MARITIME REPORTER
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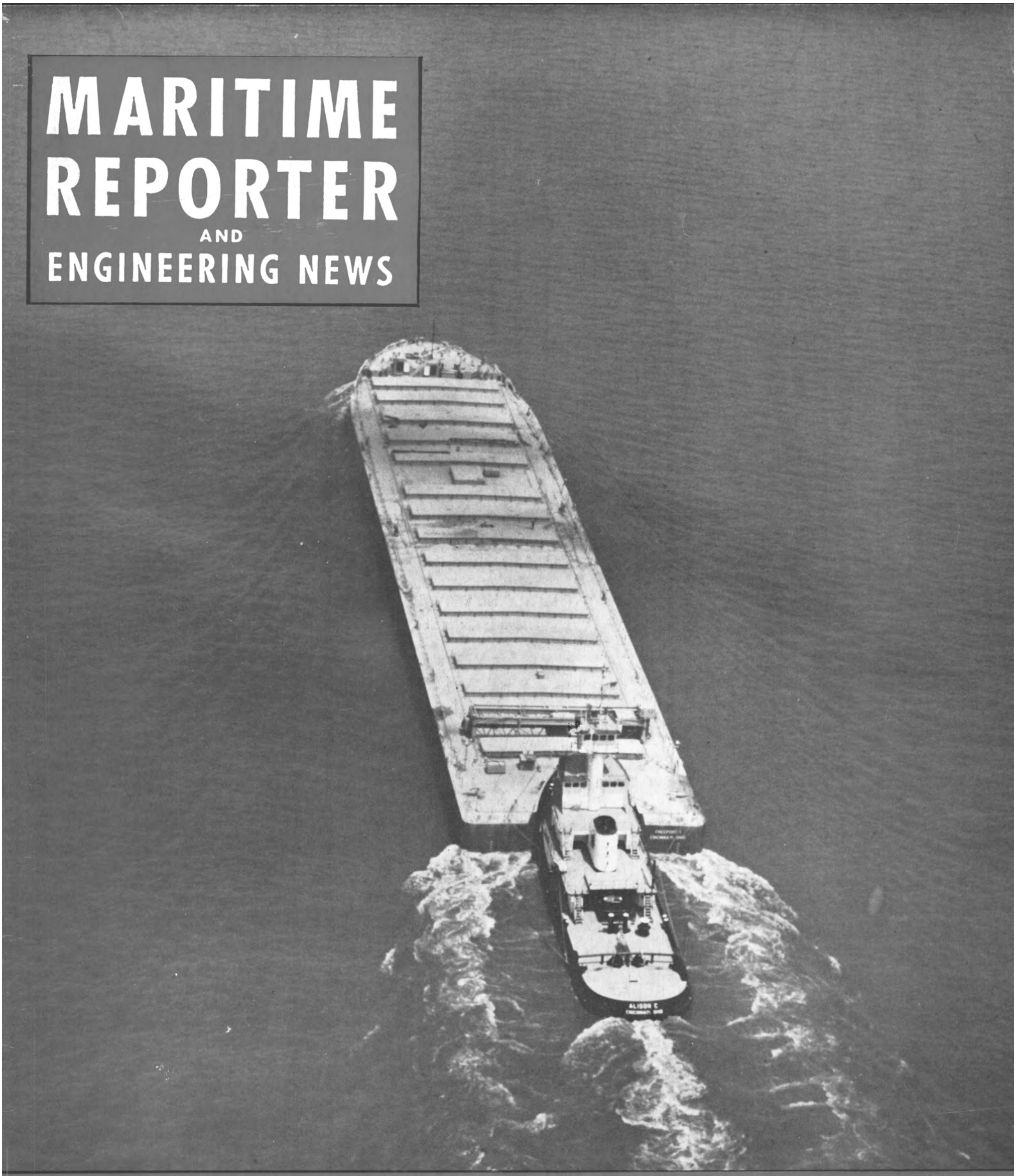
ENGINEERING NEWS



The Ohio River Company Starts Gulf Transport System Using Two 26,000-Dwt Barges

(SEE PAGE 6)

JANUARY 1, 1969

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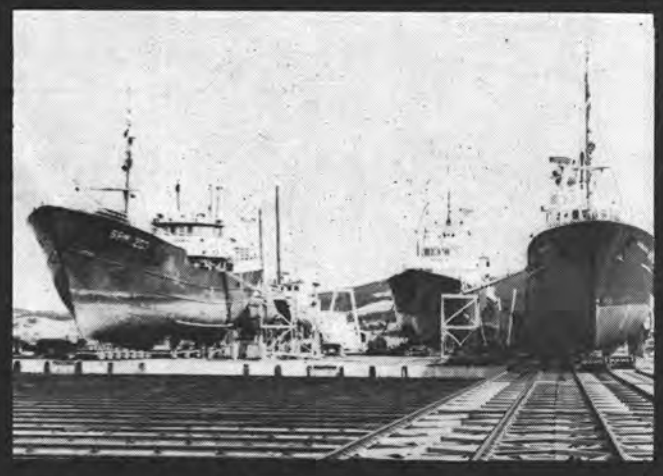

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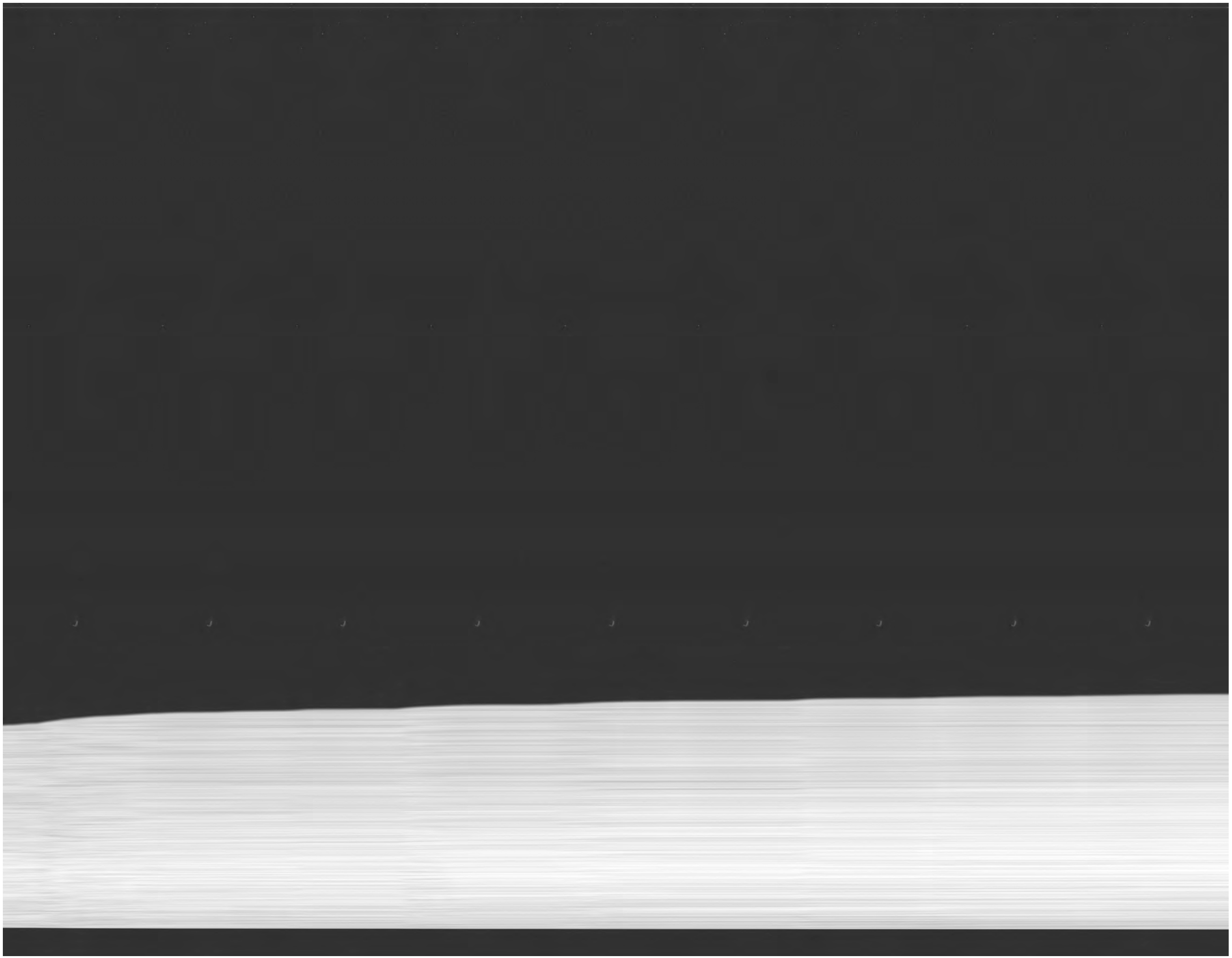

