provided, including provisions for segregated facilities if required. Air-conditioning and heating installations will be suitable for extremes of both hot and cold climates.

The helicopter deck will handle a wheeled Sikorsky S-61, and meets all requirements of governmental regulatory agencies.

North Sea Sun Oil Co. is a wholly owned subsidiary of Sun Oil Co., St. Davids, Pa. North Sea Sun represents its sister company, British Sun Oil Co., Ltd. and an associate, North Sea Exploration and Research Co., Ltd., in drilling and production activities.

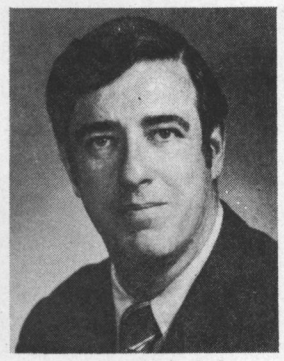
Donald Black Named Manager Of AML's New Cleveland Office

American Mail Line Ltd., Seattle, Wash.-based steamship company, announced the appointment of **Donald D. Black Jr.** as manager of its new full service office in Cleveland, Ohio.

William J. McGowan, vice president, sales, commenting on the new office, said: "Import/export trade in the Cleveland area has grown to such proportions that the area can only be served by full-time company representation."

In addition to the Cleveland area, Mr. **Black** will serve all major distribution centers in Ohio, West Virginia, and western Pennsylvania, which in the past have been served by the Chicago AML office staff.

Mr. **Black,** no newcomer to the ocean transportation business, has been associated with the steamship industry for the past 15 years. After a short association with the National Biscuit Company, he joined Jones Shipping Agency, where he remained for five years. He left that firm to assume new responsibilities with the Lamark Shipping Agency, with whom he worked for the past 10 years. Both Lamark and Jones are general agents for steamship lines handling export shipments throught the world.



Donald D. Black Jr.

The Cleveland office is located at 20525 Center Ridge Road. The telephone is (216) 333-4060.

American Mail Line operates in trans-Pacific trade with two services departing from the Pacific Northwest—a full container service to Japan, and a Far East and Southeast Asia container and breakbulk service.

In addition to Chicago and Cleveland, American Mail Line operates sales and service offices in Seattle, New York, Portland, San Francisco, Washington, D.C., St. Louis and Vancouver, British Columbia. The company is also represented by agencies in Denver, Los Angeles, Toronto, Montreal, Calgary, London, and more than 85 offices in the Far East.

MECO Appoints Thomas S. Willets

Mechanical Equipment Company, Inc.'s vice president of marketing **L.C. Mayfield** has announced the recent appointment of **Thomas S. Willets** as manager, market development.

Mr. **Willets** has been associated for a number of years with the American Machine and Foundry (AMF) desalting program in the capacity of general sales manager and director of marketing for the Maxim Evaporators Division. Based at MECO's headquarters in New Orleans, La., Mr. **Willets** will be responsible for the development of the company's flash evaporator market, which includes land based and marine evaporators and waste concentrators.

MECO was established in 1929, and offers the most diversified type of distillation equipment from a wide variety of applications in the industrial, municipality, marine, resort, pharmaceutical, and material waste markets.

Mechanical Equipment Company, Inc. is a New Orleans firm with head offices located at 861 Carondelet Street, and manufacturing facilities on the New Orleans Industrial Canal. MECO also has offices in England and Lebanon, and in September 1971 opened a large research and development laboratory in Destin, Fla., for seawater conversion and water pollution control studies.

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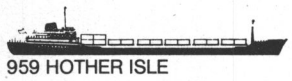
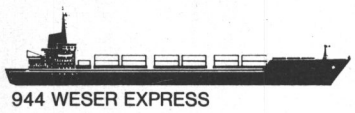
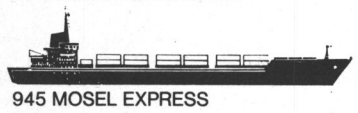
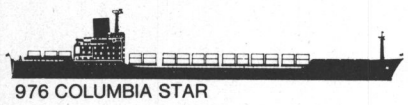
1. Generation


959 HOTHER ISLE

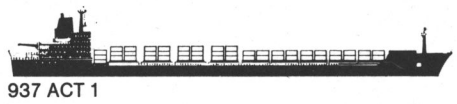

944 WESER EXPRESS


945 MOSEL EXPRESS


975 CALIFORNIA STAR

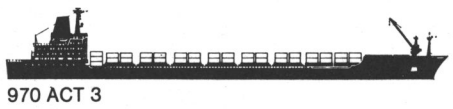

976 COLUMBIA STAR

2. Generation


937 ACT 1


938 ACT 2


941 AUSTRALIAN ENDEAVOUR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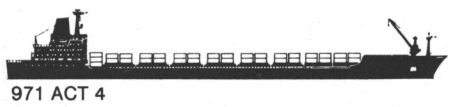
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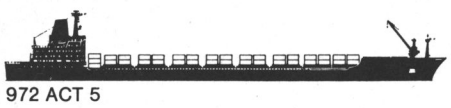
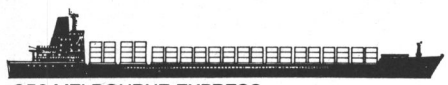

972 ACT 5


973 AUSTRALIAN EXPORTER


960 ACT 6


956 MELBOURNE EXPRESS

3. Generation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977 BREMEN EXPRESS


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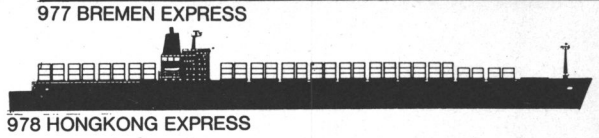
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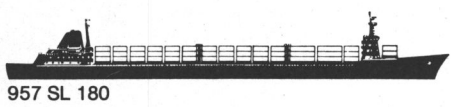
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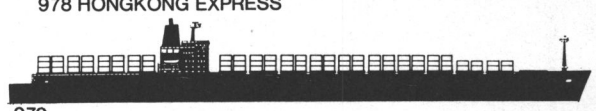
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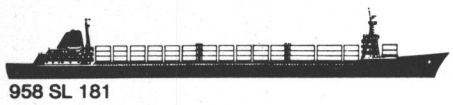
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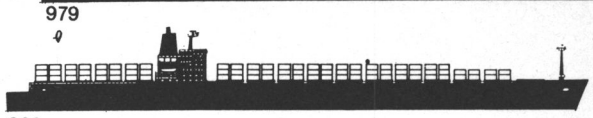
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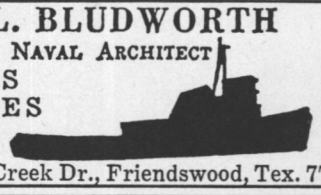
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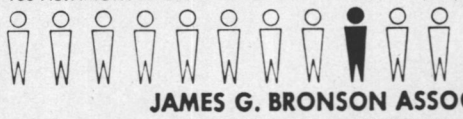
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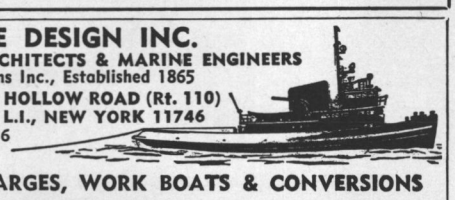
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Texas Transport & Terminal Contract With Soviet Covers More Than 2,000 Large Ships

Following recent meetings in Moscow, Soviet Government authorities and T.T.T. (Texas Transport & Terminal Co., Inc.) officials signed an agreement in that city on March 27, covering USA agency representation and stevedoring management.

Classified by Soviet spokesmen as "The most extensive such shipping accord ever awarded to a single firm in USSR maritime history," T.T.T. will act in behalf of all Soviet-controlled vessels in U.S. Atlantic and Gulf ports. The related area, under T.T.T. jurisdiction, comprises 40 states and will be coordinated with Soviet representatives stationed in this country.

More than 2,000 large, modern Soviet-flag vessels—operated by 16 individual USSR-based firms—are covered under the contract. Additionally, scores of bottoms, presently chartered by the Soviets to carry grain cargoes from the USA, are included.

The 200-vessel Leningrad-based Baltic Shipping Co. fleet is already offering through T.T.T. regularly scheduled liner services to and from the U.S. Atlantic and Gulf, calling North Europe and Baltic ports. Expansion on other trade routes to and from the U.S. is expected to be instituted in the months ahead.

Soviet Shipping Ministry officials commented that T.T.T. was chosen from the numerous firms under consideration, "Because of its established 78-years' reputation and network of interior and port offices feeding Atlantic and Gulf gateways from Maine to the Mexican border."