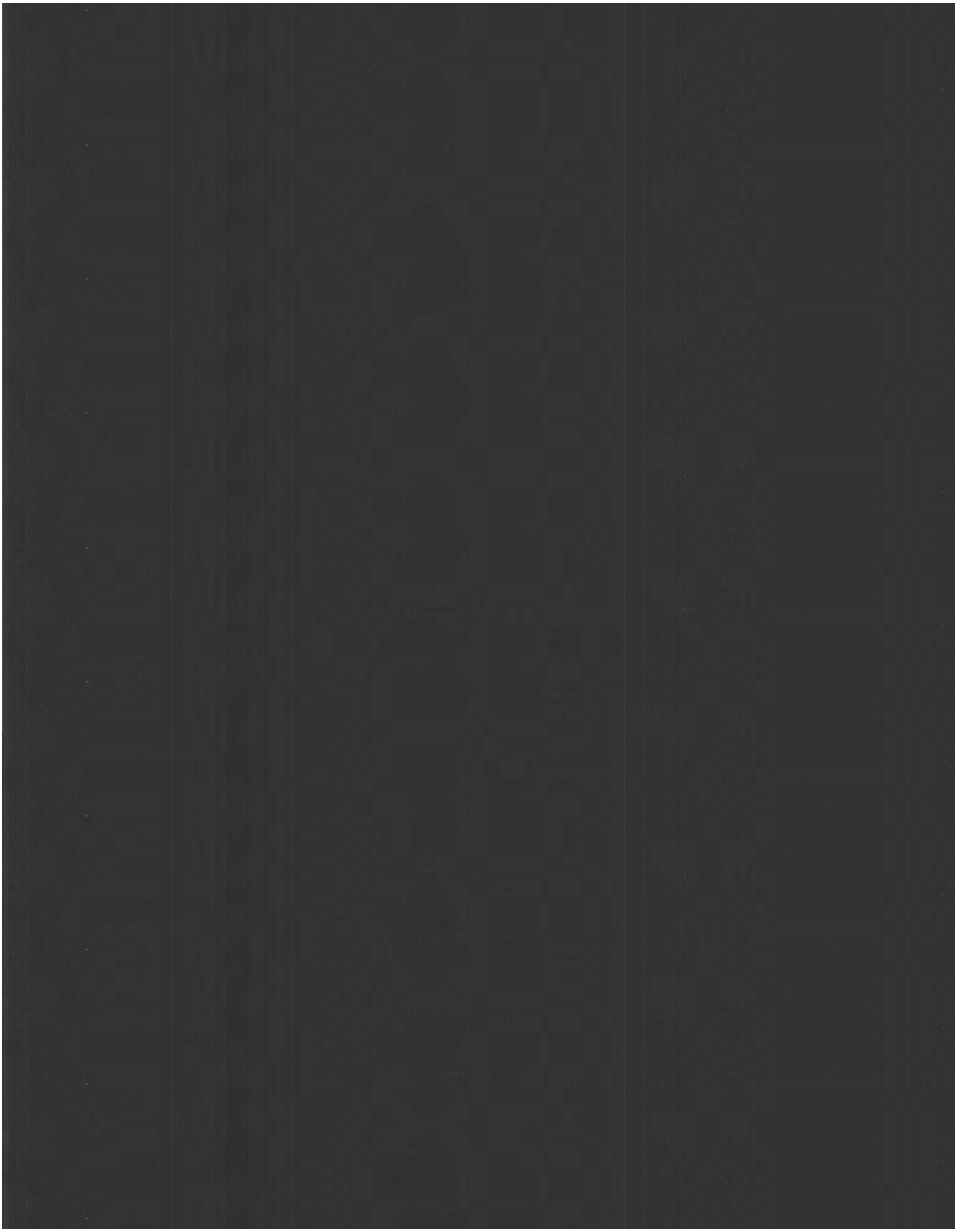

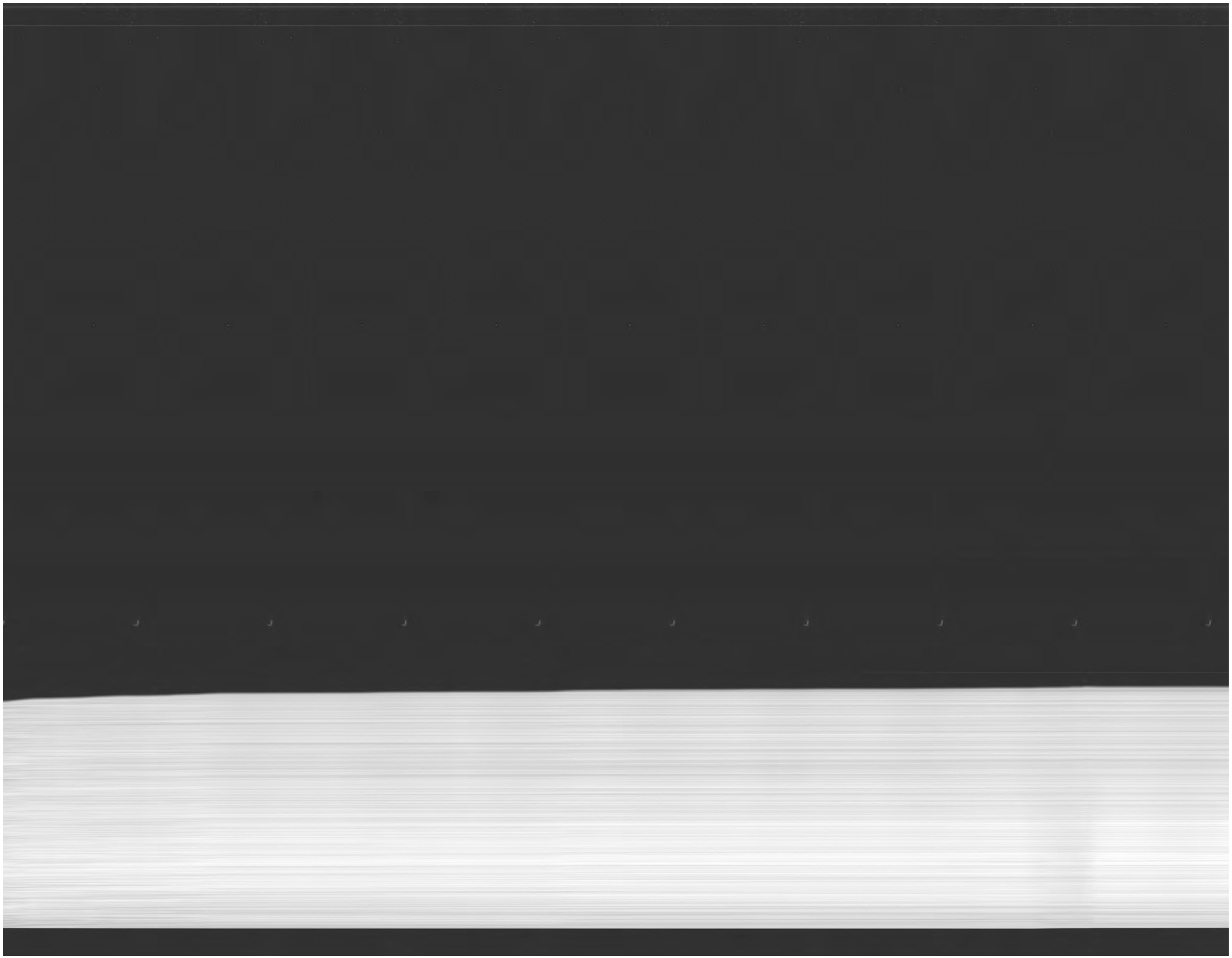

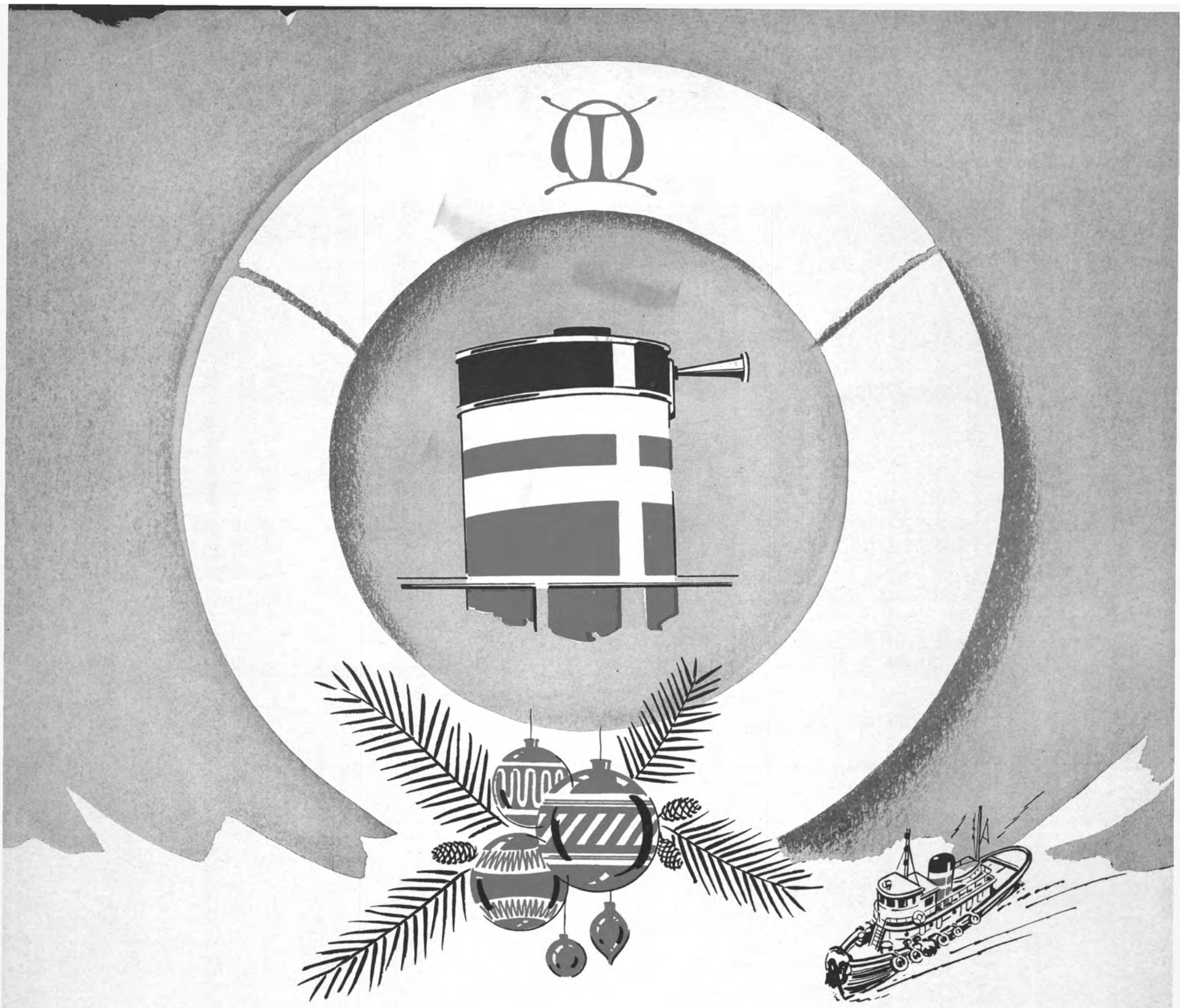

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Deeper Savannah River Opens Inland Areas To Coastal Barging

A shipment of newsprint from Augusta, Ga., arrived in Miami, Fla., on December 15, the first substantial cargo to move via the Savannah River from eastern Georgia to an Atlantic port, according to the Water Transport Association. The newsprint was carried by barges of the S.C. Loveland Co., from the Cox Paper Co., at Augusta.

Regular shipments of newsprint, amounting to 1,000 tons each, will be carried by the Loveland Company on the new route. The line is assigning a regular hopper barge to the movement.

Prior to opening of the new Savannah River Channel, only shallow draft vessels could navigate the waterway. Completion of the nine-foot channel enables shippers in North and South Carolina as well as Georgia to move considerable cargo by the river route to destinations along the Atlantic and Gulf coasts, according to the association.

NSSC Requests Bids For MSO Modernization

The Naval Ship Systems Command has issued Requests for Quotation for modernization and rehabilitation of 30 ocean minesweepers (MSOs) of 421 and 519 classes. Responses are due January 31, 1969.

Major upgrading of propulsion systems is specified in addition to improvements in habitability, navigation and sensor gear.

Martinac Low Bidder For Three Tuna Ships

J. M. Martinac Shipbuilding Corporation, of Tacoma, Wash., recently submitted the apparent low bid for the construction of three steel tuna vessels. The bids were received by the Maritime Administration on behalf of Pacific King, Inc.; Southern Seas, Inc., and Star-Kist Foods, Inc. The Martinac Shipbuilding Corporation's bid was $1,748,404 for each vessel.

The tuna vessels will be 165 feet 5 inches long.

A subsidy will be paid by the Department of Interior on the construction of the ships under its fishing-vessel program. The Maritime Administration represents the Department of Interior in this program.

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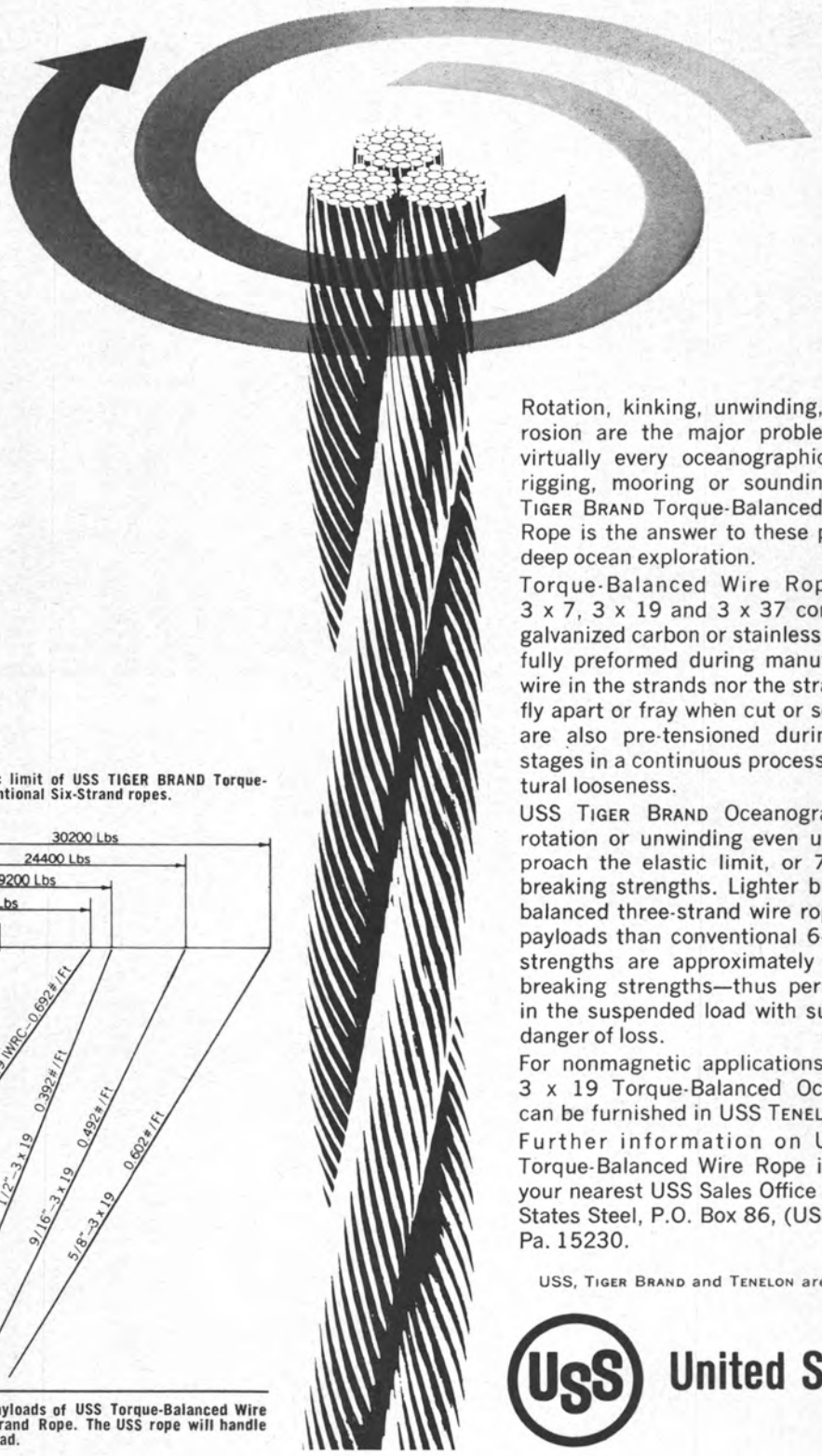

Rotation, kinking, unwinding, breakage and corrosion are the major problems encountered in virtually every oceanographic hauling, hoisting, rigging, mooring or sounding application. USS TIGER BRAND Torque-Balanced, Three-Strand Wire Rope is the answer to these problems of modern deep ocean exploration.

Torque-Balanced Wire Rope is produced in 3 x 7, 3 x 19 and 3 x 37 construction, in either galvanized carbon or stainless steels. Because it is fully preformed during manufacture, neither the wire in the strands nor the strands in the rope will fly apart or fray when cut or severed. These ropes are also pre-tensioned during final production stages in a continuous process that removes structural looseness.

USS TIGER BRAND Oceanographic Ropes resist rotation or unwinding even under loads that approach the elastic limit, or 75% of their listed breaking strengths. Lighter but stronger, torque-balanced three-strand wire ropes allow for higher payloads than conventional 6-strand ropes. Yield strengths are approximately 88% of minimum breaking strengths—thus permitting an increase in the suspended load with substantially reduced danger of loss.

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Further information on USS TIGER BRAND Torque-Balanced Wire Rope is available through your nearest USS Sales Office or by writing United States Steel, P.O. Box 86, (USS 5445) Pittsburgh, Pa. 15230.

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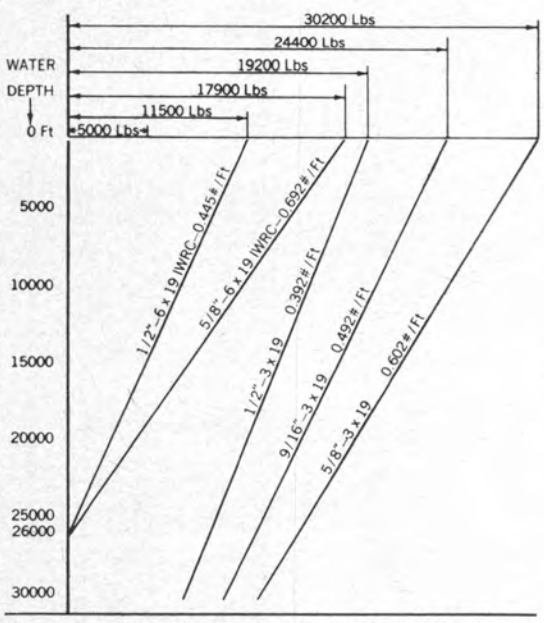
Comparative values for elastic limit of USS TIGER BRAND Torque-Balanced Wire Rope and Conventional Six-Strand ropes.



These curves compare safe payloads of USS Torque-Balanced Wire Rope and Conventional Six-Strand Rope. The USS rope will handle approximately 50% more payload.

United States Steel

World's fastest phosphate loading terminal with 26,000-dwt barges and 5,000-hp tugs ready for service.

The Ohio River Company Dedicates

Total Transport System

Tug Alison C. and Freeport 1 leave on first trip from new terminal with a full load.

Dedication and christening ceremonies held recently in Tampa, Fla., for the world's fastest phosphate loading terminal and large oceangoing tugs and barges marked the formal opening of a novel raw material transport system for Florida phosphate.

Developed by the barge operations of Eastern Gas and Fuel Associates, Boston, for the Freeport Sulphur Company, the system provides dependable, economical, large-volume movement of phosphate rock from Florida across the Gulf of Mexico to Freeport's new agricultural chemical plant in Uncle Sam, La.

The single-responsibility 'transportation package' put together by The Ohio River Company, Eastern's barge subsidiary, includes the movement of wet phosphate by unit train to Tampa, terminal handling, and transportation across the Gulf of Mexico.

The other elements of the total transportation service are two 26,000-ton barges, Freeport 1 & 2, and two 5,000-hp tugs, Alison C. and Theresa F. They will be operated by Red Circle Transport Co., an affiliate of The Ohio River Company.

For the next 15 years, the barges and tugs are committed to transport up to 2¼-million tons of phosphate rock yearly from Tampa to Freeport's new plant. Each tug and barge unit will make the 540-mile trip from Tampa to Uncle Sam, La., and back to Tampa in approximately seven days.