Gladding-Hearn Delivers Versatile New Police Boat

The 36-foot police boat Protector, built for the city of Boston, is an exact duplicate of the Vigilant built by Gladding-Hearn in 1967.

Gladding-Hearn Shipbuilding Corporation, Somerset, Mass., announces the delivery of Protector, a 36-foot steel and aluminum boat, to the city of Boston. The boat was designed by the builder especially to suit the requirements of the port, where patrol and rescue duties are on a year round basis.

For high-speed rescue missions, the boat is powered by one 300-hp Cummins diesel engine, which turns 28-inch by 22-inch three-bladed Federal Equipoise propeller through 2.5:1 reduction gears. Fully loaded with fuel and all rescue and fire fighting equipment, the boat attained a speed of 16.25 knots on acceptance trials. Due to the hazards of debris, ice and shallow water, a sturdy hull was required, and to this end bottom and transom plating is 3/16 inches thick, with rugged skeg and grounding shoe carried aft under propeller and rudder. A 4-inch "D" section rubber guard is fitted at the deck edge, and offers excellent fendering alongside of pilings or other vessels.

With the need for a strong hull to take a lot of abuse and the capacity to carry an exceptional load of equipment, yet maintain the ability to "get up and go" in emergencies, the design of the boat required close attention to detail. The goal of "a good looking boat with performance that's graceful at slow speeds (patrol), and also at high speed (rescue)" was achieved on a hull of 36-foot length, 11-foot beam, and a 4-foot 2-inch draft, using a developed vee bottom planing form with built-in spray deflectors at the bow. Steel bulkheads divide the boat into three separate watertight compartments and framing is on the longitudinal system, with deep web frames spaced about 5 feet apart between bulkheads. The cabin and trunk are aluminum, but are insulated and sheathed inside for habitability.

The main engines are fitted with two lever controls with all instruments, switches, etc. concentrated at the helm console. A bunk is arranged in the wheelhouse to accommodate stretcher cases with stowage under for life jackets and rescue gear. An enclosed head is arranged aft.

The boat was fitted with a Federal interceptor siren and public address system, and will be fitted by the city with VHF radio for department communications.

U.S. Coast Guard Drops Plan For Early Loran-A Phase-Out

Loran-A stations, relied upon by nearly two-thirds of the members of the American Institute of Merchant Shipping as a primary electronic navigational aid for determining vessel position, will not be subject to phase-out this year, as a result of hearings before the Coast Guard and Navigation Subcommittee of the House Merchant Marine and Fisheries Committee.

The Coast Guard has assured AIMS that it will keep open through the fiscal year 1974 all Loran-A stations now in operation.

Confirmation of this determination was first revealed in recent testimony by Deputy Under Secretary of Transportation **Theodore C. Lutz** before the House Subcommittee chaired by Representative **John Murphy** (D-N.Y.). The Subcommittee's earlier hearing on the Coast Guard authorization bill was the forum for public announcement of the decision to begin phasing-out Loran-A stations ahead of the previously announced schedule, and before agreement on an alternative radionavigational system.

Following testimony that the stepped-up phase-out was due to budgetary constraint — meaning that the new schedule was set by the Office of Management and Budget—AIMS president **James J. Reynolds** appeared before Representative **Murphy** to urge the Subcommittee to take whatever steps it could to prevent the early closing of Loran-A stations. AIMS testimony called attention to the threat to the environment and marine safety posed by prematurely shutting down these navigational aids.

This action prompted the Federal Government to reevaluate its decision, resulting in Secretary **Lutz's** statement that Loran-A signal emitting stations would be kept open for at least another year while alternatives are discussed with user groups. DOT said the continued operation of these stations would be accomplished within current budget estimates.

Gulf Mississippi Marine Announces Promotions

Claude J. Autin, president of Gulf Mississippi Marine Corporation, a Louisiana-based company serving the marine industry worldwide, has announced the following promotions:

Named to the position of executive vice president is former vice president **Lavell Isbell.** Mr. **Isbell** will be in charge of both domestic and international activities.

O.L. Kirkpatrick is the manager-director of North Sea operations. Mr. **Kirkpatrick,** who has 15 years of experience in the marine industry, will direct all North Sea and European activities from London. Manager of operations for the North Sea and Europe, with headquarters in Leith, Scotland, is Capt. **Philip Thomassie.**

Newly appointed vice president **John Norrod** will handle all Middle East operations and will be based in Dubai. He is a graduate of Kings Point with 10 years of experience in the industry.

Other promotions include **Bob Morrill,** manager of traffic for the Gulf of Mexico and Central and South America; Capt. **Albert Hebert,** manager of new construction, and Capt. **Jeff Guidry,** personnel manager.

These new alignments reflect the expansion of Gulf Mississippi Marine. Formed in 1958 as a towing service for the Louisiana Gulf, the Gulf fleet is now operating throughout the world. In addition to towing, the company operates supply vessels and heavy duty barges.

Virginia Port Authority Promotes M.V. Craft Jr.

M.V. Craft Jr., Virginia Port Authority director of planning has been promoted to the post of deputy executive director of port development and plans, according to the Authority's executive director Adm. **Ephraim P. Holmes.**

In his new post, Mr. **Craft** will be responsible for managing the research, engineering and planning for the development of Virginia ports.

Maritime Fruit Carriers Report Record Earnings

Maritime Fruit Carriers Company Limited, worldwide shipping concern, has reported record revenues and earnings for the year ended December 31, 1972.

Total revenues for the year rose to $57,136,694, compared to $47,564,013 the year earlier. Net income for 1972 reached $13,121,001, compared to $6,127,818 in 1971.

On a fully diluted basis, earnings per share for 1972 were equal to $2.82 based on 4,906,258 shares outstanding. In 1971, fully diluted earnings per share amounted to $1.48 calculated on 4,786,413 shares outstanding.

Included in net income for 1972 is $8,384,932 from surrender of tax benefits involving certain ships in the company's fleet. It is expected that additional income will be realized from such arrangements during the first quarter of 1973.

The company estimates that, excluding "other" operating and general expenses of $1,352,522 in 1971 and $1,266,901 in 1972, profits from operations, other than gain on sale of ship contracts in 1971, and other than income from surrender of tax benefits in 1972, increased from approximately $5 million in 1971 to approximately $6 million in 1972.

These year-end results are after deducting interest payments on ship mortgage contracts and other loans, amounting to approximately $14.7 million, compared to $9.9 million of such charges during 1971. These interest payments are treated as an expense in computing net income. The increase in this figure is due in part to the heavy schedule of deliveries during 1972, when 12 new vessels were added to Maritime's growing fleet.

Yaacov Meridor and **Mila Brener,** joint managing directors, noted: "We are pleased to report another year of continued improvement in our financial results and the expansion of our capital base. These figures reflect the fact that all of our refrigerated ships continue to operate under long-term charter, and all our oil tanker capacity has been fixed under charter parties at favorable rates."

States SS Announces Korea Feeder Service

A feeder service between Pusan, Korea and Kobe, Japan has been started by States Steamship Co., it was announced by the San Francisco, Calif.-based company. According to **J.S. Butler,** States Line vice president, the feeder service vessel will sail from Pusan every Saturday, and cargo will be transferred at Kobe to regular States Line vessels sailing for the United States and Canada.

Foreign Commerce Club Relocates

The Foreign Commerce Club of New York Inc. announced that it has moved, and is now located at One World Trade Center, Suite 3811, New York, N.Y. 10048.

Standard Dredging Elects Officers

Standard Dredging Corporation has announced the election of **William L. Siskind,** Baltimore attorney, as chairman of the board and chief executive officer. **William L. Clayton,** formerly chairman of the board, becomes chairman of the executive committee.

The company also announced the election of three new vice presidents. They are: **William G. Kennedy,** operations chief, Standard Dredging, New Orleans, La., **Leon Panitz,** Baltimore, Md., real estate developer, and **Porter F. Pearson,** company engineer.

At a special meeting of shareholders, the following persons were elected directors of the company: **William L. Clayton, Richard H. Hochman, Jay A. Norem, Herman Rubin, William L. Siskind, Ralph Slivka, John E. Weiser,** and **Leland E. Yeager.**

In addition, shareholders approved the final phases of the company's refinancing program. Mr. **Weiser,** the company's president, reported that the company had obtained approximately $4,000,000 of dredging work in the past several months, and is presently bidding on a significant amount of additional business.

Ackerman, At GE Meeting, Says American Shipbuilders Require Continued Government Support

The chief executive officer of the nation's largest shipbuilder has urged businessmen to "let your legislator know" that the United States must have a strong shipbuilding industry.