Cutting the ribbon officially opening the new highly automated bulk cargo terminal is Brig. Gen. **Charles C. Noble,** director of civil works, U.S. Army Corps of Engineers, assisted by **L. R. Fiore,** president of The Ohio River Company.

The 22-acre phosphate terminal was designed and built by McDowell-Wellman Engineering Company of Cleveland and incorporates several new concepts in phosphate handling, including the first use in the industry of an automated rotary rail car dump that can unload a 65-car unit train in less than four hours; combined stacker-reclaimers that move material to or from storage at the rate of 3,000 tons per hour, and a traveling shiploader.

The terminal's dock is 530 feet long and is supported by 30-foot-diameter cells. The terminal 'floats' without foundations on filled land resulting from a harbor dredging project of the Tampa Port Authority.

The barges are 472 feet long, 80 feet wide, 42 feet deep and have an operating draft of 30 feet. They feature the first marine use of 'rotary plow feeding' for the self-discharging system. The barges were designed by Marine Consultants & Designers, Inc., Cleveland, and built at the Avondale Shipyard, New Orleans.

The tugs have an overall length of 145 feet, a beam of 35 feet, and a 17-foot operating draft. Each tug has two pilothouses, with the upper constructed of aluminum. Power is provided by two 2,500-hp General Motors 16-cylinder 645 turbocharged diesel engines. Both tugs were designed by Design Associates, New Orleans, and built at the McDermott Shipyard, Morgan City, La.

Christening party for Red Circle Transport Company's new tugs and barges, left to right: **L. R. Fiore,** president, The Ohio River Company; **Mrs. Fiore; C. A. Coolidge,** trustee, Eastern Gas and Fuel Associates, Boston; **Mrs. Coolidge,** sponsor of tug Alison C.; **R. H. Feierabend,** vice-president, Freeport Chemical Company, Uncle Sam, La.; **Mrs. Feierabend,** sponsor of barge Freeport 1; **R. L. Williams,** vice-president, Freeport Sulphur Company, New Orleans, La.; **Mrs. Williams,** sponsor of barge Freeport 2; **Herman N. Finkelstein,** trustee of Eastern Gas and Fuel; **Mrs. Finkelstein,** sponsor of tug Theresa F.; **Eli Goldston,** president, Eastern Gas and Fuel Associates, and **Mrs. Goldston.**

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Port Of Jacksonville Expands To Blount Island

The dedication of a new $3.7-million marine terminal on Blount Island, Jacksonville, Fla., marked another large step in the process planned to make Jacksonville the leading port of the Southeast United States. This terminal is just the beginning of the development of Blount Island which has 1,600 acres of land and eight miles of perimeter on deep water, only seven miles from the ocean. It is a prime area for deep water docks, bulk shipping terminals, a shipyard and many other marine activities.

The second step in making use of the island, as announced by **Dave Rawls,** managing director of Jacksonville Port Authority, is the construction of a containership terminal aimed at making Jacksonville the containerport of the Southeast. The container terminal will be adjacent to the warehouse and 1,200-feet of wharfage that was recently dedicated. It will have 1,400 feet of wharfage and a 45-ton crane designed to handle containers or general cargo.

While Blount Island is a prime target for port expansion, the rest of the facilities under the control of the port authority are also receiving considerable attention.

The Jacksonville Port Authority recently completed its fourth year of operation with substantial gains in tonnage handled at its Talleyrand Docks & Terminals.

Jacksonville is the largest port on America's South Atlantic. Over nine-million tons of cargo move through the port's facilities each year. Its natural harbor, with 34 feet of water, links Jacksonville to American and foreign ports via 130 steamship lines.

The port's facilities include Talleyrand Docks and Terminals, and Blount Island. Jacksonville is also the site of one of the nation's four largest privately owned shipyards. This shipyard and several smaller yards provide marine repairs and fast service needed by the visiting ships. Its floating drydocks, up to 18,000-tons capacity, and large machine shops can build or repair even the largest ocean-going vessels.

Progress of the authority in 1967-68 was dramatically illustrated by its rebuilding and expansion program at Talleyrand Terminal and Blount Island.

Completed major projects during 1968 included: 30 acres of paved open storage; eight miles of new railroad track; 1,100 lineal feet of marginal wharf; 160,000 square feet of warehouse space; 1,540 feet of railroad bridge to Blount Island; 1,580 feet of vehicular bridge to Blount Island; one and two-thirds miles of paved roads at Blount Island, and all utilities within the construction areas to make these facilities fully operational.

In addition, six major construction projects are nearing completion which will substantially increase the port's present facilities with the addition of three new berths, 26 acres of paved open storage, one mile of railroad, 240,000 square feet of warehouse space and 45,000 square feet in the new Port Central Office Building.

Drawings and specifications have been completed for another wharf and transit shed, the service railroad on Blount Island, and a 40,000-square-foot transit shed for the city's 8th Street Terminal.

The construction materially improved the authority's operational capabilities. During fiscal 1967-68, tonnage increased 28 percent over the previous year. Import tonnage went up 31 percent; export tonnage 21 percent.

Major import gains were made with the following commodities: coffee, 25.6 percent; iron or steel, 22.8 percent; and bananas, 25.2 percent. Automobile imports increased from 26,-119 tons to 56,481 tons, or from 27,405 units to 48,663 units.

Paper products again dominated exports, showing a relatively small but significant increase from 125,484 tons to 128,385 tons. The completion of the new wharf and warehouse at Blount Island will accommodate enlarged paper export movements. Paper tonnage moved through the port is expected to increase considerably in another year.

Logs and lumber exports increased during the year from 932 tons to 4,860 tons, an impressive 420 percent which portends greatly increased handling of this commodity in the future.

In bulk cargo exports, petroleum products jumped from 297,356 tons to 419,830, or 41 percent. Completion in the 1970's of the Cross-Florida Barge Canal, which will add the Gulf Coast and Mississippi Valley to the present Trenton, N.J., to Miami, Fla., routes, also will substantially improve bulk cargo capabilities and prospects for the new Blount Island facilities.

Dave Rawls, Jacksonville Port Authority managing director, explains the building plans for Blount Island.

Jacksonville, which owns its docks and terminals, is the Southeast's leading containerport. The Port Authority, sensing in 1965 the growing demand for shipping by container service, built a $3.5-million facility, which is equipped with a 27.5-ton crane, on 10 acres of paved storage and parking, and operations buildings flanked by a 12,000-foot marginal wharf. The completed facility has been leased to Sea-Land Service, Inc.

The mile of marginal wharf under construction at Talleyrand Docks and Terminals, now partially built and operative, will have four 160,000-square-foot transit sheds and warehouses, 80-foot-wide aprons and vast paved areas. The facilities are designed to handle all types of general and containerized cargo. All essential equipment has been acquired to handle the heaviest containers.

Of equal importance to the port is the dredging of the St. Johns River from 34 feet to 38 feet.

Occupancy of the new three-story, 45,000-square-foot Port Authority general office building took place at the end of 1968. It houses the authority's staff on the third floor and provides it with the first meeting place of its own on the first floor. U.S. Customs has contracted for 5,210-square-feet of space on the ground floor and various port-oriented agencies, freight forwarders, marine surveyors and shipping companies will lease the second floor.

This first warehouse and terminal on Jacksonville's Blount Island, as pictured above, is currently used to service St. Regis Paper's 200,000-ton annual exports.

An artist's conception of the fully-developed Blount Island Terminal, Jacksonville, Fla., which has 1,600 acres of land and eight miles of perimeter on deep water.

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EST 1830 WALL ROPE

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Neuman Boat Line Inc. Awards Contract To Blount For Auto-Passenger Ferry

Neuman Boat Line, Inc. of Sandusky, Ohio, has awarded a contract to Blount Marine Corporation, Warren, R.I., for the construction of a 100-foot auto-passenger ferry.

The new twin-screw, double-ended ferry will run between Sandusky, Marblehead and Kelley's Island, in Lake Erie.

Capacity of the new boat will be 15 cars, and its center lane will accommodate any type vehicle which can be driven on a U.S. highway.

Power for the twin screws will be furnished by General Motors Twin Diesel engines developing 770 hp. Designed speed is 12 knots.

This new vessel will join the Blount-built Commuter and Corsair, delivered to the same owner via the Erie Canal in 1955 and 1960.

First Drilling Platform For Japanese Owners Launched By Mitsubishi

Mitsubishi Heavy Industries, Ltd. recently launched at its Hiroshima Shipyard & Engine Works, the jack-up type offshore drilling platform MD40J for Japan Drilling Co., Ltd.

Designed by Mitsubishi, this is the first offshore drilling platform built in Japan to meet recent demands by Japanese industries for the exploration of offshore oil.

The platform can be operated at the water depth of between 13 and 130 feet.

On the main working deck, a set of drilling machinery, air-conditioned living quarters for 69 persons, communication systems and a heliport will be installed.

The platform will be used offshore at Kalimantan.

O'Malley And Bowman Named Divisional General Managers By Harnischfeger Corporation

Walter R. O'Malley

G. W. Bowman

Walter R. O'Malley and **G. W. Bowman** have been appointed general managers, overhead crane products, and hoist products, respectively, for Harnischfeger Corporation, according to an announcement released by **Henry Harnischfeger,** president of the firm.

Mr. **O'Malley** has been with Harnischfeger 27 years and the last 12 years has served as sales manager, overhead cranes. He received a bachelor's degree in mechanical engineering from Marquette University in 1942.

Mr. **Bowman** has been with Harnischfeger since 1939, and the last 12 years served as manager, hoist sales. Mr. **Bowman** received a bachelor's degree in civil engineering from the University of Detroit.

The revamped divisional organization is designed to place more responsibility for engineering, service, parts and sales in the offices of the two product general managers.

Shipbuilders Council Issues Shipbuilding Forecast 1969-75

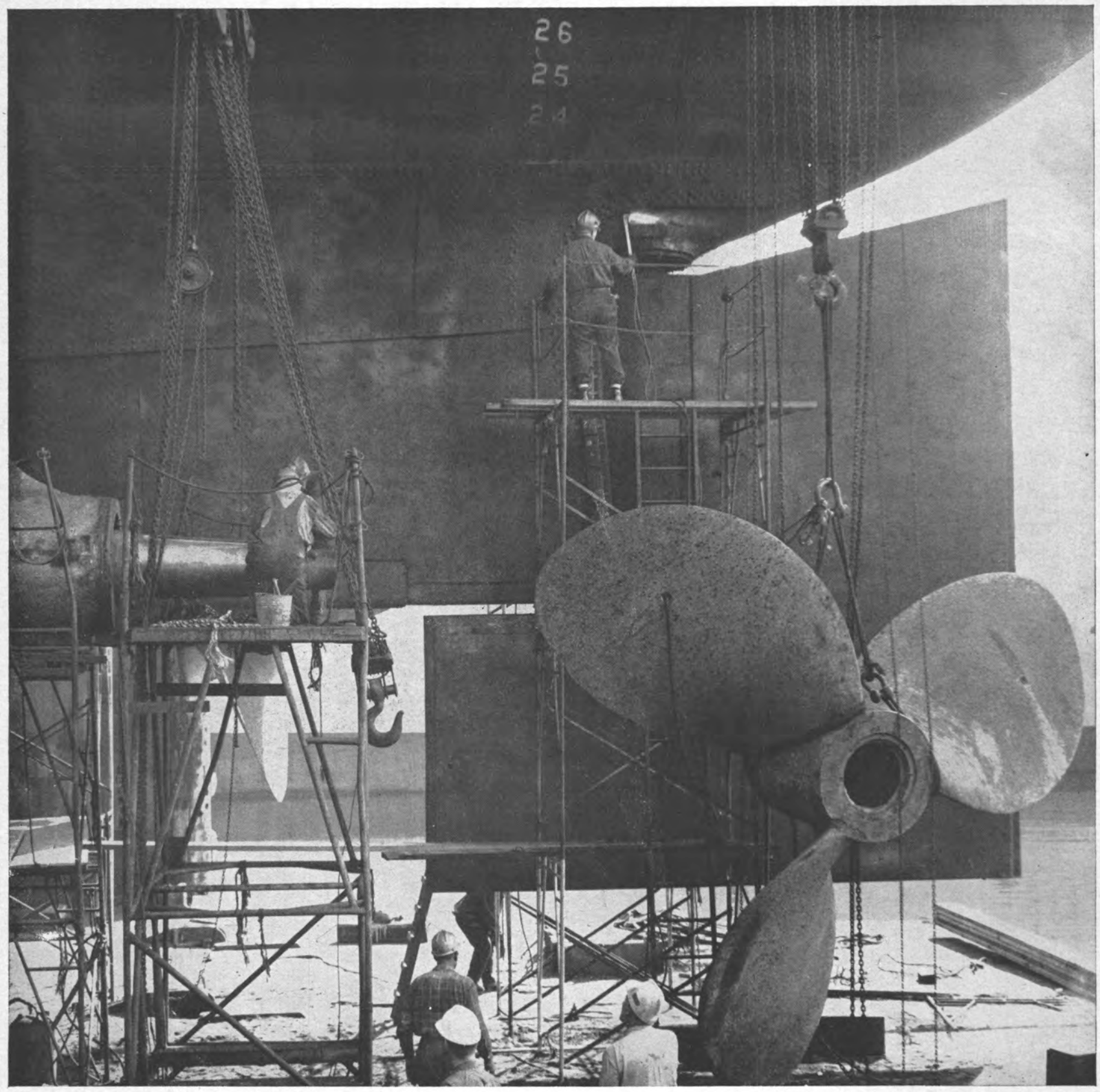
Amid the speculations as to the final attitude of the new federal administration regarding merchant and naval shipbuilding programs, the Shipbuilders Council of America has come up with a broad-range forecast.

The Shipbuilders Council has forecast the estimated annual dollar value of private shipyard activities for the period of 1969-1975 as follows (given in millions of dollars):

Merchant Fleet	**Estimate**
Self-propelled vessel construction	
Tankers	$ 60-150
Subsidized fleet	150-200
Nonsubsidized dry cargo ships	40-200
Great Lakes fleet	15-50
Small vessels	30-75
Total	295-675
Nonpropelled vessels	70-150
Ship repair and conversion	275-350
Total Merchant Fleet	640-1,175
Naval Fleet	
Construction and conversion	1,000-1,300
Repair	300-350
Total Naval Fleet	1,300-1,650
Total Ship Work	$1,940-2,825

The above estimate does not reflect proposals for merchant and naval ships advanced by President-elect **Richard M. Nixon.** If these should be translated into positive programs, estimates for subsidized merchant construction and naval construction and conversion could be on the low side.

At the same time the preceding estimate was released, Chairman **L. Mendel Rivers** of the House Armed Services Committee released a report on "The Changing Strategic Naval Balance—USSR vs. USA," prepared by a special subcommittee of the National Strategy Committee of the American Security Council. This report warned: "If the United States intends to maintain the seapower supremacy it gained during World War II and has held to the present, it will have to significantly augment its naval forces for the contests ahead."



This is an unretouched photo of a retouching job.

It might be a prettier picture if we took time out for the niceties of housekeeping. But if this is ever at the sacrifice of full speed ahead, the work comes first. Touching up a ship is very often a rough, tough, dirty job—and a Todd specialty is realism. We're especially realistic, owners say, about such things as delivery dates and cost. No prettier picture than that. Executive Offices: One Broadway, New York, N. Y. 10004 • (212) 344-6900 • Cable "Robin" New York.

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Avondale Orders Control Units For LASH Ships And Tankers From Technical Associates

According to **Melvin Goldstein,** president of Technical Associates of New Orleans, the electronics firm has been awarded a series of contracts in excess of $1.4-million by Avondale Shipyards for the LASH ships and for the supertankers presently under construction. Eleven LASH (lighter aboard ship) vessels are being built, five of which are for Prudential Steamship Lines and six for Pacific Far East Lines. The five supertankers are for the Humble Oil and Refining Company.

Technical Associates will design and fabricate the barge control loudspeaker system and the centralized instrument and control consoles for the LASH ships. The former is a unique requirement to be used for extended loading and unloading of barges onto or from the ship. A loudspeaker system, consisting of two bays of loudspeakers designed to meet environmental requirements of shipboard use, is installed as well as two high-powered address amplifiers. To facilitate the degree of mobility necessary for directing the barge operation, Technical Associates will design a wireless microphone system. With this system the loading foreman can call to the barge below and direct its movements by means of push buttons.

The centralized instrumentation and control console consists of three control consoles per ship along with the necessary instrumentation.

A bell logger, located on the bridge, is made up of an electronic device with a selectric typewriter and all of the equipment necessary to print out the engine order log from the engine order telegraph and throttle control system. It also contains an analog-to-digital converter. Should the shaft revolutions change, it automatically triggers the bell logger. The typewriter automatically prints out every four hours.

The central machine panel, located in the engine room, is approximately 20 feet in length. This panel console contains all of the various power supplies, metering displays and controls, annunciator system, throttle control system—which amounts to a small analog computer—temperature alarm set points units, and so forth.

The bridge console system is composed of the bridge navigational console, the bridge steering console and the bridge propulsion console. This system contains all of the navigational equipment, depth recorder, general alarm contact maker, navigational light controls, internal telephone and communication equipment, propulsion controls, and many others.

On the Humble 76,000-dwt tankers Technical Associates will design and fabricate both the cargo control console and the electrical test panel for all three vessels.

The control console is 16 feet in length, 7 feet in height and weighs some 3,000 pounds. It contains approximately two miles of wiring. Located in the cargo control room, it overlooks the weather deck where all of the cargo valves are located. Each of these consoles completely controls and displays the position of the more than 100 valves on each ship, the cargo pumps and the tanks.

The electrical test panel, located in the electricians' shop, is used to test all of the lamps used aboard ship.

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The Blackburn lash barge rigging system, including winches, cable fasteners and cleats are now being installed by leading companies on their first fleet of lash barges. This system has been proven to be safe, fast, efficient and economical.

After many years of barge line experience, we have designed our winch and fastener button for fast, efficient make-up of cargo barges. With the Blackburn system, 50% or more of normal makeup time using conventional equipment can be saved and rigging cost can be cut in half.

Blackburn equipment uses a minimum amount of cable without the need of eyes in either end. The winch is easy to release or take up, and surplus cable slack can be taken up or let out through this fastener button fast and easy. The winch and fastener button are designed for 1" or 7/8" cable. The cable is easy to fasten or remove from winch or fastener button. The winch is equipped with a padeye and "U" bolt that needs no doubler. The winch has a fabricated steel base that can be welded in a fixed position if desired. The winch is coated for corrosion protection against salt water and has a remarkable braking system that allows automatic slacking without removing cables when loading or unloading rigged barges.

For more detailed information and specifications about this Blackburn rigging equipment write or call today.

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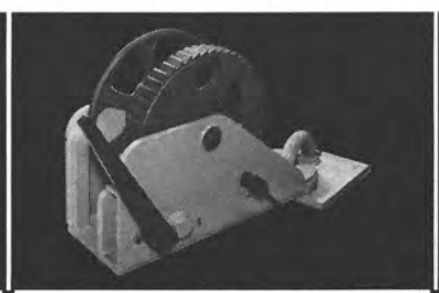
ROLLER BUTTONS

Finest high-load carrying, free-rolling roller button that has ever been designed • Precision machined parts • Needs little lubrication • Can be welded anywhere on deck.

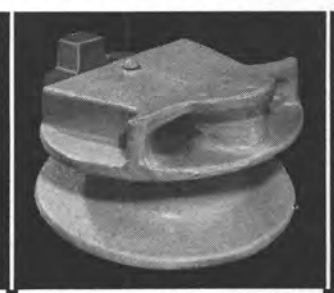
BUTTON

High-load carrying button designed to keep cable from coming off from loaded to light barges.