L.C. Ackerman, chairman of the board of Newport News Shipbuilding, a Tenneco Company, said that American shipbuilders "require continued Government support if commercial ships are to be built in the United States." Mr. **Ackerman** made the comments at a recent meeting of General Electric marine and defense officials in Williamsburg.

He prefaced his comments by noting that Newport News Shipbuilding has a backlog of more than one billion dollars in new naval nuclear ship construction of carriers, frigates, and submarines. "Building ships for the Navy is still the most important task we have, and we expect to share in many important programs calling for construction of Navy ships in the future," he said.

Mr. **Ackerman** underscored the importance of the United States shipbuilding industry in view of the predicted "very serious energy shortage."

Citing Tenneco's position as a major supplier of energy, Mr. **Ackerman** said that even with progress in coal and petroleum gasification and increased use of nuclear energy and coal, these developments will not keep up with the nation's energy demands. He said that liquefied natural gas will be imported to its maximum potential and that liquid petroleum as an energy source is bound to increase dramatically.

Many ships will be required to bring energy resources to this country, but Mr. **Ackerman** stressed the importance of building these ships in the United States. "The simple fact is that United States shipbuilding needs support to be competitive in the world market."

Comparing shipbuilding as the assembling of a ship the way a car factory assembles the automobile, Mr. **Ackerman** pointed out that what happens to the shipbuilding industry is of extreme importance to other industries dependent upon it.

He also said that U.S. shipbuilders were not directly competitive in the world market because they have not developed highly mechanized techniques such as those being used in Japan where the volume of ship orders makes it possible to achieve the efficiency of series production.

Until U.S. shipyards have this kind of volume, Mr. **Ackerman** called for some form of subsidy, either direct or indirect. "I believe that of all industries which may require some form of economic protection a good case can be made for protecting U.S. shipbuilding," he said. "This is particularly so if this country is going to rely on a large percentage of its energy being imported by ship. There are the national defense considerations, the balance of payments problem, and expecially the fact that shipbuilding involves many supporting industries," he said.

Drew Chemical Announces New Marine Instrument Line

Drew Chemical Corporation, a subsidiary of United States Filter Corporation, has announced the establishment of a new Marine Instrumentation product line.

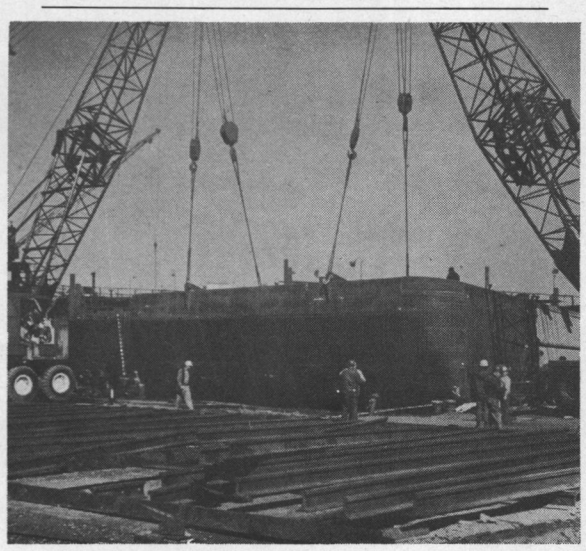
The Ameroid Marine Division will supply the instruments worldwide. Primarily devoted to measuring, monitoring and controlling the chemical characteristics of boiler and feed water, the initial employment will be concentrated on existing Drew Water Treatment programs.

The product range includes portable pH and conductivity meters and in-line analyzers for pH, conductivity, dissolved oxygen, hydrazine, chloride, ammonia and sodium.

The instruments have been specifically designed for marine application utilizing electrochemical rather than photometric methods, thus avoiding motion problems.

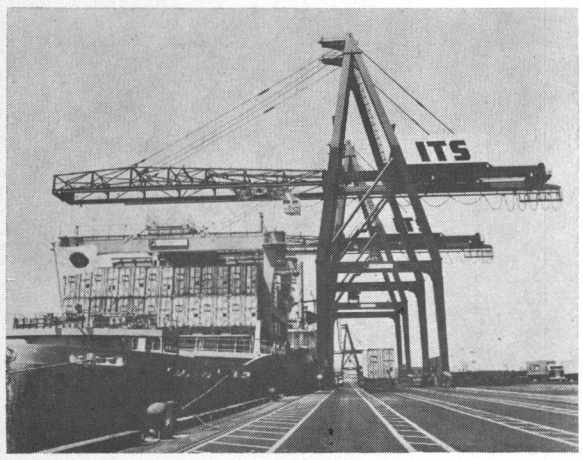
The equipment can be combined in systems engineered to customer requirements.

For additional information, contact **J. Bellew,** Drew Chemical Corporation, 522 Fifth Avenue, New York, N.Y. 10036.



A BOW FROM PERTH AMBOY: The barge Judson K. Stickle, owned by the A & S Transportation Co., is shown with its new 120-ton metal bow which was constructed and attached by Perth Amboy Dry Dock Co., Perth Amboy, N.J. The same yard has just completed a $1,000,000 overhaul and repair job on the USNS Albert J. Meyer. **Alfred C. Bruggermann,** vice president, reports that 150 skilled shipyard workers are now engaged at Perth Amboy in making repairs to MSC (MSTS), Sup Ship 3 vessels, and all sizes of barges and tugs.

I.T.S. Orders Two More Paceco MACH Portainers For Long Beach, Calif. Facility



Shown above are two MACH Portainers supplied by Paceco for I.T.S. Long Beach Terminal.

A second contract for two MACH System Portainers® has been awarded to Paceco, a division of Fruehauf Corporation, Alameda, Calif., by International Transportation Services, Inc. for their terminal operation at the Port of Long Beach, Calif. This second order comes less than 12 months from the installation date of I.T.S.'s first two MACH (Modular Automated Container Handling) cranes from Paceco.

Like the first two MACH Portainers, the new cranes are built with a high-speed power package and Paceco's container "Sway Stop." They have the ability to load and unload containers in a continuous high-speed operation with maximum control of the container at all times. The operation of the MACH crane depends less on the skill level of the operator. The new cranes also have provision for the addition of modules for future automation.

The new Portainers will be equipped to handle two 20-foot containers simultaneously and will have telescoping spreaders to handle 20-foot, 27-foot, 35-foot and 40-foot containers. At the time of installation, the Port of Long Beach will have 12 Paceco Portainers operational—10 of them being MACH.

I.T.S. has also contracted with Paceco for three Rubber Tired Transtainers® which will handle terminal area loading and stacking requirements. The three new Transtainers are also capable of lifting two 20-foot containers simultaneously and have telescoping spreaders to handle 20-foot, 27-foot, 35-foot and 40-foot containers. Each have a 40-long-ton capacity. The five new Paceco cranes for I.T.S. are scheduled to be operational at the end of 1973.

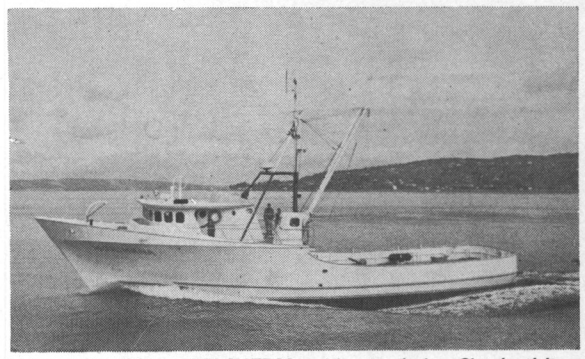
DeFelice Marine Contractors Bought By Pott Industries Inc.

Lloyd M. DeFelice of Metairie, La., president of DeFelice Marine Contractors, Inc., and **Richard P. Conerly** of St. Louis, Mo., president of Pott Industries Inc., have jointly announced that Pott Industries and DeFelice Marine Contractors, Inc. have entered into an agreement whereby Pott Industries Inc. will acquire all of the outstanding stock of DeFelice Marine Contractors, Inc. in exchange for an undisclosed number of shares of Pott convertible preferred stock.

DeFelice Marine Contractors, Inc. is headquartered in Metairie, and is primarily engaged in providing tug service in the Gulf of Mexico and worldwide to offshore construction contractors. Pott Industries Inc., a St. Louis-based corporation, owns and operates several shipyards, barge lines and other businesses.

During 1972, DeFelice Marine Contractors, Inc. had sales and revenues of approximately $3,649,000.

Mr. **Conerly** said that Pott Industries Inc. intends to operate DeFelice Marine Contractors, Inc. as a separate wholly owned subsidiary with Mr. **DeFelice** agreeing to continue as president and chief executive officer. Mr. **Conerly** said that he does not anticipate any changes in DeFelice Marine Contractors, Inc.'s present management or policies.



MARTINOLICH DELIVERY: Martinolich Shipbuilding Corporation, Tacoma, Wash., recently delivered the 90-foot long-line fishing vessel Mokihana for the Hawaiian Islands. This vessel was built for **David Nabeshima** of Honolulu. The design has been changed from Martinolich's stock 87-foot vessel to a 90-foot vessel with finer waterlines, which has increased the speed from 10.2 knots to 11.5 knots. She is powered with a D-379 Caterpillar engine, one 60-kw General Motors auxiliary generator, and one 30-kw General Motors auxiliary generator. The hold is refrigerated to carry ice, as the vessel will be fishing for the fresh fish market. She is fully equipped with a Japanese line puller, aluminum conveyor, aluminum dip tank, and a new vertical reel with a level winder that winds 32 miles of line with the reel staying stationary and the level winder wrapping the line around the drum. She also has a line thrower on the stern end of the vessel, and is a new innovation for long-line fishing. She is fully equipped with electronic equipment, and swings a 78-inch Coolidge propeller.

Boeing Aerospace Gets $4-Million Contract From Marianas Jetfoil

Marianas Jetfoil, Inc. of Guam has awarded the Boeing Aerospace Company, Seattle, Wash., a contract of about $4 million for a high-speed waterjet-powered hydrofoil boat.

The 250-passenger 106-ton Jetfoil will travel at speeds over 45 knots in waves up to 12 feet. Beginning in late 1975, the vessel will be utilized for marine excursions and luxury tours around Guam.

MarAd Report Published For Fiscal Year 1972

The Maritime Administration has announced that copies of its annual report for Fiscal Year 1972 have been published and are available from the Superintendent of Documents, Government Printing Office, Washington, D.C., at $1.25 a copy.

Titled "Marad 1972: A New Wave in American Shipping," the report can also be obtained from the Eastern Region Director, Maritime Administration, 26 Federal Plaza, New York, N.Y.

Bureau Veritas Offers 1973 Register Of Liquefied Gas Carriers

First introduced last year, the 1973 edition of the Register of Liquefied Gas Carriers classed with Bureau Veritas is now available. There is no charge for this document, which is available from any of the Society's offices.

Details of over 100 methane and LPG vessels are given, which cover more than a third of the world's fleet of this type of vessel.

The Society's pre-eminence in this field is reflected in the changes to be found in their 1973 Rules for the classification and construction of ships.

Chapter 22 of the Rules relating to the carriage of liquefied gases has been completely revised, and is related to a new Chapter 10 where the structural requirements for liquid gas ships are defined. These sections embrace detailed lists of the design loads which require to be considered for direct calculations and structural analyses.

New conditions are defined for an assessment of the extent and capability of secondary barriers, and the Society is prepared to consider the requirements for a secondary barrier in the light of results from the following: (1) a complete analysis of stress due to actual static and dynamic loads; (2) a fatigue analysis; (3) a fracture mechanics analysis, and (4) a buckling analysis.

There are also revised requirements for tank materials and their welding.

The British central office of Bureau Veritas is located at Ocean House, 24-25 Great Tower Street, London EC3R 5AQ.

Keske To Supervise Vessel Operations For Cleveland-Cliffs

Carl D. Keske has been named supervisor-vessel operations for the marine department of The Cleveland-Cliffs Iron Company, Cleveland, Ohio, according to **Richard P. Eide,** manager.

Mr. **Keske** had been personnel administrator for Cliffs's marine department since 1970, after having served 11 years with the United States Navy. His new duties include responsibility for day-to-day vessel operations and coordination of maintenance and repair programs for Cliffs's 14-vessel fleet. He will continue to supervise vessel personnel, labor relations, safety, and medical programs for the department.

A member of The Society of Naval Architects and Marine Engineers, and The Propeller Club, Mr. **Keske** graduated from James F. Rhodes High School in 1955 and from the United States Naval Academy in 1959. He will obtain his master's degree in economics from Case-Western Reserve University this month.

Seatrain Lines Names Mrs. Patricia Hiller

Arthur C. Novacek, president of Seatrain Lines Container Division, Weehawken, N.J., has announced the appointment of **Mrs. Patricia Hiller** to the position of administrative assistant to the president.

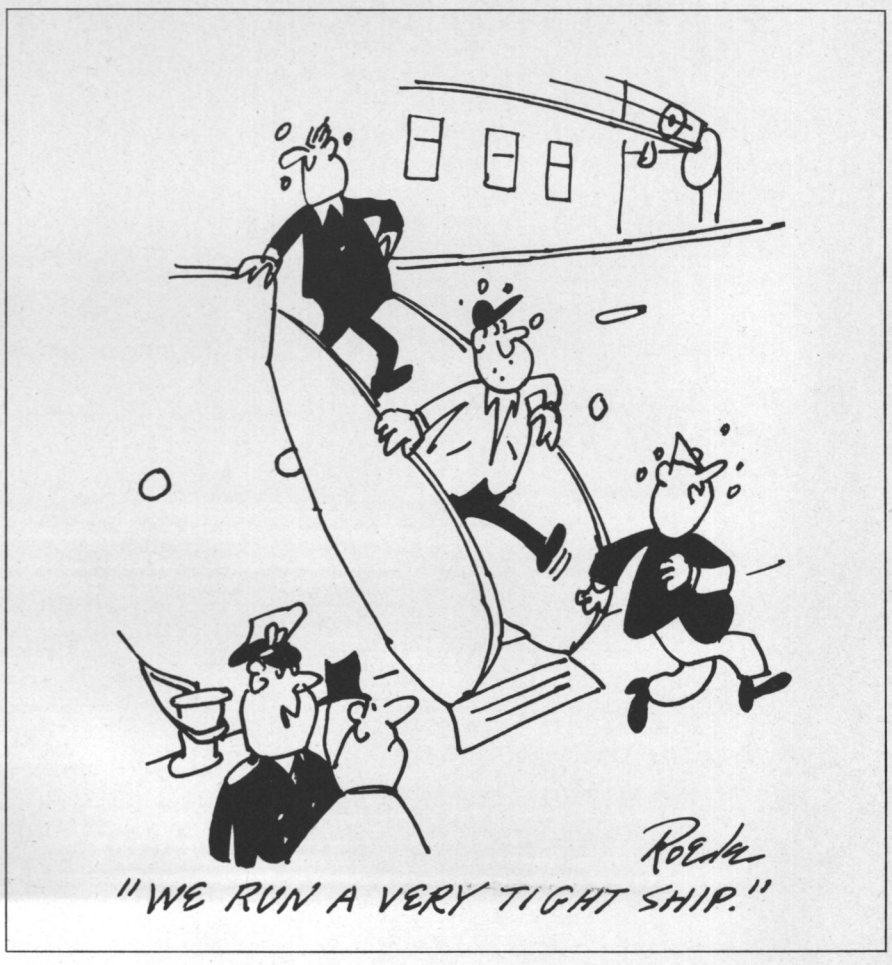
A graduate of Sherwood Business College, **Mrs. Hiller** was previously associated with the Bendix Corporation, and the General Automotive Company. She joined Seatrain in 1969.

Seatrain Lines is an American company that has established itself as one of the world's leading and fastest-growing international containerized shipping firms, and provides regular, fast, computer-monitored door-to-door container service between almost all points in Europe, the United States East, West and Gulf Coasts, Canada, the Caribbean, Hawaii, Guam, Kwajalein, Korea, Japan, Hong Kong and Taiwan.

Federal Barge Lines Appoints Blakeman

Federal Barge Lines, St. Louis, Mo., a division of Pott Industries, Inc., has announced the recent appointment of **Thomas C. Blakeman** as assistant marine superintendent. In this position, Mr. **Blakeman** will be involved with all phases of operation and maintenance of Federal's barge and towboat fleet.

Mr. **Blakeman** came to Federal from Colt Industries, Power Systems Division, where he served two years as a project engineer in the design of marine main propulsion diesel power plants. A Kings Point graduate, he has also sailed as an engineering officer aboard merchant ships.



Computers/Manganese Nodules —Two Subjects Discussed By SNAME Pacific NW Section

Principals shown above, left to right: **Jacob Fisker Andersen,** Pacific Northwest Section papers chairman; **Russell V. Carstensen,** who presented the paper on "Computers"; **David A. Swan,** who presented the paper on "Manganese Nodules," and **George D. Salisbury,** Section chairman.

The design for electrical and electronic system installation forms a significant portion of naval ship construction, conversion, and alteration cost. A large portion of this cost is incurred in translating the installation requirements of the designer into production drawings or other supportive technical documentation. This ancillary documentation is generally produced after the development of the actual basic design to be implemented. Not only does this procedure constitute a poor return for the shipbuilder's investment in trained technical personnel, but it also partially demonstrates why such personnel are not readily available for problem resolution during the production phase.