BLACKBURN WINCH

21" high, 12" wide and 42" long including padeye • Line pull of 20,000 lb. • Designed for 1" or 7/8" cable • Made of fabricated 3/4" steel plate.



CABLE FASTENER

Designed for three leads 1" or 7/8" cable • Cable can lead in any direction • Removable wedge eliminates the need for eyes.

CLEATS

High-load carrying cleats • Both our 24" and 36" cleats are designed for two wraps of 1" cable while using line at the same time.

Lykes Establishes Container Department

Establishment of a Container Department to meet present and future growth of cargo containerization in the U.S. Gulf ports areas, was announced by **W. J. Amoss Jr.,** traffic vice-president of Lykes Bros. Steamship Co., Inc.

Lykes' container operations have increased in recent months and this growth is expected to continue as the company introduces into service its three revolutionary new barge and intermodal carriers with facilities for the transportation of as many as 1,600 containers each, and its nine jumboized Gulf Pride Class ships which are to be lengthened by 97 feet to provide for greater container carrying capacity. Each of the nine ships will carry 182 containers in addition to increased breakbulk cargoes.

James H. Crosby, a veteran member of the Lykes traffic organization, and formerly manager of the company's Continent and United Kingdom traffic services, has been named manager of the new Container Department.

E. W. Patterson, another veteran of the Lykes' traffic division, succeeds Mr. **Crosby** as manager of the Continent and United Kingdom services, and **R. L. Lambremont** has been transferred from Lykes' office in Galveston to New Orleans, to take over Mr. **Patterson's** post as manager of the South and East Africa service.

H. E. Campbell, formerly local manager for Lykes at Port Arthur, shifts to Galveston to replace Mr. **Lambremont** as traffic manager of Lykes' Galveston office. **E. J. Breaux,** manager at Beaumont, will now supervise all activities of the Lykes' organization in the ports of Beaumont, Port Arthur, Port Neches and Orange.

Consolatti Named Controller By Paceco

Adam J. Consolatti

Adam J. **Consolatti** has been named controller of Paceco, a division of Fruehauf Corp. He will assist Paceco's president and general manager in all financial matters affecting the company.

Mr. **Consolatti** most recently served as chief financial officer and controller at Fruehauf's Decatur, Ala., operations. He joined Fruehauf in 1952, and has held financial positions at company facilities in Westfield, Mass., Delphos, Ohio, and Detroit, Mich.

AEIL Names Hamilton Far East Director

The appointment of **Harry Hamilton** as director, Far East Area for American Export Isbrandtsen Lines was announced by **Manuel Diaz,** president of the worldwide steamship company.

Mr. **Hamilton** has been associated with the steamship industry since 1946. He has served at various times as operations manager for Amerind Shipping Corporation, general manager for Isbrandtsen Agencies, Inc., vice-president of Dragor Shipping Company, Inc., and president of U.S. Bulk Carriers, Inc. Most recently he was manager of vessel scheduling at AEIL's New York headquarters.

Mr. **Hamilton** relieved **Poul C. Christensen** at AEIL's Tokyo office. Mr. **Christensen** has returned to New York for reassignment with AEIL, New York.

Tidewater To Acquire 30 Offshore Vessels

At a recent board of directors meeting, Tidewater Marine Service, Inc., New Orleans, La., announced that it intends, within the next 12 to 18 months, to purchase 30 new offshore oil-well supply and service boats at an approximate price of $14-million.

The master of the long haul is a master indeed—
He may be called upon to tow floating units of any size or type—
from dredges to drydocks, from barges to battleships,
from derricks to drill rigs on the oceans of the world—tow ships
in distress under the most adverse conditions to a safe haven—
and professionally perform the many demanding tasks
expected of the man in command of a Moran seagoing tug.

The confidence this Man from Moran must have to meet the
challenges of his job—and deliver his tows safely—is born
of experience and the knowledge that the vessel he commands
is a part of the world's largest, most modern tug fleet
backed by an organization with over a century of achievement
and a seagoing tradition second to none.

You expect more when you call...

The Man from Moran

MORAN TOWING & TRANSPORTATION CO., INC.
17 Battery Place, New York, N.Y. 10004

Halter Marine Delivers Two Halmar 100 Class Tugs

The Mister Lou, one of two Halter Marine tugs delivered to Jackson Marine Service, is another Halmar 100 class tug which is designed for harbor and open ocean service. The tug has entered service in Africa.

Halter Marine Services, Inc., New Orleans, La., has delivered its second and third 100-foot tugs of the Halmar 100 class since the introduction of the Halmar 100 to the marine industry in late 1967. The first 100-foot tug was the Jason Smith, built for Crescent Towing and Salvage Company, Inc. The latest deliveries from the builder's yards were the Capt. Jac and the Mr. Lou, built for Jackson Marine Service of Port Aransas, Texas.

The new tugs are designed for harbor and open ocean service and are classed by the American Bureau of Shipping for Maltese Cross A-1 Ocean Towing Service. Primary propulsion on each of the boats is by two Caterpillar D398B series diesel engines providing 1700 continuous horsepower through 5.3:1 Caterpillar reduction gears. The engines of each tug turn two 100-inch diameter 4-blade stainless steel propellers on 9-inch steel shafts and can produce a maximum bollard pull of 60,000 pounds. The boats have a free running speed each of 12.75 knots. Two 60-kw Delco generators driven by 671 General Motors engines provide auxiliary power for each tug.

The Capt. Jac and the Mr. Lou are each equipped with a Sperry electro-hydraulic dual steering system that activates two hydrofoil-shaped spade rudders with 10-inch stocks. Engine and rudder controls are located in the pilothouse and on the after boat deck. Engine controls are located both port and starboard in the pilothouse, and the master can use a Sperry walk-around steering control unit when necessary.

The two new tugs are each centrally air conditioned in all living areas and in the pilothouse, and accommodations are provided for eight. Access to the pilothouse is by any one of two outside and one interior ladders. A ladder to the wheelhouse top is provided to allow access to the folding aluminum mast on each vessel. From the wheelhouse the master has direct access to the bridge wings, boat deck and foredeck. Each tug has a large hold forward for stowage or additional quarters, and has a hold aft for stowage of hawsers and towing gear. Deck equipment for each boat includes a towing winch.

All Halmar 100 class tugs admeasure under 200 gross tons.

The Capt. Jac and the Mr. Lou began their services for Jackson Marine Services in Africa.

New Developments In Grain Carriage On General Cargo Type Vessels

Capt. S. F. Sammis
Deputy Chief Surveyor
National Cargo Bureau, Inc.

As a consequence of a number of casualties to general cargo vessels carrying grain under the requirements of Chapter VI of the Convention for the Safety of Life at Sea 1960, the Inter-Governmental Maritime Consultative Organization (IMCO) Sub-Committee on Bulk Cargoes has been engaged in formulating amendments to those regulations.

These amendments are a product of a series of surveys and experiments dating back to 1962 when the validity of the assumptions forming the basis of the 1960 Convention were questioned.

In order to evaluate the effectiveness of feeders a questionnaire was placed on board grain carrying vessels so that settlement of grain in feeders could be measured on various vessels in all weathers encountered on a number of the world's trade routes.

The results of these measurements indicated that in heavy weather there was some drop in feeders. The question then became, where did the grain go? There must have been void spaces under the deck but by what means were they caused? Was it the settling assumed by Chapter VI of the 1960 Convention or was it a condition of loading?

These questions led to another research project wherein holes were drilled in decks immediately over grain holds and measurements made through them to the grain surface. The measurements were made immediately after loading, at two points during the voyage and just prior to discharge. In all cases, of which there were five conducted on U.S.-flag vessels and numerous others on British-flag ships, the voids were found to exist after loading and not to change during the voyage. Therefore, the settling assumed by the 1960 Convention was actually negligible and voids found were fairly constant in depth averaging about 18 inches in all of the vessels gauged.

Having established that the assumptions upon which the 1960 Convention was based were erroneous, the U.S. Panel on Bulk Cargoes, composed of representatives from the U.S. Coast Guard, National Cargo Bureau, Inc. and industry, set out to develop a pattern of grain behavior by the use of a model designed to simulate a transverse section of the forward half of a Victory ship No. 3 hold. This project was carried out in the fall of 1966 at the U.S. Coast Guard facility at Curtis Bay, Md., through the joint efforts of the National Cargo Bureau and the U.S. Coast Guard. The model was built to a scale of one inch to the foot and was fitted with plexiglass bulkheads through which the pattern of grain movement could be watched. The model was suspended in gimbals so as to allow heeling to develop grain shifts. The relative amounts of force required to resist such shifts were recorded and the arrangements compared one to another. The model was so constructed as to allow the removal of decks so that one, two and three deck arrangements could be studied. Void spaces found under the decks of the full size vessels were simulated in the model by loading the wheat up to 1½ inches under the decks. Scale effect was established as negligible by using grain of another density, and deriving similar results.

The U.S. Delegation to the Sub-Committee on Bulk Cargoes submitted a report based on the tests at the next meeting of the Sub-Committee and after review by the assembled delegations a U.S./U.K. working group was established to conduct further tests at Curtis Bay in the early spring of 1967 pursuant to drafting amended regulations including stability criteria for the carriage of grain.

The draft of amended regulations developing from this project was presented at the next meeting of the Sub-Committee which decided on further revisions in an attempt to embrace the various smaller types of vessels operated by European nations.

In general the objective of the working group was to couple the results of the research projects and tests with an engineering approach that would treat each vessel in terms of its own ability to carry grain from the stability standpoint. This was done by assuming that an underdeck void space depending upon the vessel's characteristics exists under all horizontal surfaces together with heeling moments generated by a 15 degree transverse shift of grain in such voids. By establishing minimum stability values necessary to meet such conditions the minimum GM concept stated in the 1960 Convention has been extended so as to also consider the dynamical aspects of the problem.