This theme was developed in a paper presented by **Russell V. Carstensen,** electronics engineer at Puget Sound Naval Shipyard, at the annual Student Meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers held on March 10, 1973, in Seattle, Wash.

In his paper, "Problems in Using Computers for Electrical/Electronic System Installation Design," Mr. **Carstensen** broke his subject down into five groups: a review of design information required to accomplish electrical and electronic system installation; problems facing computer users; conflicts resulting from lack of firm management guidance; loss of momentum through inconsistent or insufficient funding, and adaptation of the total organization to computer applications.

The technique of using computers to generate issuable production drawings has been proved both feasible and directly integrable within a conventional shipyard production environment. Mr. **Carstensen** feels that the ultimate reward of the use of computers will be closer liaison between the designer and the craftsman as ideas are being converted to functioning hardware.

Manganese nodules were discussed by **David A. Swan** in the second paper, "A Study on the Potential of Manganese Nodules as a Future Mineral Resource."

Mr. **Swan** discussed the many parts of this nodule harvesting business—nodule distribution throughout the world, mining methods, processing methods, economics of mining manganese nodules, and the legal framework for deepsea exploitation.

Manganese nodules, containing nickel, copper, cobalt and manganese have become the most economically important sediment of the ocean floor.

When the deepsea camera replaced coring and dredging in nodule exploration, it became a very useful tool in more rapidly surveying possible nodule sites.

It is understandable that groups presently working on this relatively new mining technique are not publishing all of their findings, but one possible method of recovering manganese nodules is by the use of a dredging head and a 10-inch riser casing through which the nodules are pumped to the ship.

The legal question of mining in the ocean will have to be resolved in the international political arena, Mr. **Swan** stated. Presently, no laws cover the mining of deepsea minerals beyond the continental shelf; in fact, even the legal definition of the continental shelf is yet to be agreed upon.

There is still much to be done before the commercial mining of manganese nodules becomes a reality, but the work appears challenging, and the rewards are great enough to encourage the development of this future source of minerals for the nations of the world.

Discussers were **Ken Wiegand** of Boeing, **David Piper** and **Fred B. Brien,** both of the University of Washington.

Los Angeles Section Hears G.E. Author Present Paper On Gas Turbine Electric Propulsion

The March meeting of the Los Angeles Metropolitan Section of The Society of Naval Architects and Marine Engineers was held aboard the S/S Princess Louise in Los Angeles Harbor. Capt. **R. Fay** (left), Commander of the Long Beach Naval Shipyard and chairman of the local Section, introduced **Ron Riggi** of the Gas Turbine International Department of General Electric Company, who presented his paper discussing "Gas Turbine Electric Propulsion for a Products Carrier." This propulsion system is to be installed in Chevron tankers soon to be built by Gunderson Bros. in Portland, Ore.

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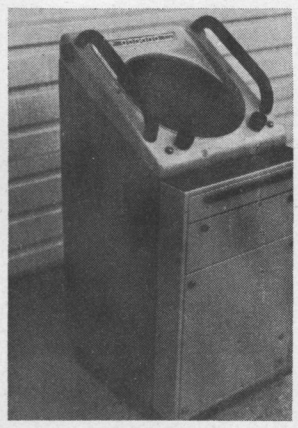

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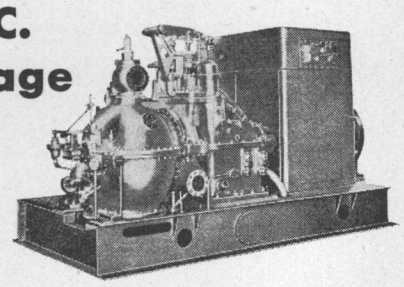

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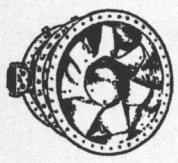

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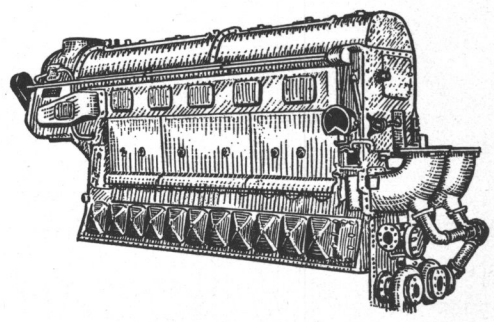

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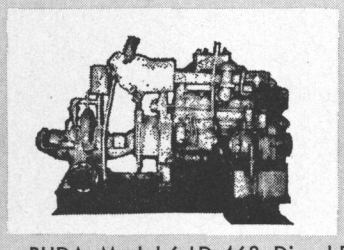

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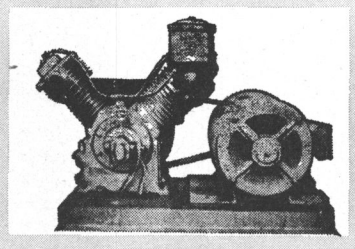

2—GARDNER-DENVER, 150 CFM, 125 PSI, Class WB, Size 7x5¾x5, with Diehl Motors, 45 HP, 230 Volts DC, 870 RPM, 167 Amperes.

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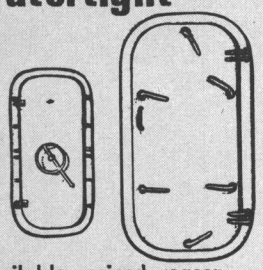

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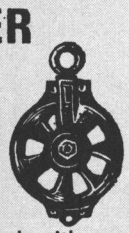

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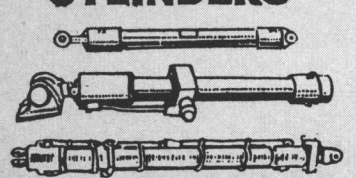

Bore	Overall Stroke	Rod Diameter	retracted length	Action
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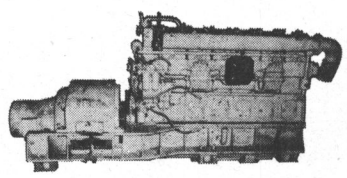
10"	26"	3.75"	58½"	single
2"	8"	1½"	20"	double
2.5"	15"	1.12"	25½"	double
3"	8"	1.37"	15½"	double
6"	8'	4"	144"	double

MARINE DIESEL GENERATORS



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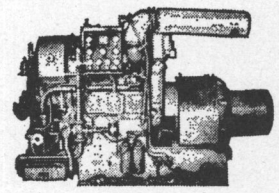
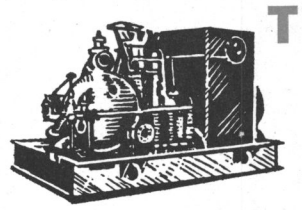


4—GENERAL MOTORS, Model 3-268A, marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generators, 450/3/60.

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

TURBINE GENERATORS



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

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

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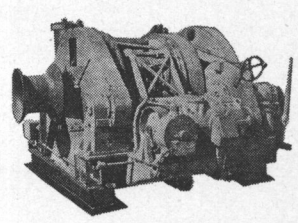

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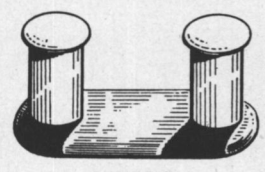
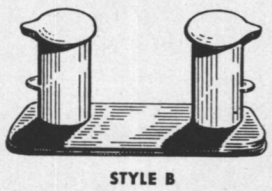


STYLE A



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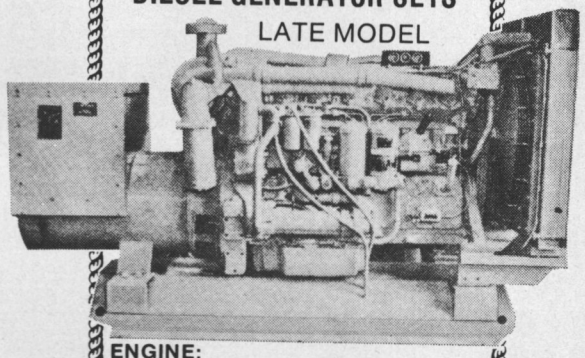

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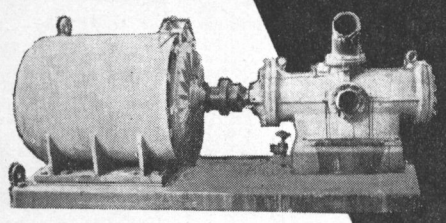

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Completely Self-Contained on Railroad Flat Car—Ex-Navy Emergency Unit

GENERATOR: Allis-Chalmers — 525 VDC — 2290 amps—750 RPM—self-ventilating—horizontally split casing. DIESEL: G.M. 16-278A—8¾ x 10½—1700 BHP—720 RPM. Unit includes control panel & switches—excitation sets—aux. lighting generator driven by GM 2-71 2-cyl. 4½ x 5 engine at 1200 RPM. Generator is 120 VDC. Also included are silencers and mufflers.

ALL MOUNTED ON FLATCAR WITH STANDARD TRUCKS AND WHEELS—56½" GAUGE

Has air, water and oil tanks — starting air compressor—all on same car and interconnected. Entire unit was fabricated by Navy for Navy Yard use. Total weight 120,000 lbs. Shipping Dimensions: 40' long—9'4" wide—15' high. Car has steel wheels and can be certified to go over the road. **UNIT CAN BE EASILY REMOVED FROM FLATCAR AND PLACED ON VESSEL.**

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

BARGE SERVICE TO ALL POINTS

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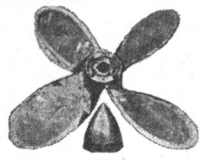

PROPELLERS TAILSHAFTS RUDDERS

PROPELLERS—Reconditioned A.B.S.
T-2-SE-A2 Mission Tanker Beaumont, Tex./Baltimore, Md.
T2-SE-A1 T2 Tanker Jacksonville, Fla.

TAILSHAFTS—Reconditioned A.B.S.
T2-SE-A2 Mission Tanker Baltimore, Md.
T2-SE-A1 T2 Tanker Baltimore, Md.
BETHLEHEM Sparrows Point 29,000 Ton Hull 4518, 13600 HP @ 109 RPM. (Unused) Baltimore, Md.

RUDDERS—Reconditioned & Unused
AP2 Victory AP3 Victory
T2-SE-A2 Mission Tanker Baltimore, Md.
T2-SE-1 T2 Tanker Baltimore, Md.
C-1MAV-1 (unused)

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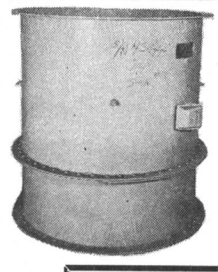
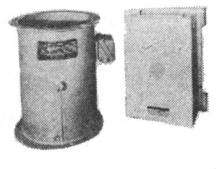


UNUSED
30,000 CFM
AXIAL FANS

Made by Joy Manufacturing Co.—A30A4W6. MOTOR: 25/14 HP—440/3/60—36-20.4 amps—1200/1900 RPM.

OTHER AVAILABLE AXIAL FLOW FANS

115 VOLTS DC
4000 CFM/5000 CFM/6000 CFM/10,000 CFM/12,000 CFM



230 VOLTS DC
Unused 2000 CFM 20AF —mfg. by Joy—0.75 HP motor—3450 RPM—3.4 amps—0.5" static—15" ID—17" flange

ALSO
8000 CFM/10,000 CFM/35,000 CFM

440 VOLTS AC
1000 CFM—Bufallo A1A4W5—¾ HP—440/3/60/3450
2000 CFM—220/440/3/60—1.5 HP/3400 RPM

THE BOSTON METALS COMPANY
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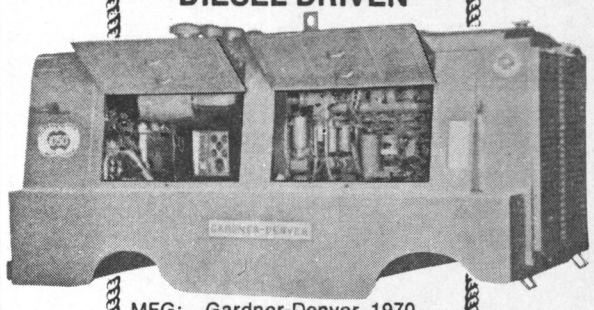
1500 KW GENERAL ELECTRIC TURBO GENERATOR SETS

TURBINE: 420/618 PSI 825/850° Total Temperature Type FN4-FN30 11 Stage 8145 RPM GEI-19320
GEAR: Type S195A 8145/1200 RPM
GENERATOR: 1500 KW 450 V 3 Ph 60 Cy .8 PF 1200 RPM Continuous 2340 KVA 2 Hrs Type ATI-HL
Four Units Available, Complete with Board, Condensers, Air Ejector and Condenser and Condensate Pumps. Removed from Cruiser ROANOKE. In Like New Condition.

Nicolai Joffe Corporation
San Francisco Branch
445 LITTLEFIELD AVENUE (P.O. Box 2445)
SOUTH SAN FRANCISCO, CALIFORNIA 94080
Phone (415) 761-0993 TWX: 910-371-7248
New York Office: (212) 832-3320

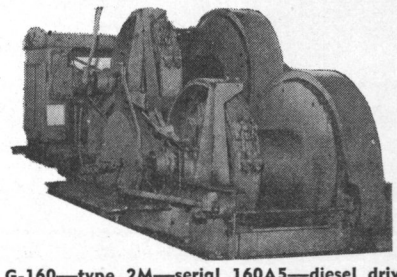
1200 CFM ROTA-SCREW
AIR COMPRESSOR
DIESEL DRIVEN



MFG: Gardner-Denver, 1970
MODEL: SP 1200, 2-Stage, Dry Type
OPERATING PRESSURE: 100 psi
R.P.M.: 1850
ENGINE: G.M. 12-V-71
MODEL: 7123-7000
SIZE: 15'4" LONG 6'4" WIDE 8'2" HIGH
WEIGHT (PROX): 15,700 pounds
The unit was designed for use with pneumatic tired wheels; which, along with the axles, are *not* available.

PECK EQUIPMENT COMPANY
3500 ELM AVENUE, PORTSMOUTH, VA. 23704
TELEX 82-3469 PHONE (703) 399-4071

SKAGIT DOUBLE DRUM WATERFALL WINCH



Model G-160—type 2M—serial 160A5—diesel driven by GM 6-71 with TRA-76R 4-speed transmission type 2 MRAG—forward and reverse. LIPE 14-2 clutch. LINE PULL RATING: 30,000 lbs. on both drums simultaneously at a line speed of 60 FPM on the outer layer of cable and 25 FPM on the first wrap. DIMENSIONS: drum flange 60"—barrel 24"—barrel length 30". DRUM CAPACITY: 5000 ft. of 1" cable with 2" of free flange or 5938 ft. of 1" cable using full drum capacity. UNIT DIMENSIONS: OAL 188½"—OAW 123"—OAH 104"—foundation centers 63". Equipped with front and rear drum friction devices; front and rear drum brakes; 2 gypsys; pedestal foot brakes; ratchet & pawls; gear shifters; throttle control; clutch controls.