The requirement for fittings in any vessel under the proposed criteria would then be limited to those that are necessary to restrict the possible total heeling moment generated by the 15 degree shift of grain to such a quantity as can be compensated for by the stability of the vessel in question.

Thus it is anticipated that by allowing the characteristics of the vessel to dictate the amount of fittings required, that grain carriage will be more economical, commensurate with safety.

The next meeting of the Sub-Committee on Bulk Cargoes will convene in London this month, immediately after the Sub-Committee on Subdivision and Stability finally establishes the stability aspects of the proposal leaving the Sub-Committee on Bulk Cargoes free to conclude its work. If agreement is reached by member delegations at this session the final draft will then be submitted to the Maritime Safety Committee prior to final review by the General Assembly in the fall of 1969.

Since the General Assembly meets once every two years, agreement at the Sub-Committee level in January is imperative if implementation is not to be drastically delayed.

Since the U.S. has placed great faith in the new criteria, it has applied it on an equivalent experimental basis to a class of new vessels. The first of these vessels sailed recently, in complete compliance with the proposed regulations, on a trans-Pacific voyage laden with grain but without any shifting boards or feeders.

If agreement can be reached in time at IMCO, these vessels will be the forerunners of many more of various nationalities.

Seven 200,000-Dwt Tankers Being Built In Norway To Have GE Powerplants

General Electric Company has announced the receipt of orders totaling over $5-million to supply major parts for steam propulsion equipment for seven supertankers to be built in Norway.

H. W. Ogilvie, manager of marketing for GE's Marine Turbine and Gear Department, West Lynn, Mass., said the company received the orders from the firm of Kvaerner Brug in Oslo for the manufacture of the rotating equipment for the steam propulsion units. Kvaerner Brug, an overseas manufacturing associate of General Electric, will make the stationary equipment to GE designs.

The seven supertankers are being built in the Oslo shipyards of Akers Mek Verksted for the firm of Hilmar Reksten, Bergen, Norway. The 200,000-dwt supertankers will each be powered by 30,000-shp, 80-rpm steam propulsion units.

Using General Electric's MST-14 marine propulsion units with attached auxiliaries, the fuel rate of each vessel is expected to be less than 0.44 pounds per shaft horsepower hour. General Electric is also furnishing technical services and advance system design information to make possible the low fuel rate.

Mr. **Ogilvie** pointed out that the orders are another indication of the great advances that have been made within recent years in steam propulsion. "The best proof of these improvements," he said, "is the many ships now changing from other forms of propulsion to steam. Of the 233 ships on order and under construction in the world today, rated 27,501 shp and over, 91.7 percent are steam powered, and of these ships GE is supplying equipment to 27 percent."

Mr. **Ogilvie** said, "The MST-14 is the most efficient steam plant ever to be installed in a merchant ship."

The first of the seven ships is scheduled for service around the middle of 1969.

General Koisch Appointed Director Of Civil Works

Brig. Gen. **Francis P. Koisch** has been appointed as director of civil works of the United States Army Corps of Engineers, effective late January 1969. General **Koisch** succeeds Brig. Gen. **Charles C. Noble,** who has been reassigned to Heidelberg, Germany.

In his new post, General **Koisch** will be responsible for direction of the engineer corps' nationwide water resources program.

"GRANDPA STILL LOVES THE SOUND OF THE WIND RUSHING THROUGH THE RIGGING."

CLASSIFICATIONS OF U.S. NAVY SHIPS AND CRAFT

(REVISED BY SECRETARY OF NAVY DIRECTIVE DATED AUGUST 14, 1968)

COMBATANT SHIPS

WARSHIPS

Battleship	BB
Aircraft Carriers:	
Attack Aircraft Carrier	CVA
Attack Aircraft Carrier (Nuclear Propulsion)	CVAN
ASW Support Aircraft Carrier	CVS
Training Aircraft Carrier	CVT
Cruisers:	
Heavy Cruiser	CA
Guided Missile Cruiser	CG
Guided Missile Cruiser (Nuclear Propulsion)	CGN
Light Cruiser	CL
Guided Missile Light Cruiser	CLG
Command Ship	CC
Destroyers:	
Destroyer	DD
Guided Missile Destroyer	DDG
Frigate	DL
Guided Missile Frigate	DLG
Guided Missile Frigate (Nuclear Propulsion)	DLGN
Ocean Escorts:	
Escort Ship	DE
Guided Missile Escort Ship	DEG
Radar Picket Escort Ship	DER
Submarines:	
Submarine	SS
Submarine (Nuclear Propulsion)	SSN
Fleet Ballistic Missile Submarine (Nuclear Propulsion)	SSBN
Guided Missile Submarine	SSG
Patrol Ships:	
Patrol Escort	PCE
Patrol Rescue Escort	PCER
Patrol Gunboat	PG

AMPHIBIOUS WARFARE SHIPS

Amphibious Command Ship	LCC
Inshore Fire Support Ship	LFR
Amphibious Fire Support Ship	LFS
Amphibious Assault Ship (general purpose)	LHA
Amphibious Cargo Ship	LKA
Amphibious Transport	LPA
Amphibious Transport Dock	LPD
Amphibious Assault Ship	LPH
Amphibious Transport (small)	LPR
Amphibious Transport Submarine	LPSS
Dock Landing Ship	LSD
Tank Landing Ship	LST

MINE WARFARE SHIPS

Mine Countermeasures Ship	MCS
Minehunter, Coastal	MHC
Minelayer, Coastal	MMC
Minelayer, Fast	MMD
Minelayer, Fleet	MMF
Minesweeper, Coastal (non-magnetic)	MSC
Minesweeper, Coastal (old)	MSCO
Minesweeper, Fleet (steel hull)	MSF
Minesweeper, Ocean (non-magnetic)	MSO
Minesweeper, Special (device)	MSS

COMBATANT CRAFT

PATROL CRAFT

Patrol Craft (Hydrofoil)	PCH
Patrol Craft, Submarine	PCS
Patrol Gunboat (hydrofoil)	PGH
Fast Patrol Craft	PTF

COMBATANT CRAFT (Cont'd)

LANDING CRAFT

Landing Craft, Assault	LCA
Landing Craft, Mechanized	LCM
Landing Craft, Personnel, Large	LCPL
Landing Craft, Personnel, Ramped	LCPR
Landing Craft, Utility	LCU
Landing Craft, Vehicle, Personnel	LCVP
Amphibious Warping Tug	LWT

MINE CONTERMEASURER CRAFT

Minehunter, Auxiliary	MHA
Minesweeper, Auxiliary	MSA
Minesweeping Boat	MSB
Minesweeper, Drone	MSD
Minesweeper, Inshore	MSI
Minesweeping Launch	MSL
Minesweeper, River (Converted LCM-6)	MSM
Minesweeper, Patrol	MSR

RIVERINE WARFARE CRAFT

Assault Support Patrol Boat	ASPB
Armored Troup Carrier	ATC
Command and Control Boat	CCB
Monitor	MON
Patrol Air Cushion Vehicle	PACV
River Patrol Boat	PBR
Patrol Craft, Inshore	PCF

AUXILIARY SHIPS

Destroyer Tender	AD
Degaussing Ship	ADG
Ammunition Ship	AE
Store Ship	AF
Combat Store Ship	AFS
Miscellaneous	AG
Escort Research Ship	AGDE
Hydrofoil Research Ship	AGEH
Environmental Research Ship	AGER
Miscellaneous Command Ship	AGF
Missile Range Instrumentation Ship	AGM
Major Communications Relay Ship	AGMR
Oceanographic Research Ship	AGOR
Radar Picket Ship	AGR
Surveying Ship	AGS
Auxiliary Submarine	AGSS
Technical Research Ship	**AGTR**
Hospital Ship	**AH**
Cargo Ship	**AK**
Cargo Ship, Dock	**AKD**
Light Cargo Ship	**AKL**
Stores Issue Ship	**AKS**
Cargo Ship and Aircraft Forry	**AKV**
Vehicle Cargo Ship	**AKR**
Net Laying Ship	ANL
Oiler	AO
Fast Combat Support Ship	**AOE**
Gasoline Tanker	**AOG**
Replenishment Oiler	**AOR**
Transport	**AP**
Self-propelled Barrackes Ship	**APB**
Small Coastal Transport	APC
Repair Ship	AR
Battle Damage Repair Ship	ARB
Cable Repairing Ship	ARC
Internal Combustion Engine Repair Ship	ARG
Landing Craft Repair Ship	ARL
Salvage Ship	ARS
Salvage Lifting Ship	ARSD
Salvage Craft Tender	ARST
Aircraft Repair Ship (aircraft)	ARVA
Aircraft Repair Ship (engine)	ARVE
Aircraft Repair Ship (helicopter)	ARVH
Submarine Tender	AS
Submarine Rescue Ship	ASR
Auxiliary Ocean Tug	ATA
Fleet Ocean Tug	ATF
Salvage Tug	ATS
Seaplane Tender	AV
Advance Aviation Base Ship	AVB
Guided Missile Ship	AVM
Aviation Supply Ship	AVS
Auxiliary Aircraft Transport	AVT
Distilling Ship	AW
Fast Deployment Logistics Ship	FDL
Unclassified Miscellaneous	IX