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Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186
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Combustion Engineering, Inc., Windsor, Connecticut 06095
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Bird Johnson Co., 883 Main St., Walpole, Mass. 02081
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
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Independent Petroleum Supply Co., 1345 Ave. of Americas, New York, N.Y. 10019
The West Indies Oil Co., Ltd., St. John's Antigua, W. I.
CARGO HANDLING EQUIPMENT
MacGregor International Organization, 49 Gray's Inn Road, London W.C.I., England
CATHODIC PROTECTION
Engelhard Industries, 430 Mountain Ave., Murray Hill, N.J. 07974
CLUTCHES, GEARS & BRAKES
Amarillo Gear Co., 517 No. Polk St., Amarillo, Texas 79105
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307
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Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414 Wilson Ave., Newark, N.J. 07105
EGD Spee-Flo Co., 4631 Winfield Rd., Houston, Texas 77039
Marine Engineering & Construction Co., Inc., 1664 Tchoupitoulas St., New Orleans, La. 70130
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Philadelphia Resins Corp., 20 Commerce Dr., Montgomery, Pa. 18936
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Ameron Corrosion Control Div., Brea, Calif. 92621
Lighter Aboard Ship, Inc., 225 Baronne St., New Oreans, La. 70112
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98421
CONTAINER LASHINGS & COMPONENTS
American Engineered Products, P.O. Box 74 Nichol Ave., McKees Rock, Pa. 15136
W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233
CONTROL SYSTEMS
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
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Ameron Corrosion Control Div., Brea, Calif. 92621
Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
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ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Conrad-Stork, Div. Stork-Werkspoor, P.O. Box 134, Haarlem, Holland
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Houston Systems Mfg. Co., P.O. Box 14551, Houston, Texas 77021
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
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Star Iron & Steel Co., 326 Alexander Ave., Tacoma, Wash. 98401
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Mark Products, Inc., 10507 Kinghurst Dr., Houston, Texas 77072
Trans-Sonics, Inc., P.O. Box 326, Lexington, Mass. 02173
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Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027
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ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
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Pacific Pipe Co., 49 Fremont St., San Francisco, Calif. 94080
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Alco Engine Div., White Industrial Power, Inc., 100 Orchard St., Auburn, N.Y. 13021
Bruce GM Diesel, Inc., 180 Route #17 S. at Interstate 80, Lodi, N.J. 07644
Caterpillar Tractor Co., Industrial Div., 100 N.E. Adams St., Peoria, Ill. 61602
Colt Industries Inc., Power Systems Div., Beloit, Wisc. 53511
De Laval Turbine Inc., Engine & Compressor Div., 550 85th Ave., Oakland, Calif. 94621
Electro-Motive Division General Motors, La Grange, Illinois 60525
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
Sulzer Brothers, Ltd., Winterthur, Switzerland
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Walz & Krenzer, Inc., 20 Vesey St., New York, N.Y. 10007
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Galbraith-Pilot Marine Corp., 166 National Rd., Edison, N.J. 08817
Harvard Murlin Div., P.O. Box 302, Quakertown, Pa. 18951
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
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Aqua-Chem, Inc., Water Technologies Div., Box 421, Milwaukee, Wis. 53201.
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Riley-Beaird, Inc., Maxim Evaporator Profit Center, P.O. Box 1115, Shreveport, Louisiana 71130
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Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
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Universal Hydraulics, Div. of Ohio Brass Co., 4500 Beidler Roaa, Willoughby, Ohio 44094
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Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
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Snelson Oilfield Lighting Co., 1201 E. Doggett St., Fort Worth, Texas 76104.
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Gazocean U.S.A. Inc., 125 High St., Boston, Mass. 02110
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Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
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Bently Nevada Corp., P.O. Box 157, Minden, Nevada 89423
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Crosby Group, Box 3128, Tulsa, Okla. 74101
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Hoffert-Lowe, Inc., 108 Ridge Road, North Arlington, N.J. 07032
Philadelphia Gear Corp., Schuylkill Expressway, King of Prussia, Pa. 19406
Western Gear Corp., Industrial Products Div., P.O. Box 126, Belmont, Calif. 94003
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Kearfott Marine Products, 780 South 3rd Ave., Mt. Vernon, N.Y. 10550
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742
Peltz Brothers, Inc., 3499 Inventors Road, Norfolk, Va. 23502
Stow Mfg. Co., 225 Shear St., Binghamton, N.Y. 13902
Vokes Filter Div., (Cardwell Machine Co.), Cardwell and Castlewood Rd., Richmond, Va. 23221
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186
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Bailey Joiner Co., 115 King Street, Brooklyn, N.Y. 11231
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Adams & Porter, Cotton Exchange Bldg., Houston, Texas
Midland Insurance Co., One State St. Plaza, New York, N.Y. 10004
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Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Ark. 72204
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Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Tech Systems, Inc., 405 Watertown Rd., Thomaston, Conn. 06787
Terry/Whiton, P.O. Box 350, New London, Conn. 06320
Turbo Power & Marine Systems, Subsidiary of United Aircraft Corp., 1690 New Britain Ave., Farmington, Conn. 06032
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MARITIME FINANCING—Leasing
General Electric Credit Corp., 4 Corporate Drive, White Plains, N.Y. 10604
Rhode Island Hospital Trust National Bank, 15 Westminster Street, Providence, R.I. 02903
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J. L. Bludworth, 4030 Wynne St., Houston, Texas
Breit Engrg. Inc., 441 Gravier St., New Orleans, La. 70130
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517
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Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
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Marine Design Inc., 1180 Ave. of Americas, N.Y., N.Y. 10036
Marine Design Associates, P.O. Box 2674, Palm Beach, Florida
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
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George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 77 Commonwealth Ave., West Concord, Mass. 01742
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Ocean-Oil International Engrg. Corp., P.O. Box 6173, New Orleans, La. 70114
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S.L. Petchul, Inc., 8-D So. New River Drive East, Ft. Lauderdale, Fla. 33301
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Yankee Shipwrights, P.O. Box 35251, Minneapolis, Minn. 55435
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Collins Radio Co., M/S 407-321, Dallas, Texas 75207
ELCO Corp./Safecraft Division, Maryland Road & Computer Ave., Willow Grove, Pa. 19090
Electro-Nav, Inc., 501 Fifth Ave., New York, N.Y. 10017
F&M Systems Co., P.O. Box 20778, 2525 Walnut Hill Lane, Dallas, Texas 75220
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Lorain Electronics Corp., 2307 Leavitt Road, Lorain, Ohio 44052
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Cal. 90503
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo.
Radiomarine Corp., 20 Bridge Avenue, Red Bank, N.J. 07701
Raytheon Co. Marine Products, 676 Island Pond Rd., Manchester, N.H. 03103
Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Standard Communications Corp., 639 N. Marine Ave., Wilmington, Calif. 90744
Teledyne Hastings Raydist, P.O. Box 1275, Hampton, Va. 23361
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721
The Waterways Co., 3512 Metairie Hts. Rd., New Orleans, La. 70002

OILS—Marine—Additives
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Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Mobil Oil Corp., 26 Broadway, New York, N.Y. 10004
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Texaco, Inc., 135 E. 42nd St.. New York, N.Y. 10017

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Carboline Co., 328 Hanley Industrial Court, St. Louis, Mo. 63144
Devoe & Raynolds Co., Inc., Subsidiary Celanese Coatings Co., 414 Wilson Ave., Newark, N.J. 07105
Hempel's Marine Paints, Inc., 25 Broadway, New York, N.Y. 10004
International Paint Co., 21 West St., New York, N.Y. 10006
Marine Engineering & Construction Co., Inc., 1664 Tchoupitoulas St., New Orleans, La. 70130
Mobil Chemical Company, Metuchen, N.J. 08840
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Porter Paint Company, 400 South 13th Street, Louisville, Ky. 40203
Transocean Marine Paint Association, P.O. Box 456, Delftseplain 37, Rotterdam, Holland

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Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
The West Indies Oil Co., Ltd., St. John's, Antigua, W. I.

PIPE—Cargo Oil
Kubota, Ltd., 22, Funade-cho 2-chome, Naniwa-Ku, Osaka, Japan
Tioga Pipe Supply Co., Inc., P.O. Box 5997, Philadelphia, Pa. 19137

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 Tallyrand Ave., Jacksonville, Fla.

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Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
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
Ferguson Propeller, 1132 Clinton St., Hoboken, N.J. 07030

PUMPS
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
Goulds Pumps, Seneca Falls, N.Y. 13148
Houttuin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Arkansas 72204
Worthington Corporation, Harrison, New Jersey 07029

RATCHETS
W. W. Patterson Co., 830 Brocket St., Pittsburgh, Pa. 15233

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ROPE—Manila—Nylon—Hawsers—Wire
American Mfg. Co., Inc., Noble & West Sts., Brooklyn, N.Y. 11222
Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Columbian Rope Co., 309 Genesee St., 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

RUDDER ANGLE INDICATORS
Galbraith-Pilot Marine Corp., 600 Fourth Ave., Brooklyn, N.Y. 11215
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.

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

SCAFFOLD BOARDS
Howmet Corporaton, Southern Extrusions Division, P.O. Box 40, Magnolia, Arkansas 71753

SEWAGE DISPOSAL
Babcock & Wilcox Co., 161 East 42nd Street, New York, N.Y. 10017
Jered Industries, Inc., 1300 S. Coolidge Rd., Birmingham, Mich. 48008
Koehler-Dayton, Inc., P.O. Box 309, New Britain, Conn. 06050
LaMere Industries, Inc., 277 N. Main Street, Walworth, Wis. 53184

SHAFT REVOLUTION INDICATOR EQUIP.
Electric Tachometer Corp., 68th & Upland Sts., Phila., Pa. 19142
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., 1251 New Dock St., Terminal Island, Cal. 90731
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

SHIP BROKERS
Agemar, P.O. Box 1465, Maracaibo, Venezuela
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
Mowbray's Tug and Barge Sales Corp., 21 West St., N.Y., N.Y. 10006
Oaksmith Boat Sales, Inc., Fisherman's Terminal, Seattle, Wash. 98119

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004
Huntington Alloy Products, Div. International Nickel Co., Inc., Huntington, W. Va. 25720
International Nickel Co., 1 New York Plaza, New York, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking
Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Barbour Boat Works, Inc., P.O. Box 1069, New Bern, N.C.
Beliard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bertram Marine, Division of Whittaker, 3663 N.W. 21 Street, Miami, Fla. 33142.
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Bludworth Shipyard, Inc., Box 5426, Cypress St., Brady Island, Houston, Texas 77012
Brodogradiliste "SPLIT", P.O. Box 107, Split, Yugoslavia
Carrington Slipways Pty. Ltd., Tomago, N.S.W. 2322, Australia
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock, Inc., P.O. Box 153, Willemstad, Curacao, N.A.
Dillingham Corp., P.O. Box 3288, Honolulu, Hawaii 96801
Devcon Corporation, Endicott Street, Danvers, Mass. 01923
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Empressa 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
Gotaverken American Corp., 39 Broadway, New York, N.Y. 10006
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 & Whampoa Dock Co. Ltd., Kowloon Docks, Hong Kong
Ishikawajima-Harima Heavy Industries Co., Ltd., 15 William St., New York, N.Y. 10005
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla. 32203
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 Malmo, Fack, Malmo, Sweden
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
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 Engineering & Construction Co., Inc., 1664 Tchoupitoulas St., New Orleans, La. 70130
Maryland Shipbuilding & Drydock, P.O. Box 537, Baltimore, Md. 21203
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Mitsubishi Heavy Industries, Ltd., 5-1 Marunouchi 2-chome, Chiyoda-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Newport Ship Yard, Inc., 379 Thames St., Newport, R.I. 02840.
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
Nuclear Service & Construction Co., Inc., 9296 Warwick Blvd., Newport News, Va. 23607
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
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
Peterson Builders, Inc., 334 So. 1st Ave., Sturgeon Bay, Wis. 54235
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
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Swedish Shipbuilding Association, Fack S-402 70, Gothenburg 8, Sweden
Teledyne Sewart Seacraft, P.O. Box 108, Berwick, La. 70342
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor/Mas, Inc., P.O. Box 13107, Port Everglades, Fla. 33316
Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

SHIP ROUTING
Weather Routing, Inc., 90 Broad Street, New York, N.Y. 10004

SHIP STABILIZERS
Maritech, Inc., 38 Union Sq., Somerville, Mass. 02143
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.

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—Salvage, Lighterage, Barge Chartering
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Bouchard Transportation Co., Inc., 25 West Barclay St., Hicksville, L.I., N.Y. 11801
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
Interstate Oil Transport Co., 214 Transportation Center, Six Penn Center Plaza, Philadelphia, Pa. 19103
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
L. Smit & Co., 11 Broadway, New York, N.Y. 10004
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y. 11214

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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
Mesco Tectonics, Inc., 5 Central Ave., Clifton, N.J. 07011

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Tweco Products, Inc., P.O. Box 666, Wichita, Kan. 67201

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Bethlehem Steel Corp., Bethlehem, Pa. 18016
United States Steel Corp., P.O. Box 86, Pittsburgh, Pa. 15230

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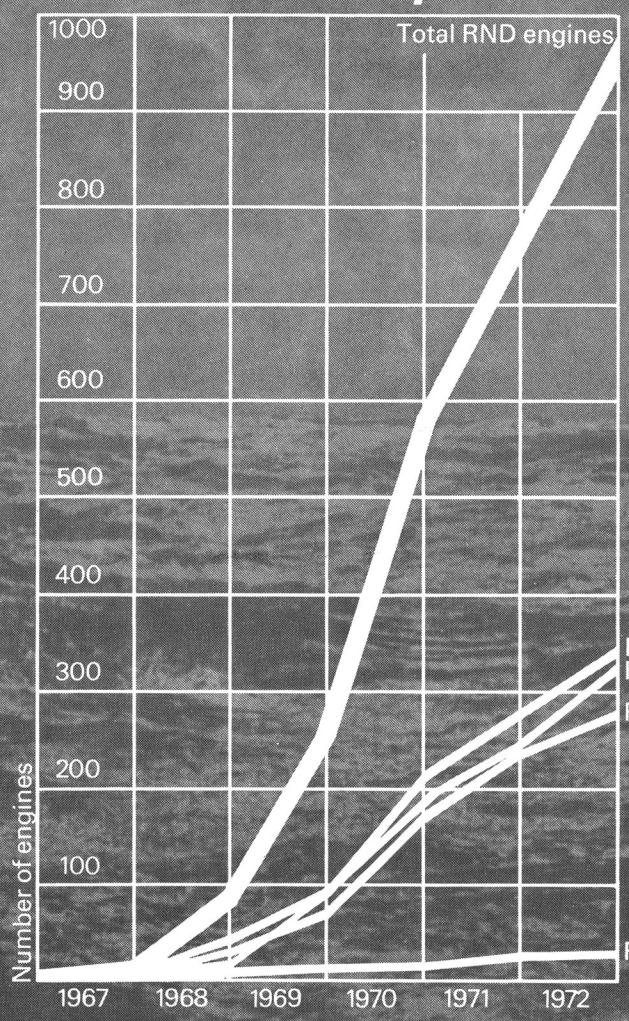

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had been ordered.

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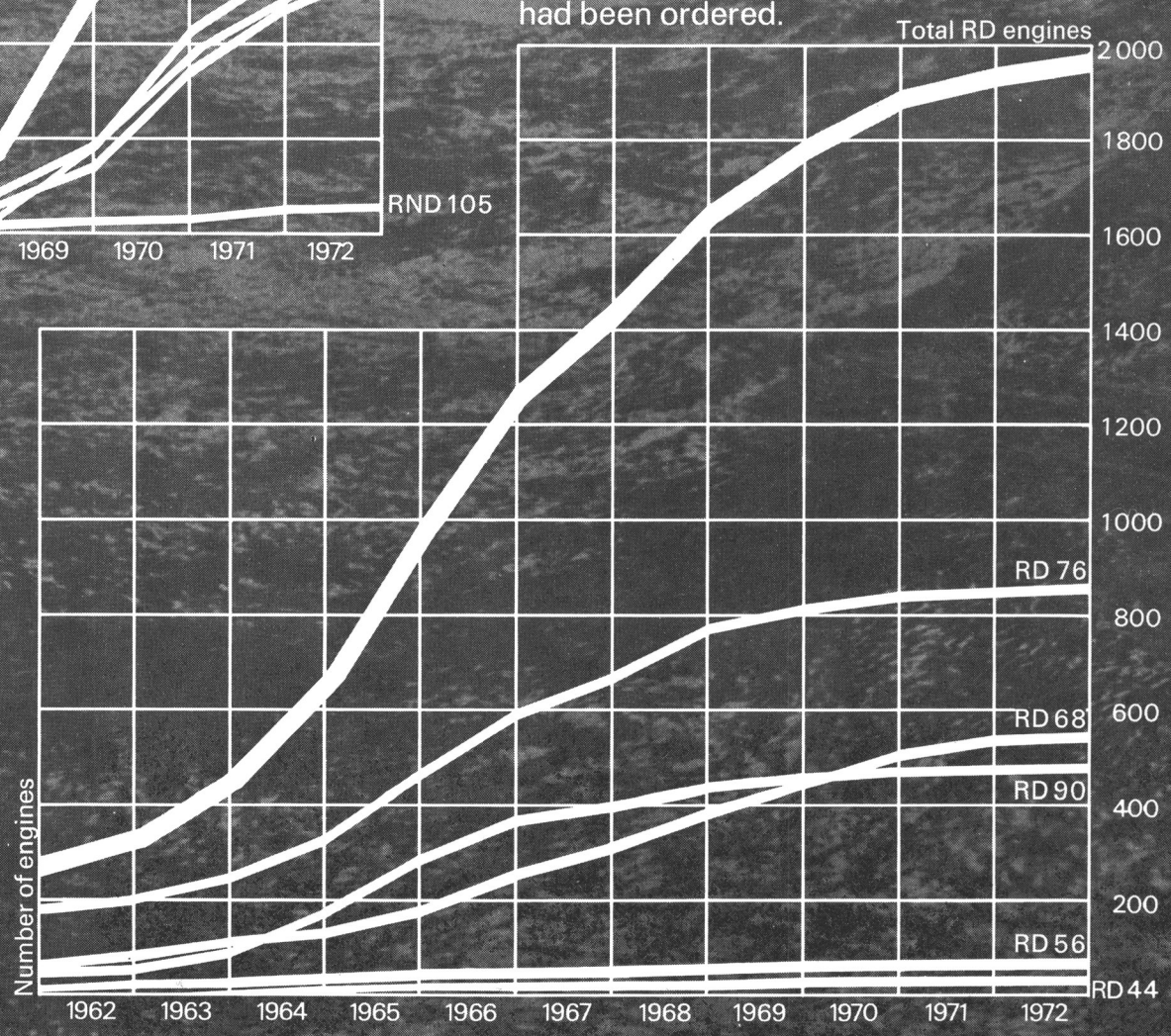

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