SERVICE CRAFT

Large Auxiliary Floating Dry Dock**	AFDB
Small Auxiliary Floating Dry Dock**	AFDL
Medium Auxiliary Floating Dry Dock**	AFDM
Barracks Craft**	APL
Auxiliary Repair Dry Dock**	ARD
Medium Auxiliary Repair Dry Dock**	ARDM
Submersible Research Vehicle (nuclear propulsion)	NR
Target and Training Submarine*	SST
Submersible Craft*	X
Miscellaneous Auxiliary*	YAG
Open Lighter**	YC
Car Float**	YCF
Aircraft Transportation Lighter**	YCV
Floating Crane**	YD
Diving Tender**	YDT
Covered Lighter*	YF
Ferryboat or Launch*	YFB
Yard Floating Dry Dock**	YFD
Covered Lighter**	YFN
Large Covered Lighter**	YFNB
Dry Dock Companion Craft**	YFND
Lighter (special purpose) **	YFNX
Floating Power Barge**	YFP
Refrigerated Covered Lighter*	YFR
Refrigerated Covered Lighter**	YFRN
Covered Lighter (range-tender) *	YFRT
Harbor Utility Craft*	**YFU**
Garbage Lighter*	**YG**
Garbage Lighter**	**YGN**
Salvage Lift Craft, Heavy**	**YHLC**
Dredge*	**YM**
Salvage Lift Craft, Medium**	**YMLC**
Salvage Lift Craft, Light*	**YLLC**
Gate Craft**	YNG
Fuel Oil Barge*	**YO**
Gasoline Barge*	**YOG**
Gasoline Barge**	**YOGN**
Fuel Oil Barge**	**YON**
Oil Storage Barge**	**YOS**
Patrol Craft*	**YP**
Floating Pile Driver**	**YPD**
Floating Workshop**	**YR**
Repair and Berthing Barge**	**YRB**
Repair, Berthing and Messing Barge**	**YRBM**
Floating Dry Dock Workshop (hull) **	YRDH
Floating Dry Dock Workshop (machine) **	YRDM
Radiological Repair Barge**	YRR
Salvage Craft Tender **	YRST
Seaplane Wrecking Derrick*	YSD
Sludge Removal Barge**	YSR
Large Harbor Tug*	YTB
Small Harbor Tug*	YTL
Medium Harbor Tug*	YTM
Drone Aircraft Catapult Control Craft*	YV
Water Barge*	YW
Water Barge**	YWN

* Self-Propelled
** Non-Self-Propelled

DEEP SUBMERGENCE VEHICLES

Deep Submergence Rescue Vehicle	DSRV
Deep Submergence Search Vehicle	DSSV

NOTES

Letter prefixes to classification symbols may add identification:

E- prototype ships or craft in experimental or developmental status.

T- assigned to Military Sea Transportation Service (MSTS)

F- being constructed for foreign government.

Letter "N" as last letter of ship symbol denotes nuclear propulsion. "N" as last letter of service craft symbol indicates non-self propelled.

DX, DXG, DXGN are symbols for new destroyer/frigate classes now under development.

Compiled by
SHIPBUILDERS COUNCIL OF AMERICA

Side Shell Damage Repaired by Bethlehem

The 46,600-dwt Anna Bibolini, loaded with Venezuelan ore for our Sparrows Point, Md., steel mills, first went aground in the Orinoco River. Then, off Cape Henry, Va., a collision and a second grounding almost completely disabled the 700-ft vessel. Towed to Baltimore, she discharged her cargo, and was then taken into drydock for repairs at Bethlehem's Key Highway Yard in Baltimore harbor.

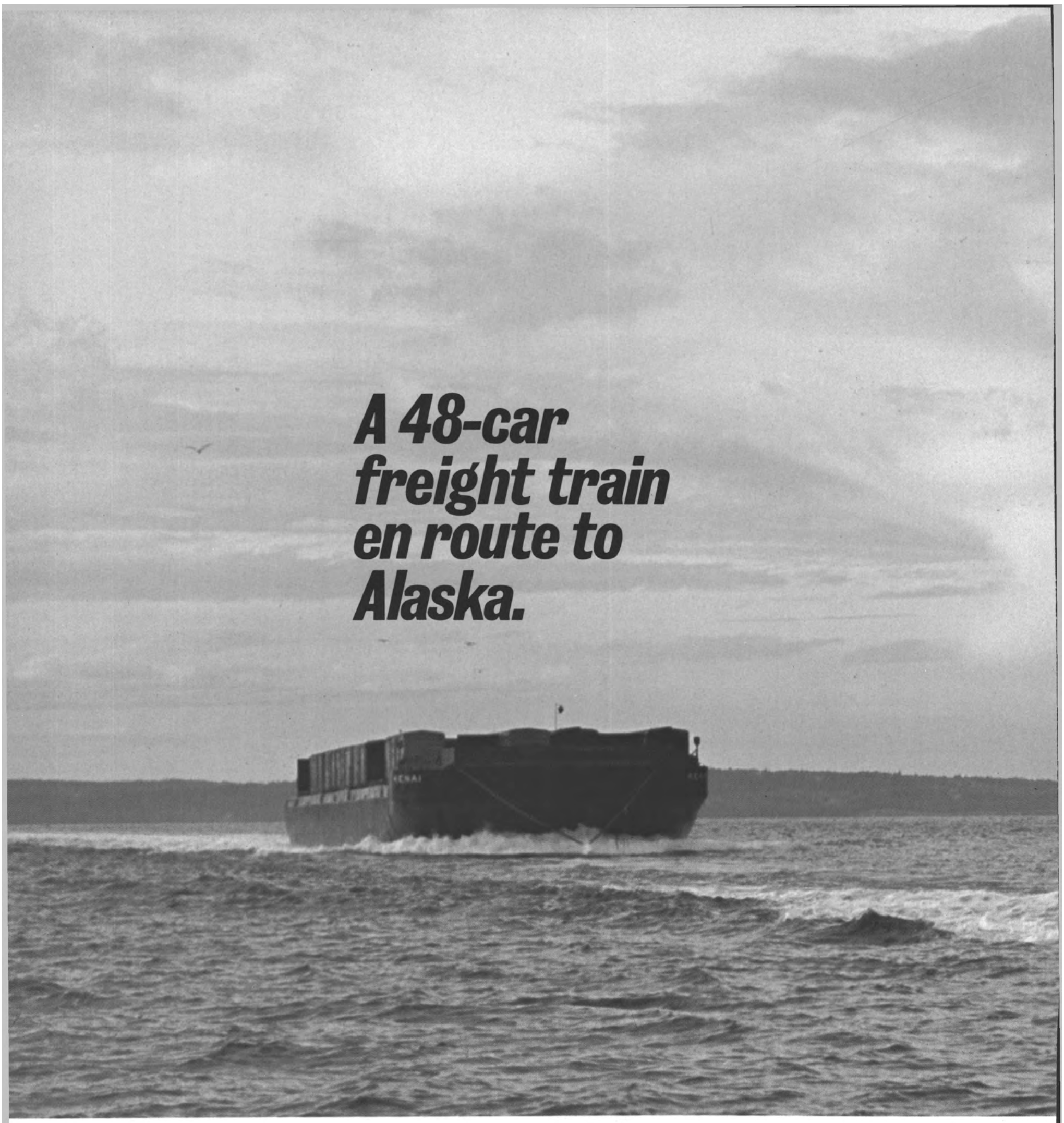
Bethlehem's survey revealed that the greatest damage was sustained by the port side of the vessel, where Numbers 6 and 7 holds were stove in and open to the sea. Deck plates and hatch coamings were buckled, as were some shell plates on the starboard side. Assorted internals and fixtures were distorted or missing. In addition, the rudder, tailshaft, propeller and starboard anchor and chain required attention, and a good portion of the bottom needed blasting and coating.

Repairs completed in 32 days. Half-a-million pounds of steel had to be fabricated and installed to recondition the Anna Bibolini. With the help of the adjacent steel plant, the Yard obtained the necessary plates in short order and was able to deliver the ship to its owners only 32 days after the repair work began. Such speedy repairs—the result of efficient work scheduling and materials handling techniques—are characteristic of all Bethlehem repair yards. When you need real service, give us a call.

SHIP REPAIR YARDS
Boston Harbor — New York Harbor
Baltimore Harbor — Beaumont, Texas
Los Angeles Harbor — San Francisco Harbor
SHIPBUILDING YARDS
Sparrows Point, Md. — Beaumont, Texas
FOUNDRY & PROPELLER PLANT
Staten Island, New York

BETHLEHEM STEEL
Shipbuilding
GENERAL OFFICES: 25 BROADWAY, NEW YORK, NY 10004
Telephone: 212 DIgby 4-3300 Cable Address: BETHSHIP

A 48-car freight train en route to Alaska.



The ocean-going tug, Sea Swift, has the train under tow aboard the Hydro-Train barge, Kenai.

Sea Swift is the newest in a fleet of tugs used by Puget Sound Tug & Barge Company to "railroad" freight from Seattle across the Gulf of Alaska to Whittier. She'll tow one, and sometimes two 400′ Alaska Hydro-Train Division barges, each with a capacity of up to 48 railroad freight cars.

In a blow, she tackles 40 mph winds with waves as high as 30′ and still maintains a 12-knot average for the trip.

The twin-screw Red-Stack tug, Sea Swift is powered by two General Motors 16-645E5 Diesel engines which are controlled from the pilot house by GM pneumatic control equipment. In calmer seas, she can cruise at 15 knots under tow.

With new GM power, Puget Sound Tug & Barge is cutting the round-trip time in half. Earlier tugs made the trip in 16 to 18 days. Sea Swift's average time is just over 9 days.

For more details about her power and controls, just call your Electro-Motive man.

GM
MARK OF EXCELLENCE

Electro-Motive Division
La Grange, Illinois


Maritime Reporter/Engineering News
Astilleros De Cadiz To Build Two Continental Oil Tankers
Continental Oil Company has announced a $34-million program to speed crude-oil deliveries from Libya to Britain.
According to Andrew W. Tarkington, the president of the oil company, the program involves the construction of two 115,000-ton tankers, a crude-oil storage terminal in England, a 17-mile pipeline and a specially designed single-point mooring discharge facility in the Humber Estuary, pending approval by the British Government.
The new tankers, Mr. Tarkington said, are to be built for World Wide Transport, Inc., Conoco's shipping subsidiary, by Astilleros de Cadiz, S.A., Cadiz, Spain. The 904-foot vessels will be powered by a 23,000-hp diesel engine designed to burn low-sulphur Libyan crude oil.
Mr. Tarkington noted that most of the financing for the new project had been arranged in Europe and that the project, when added to present investment in refinery construction, would bring his company's commitment for new refinery capacity in Britain to more than $125-million.
The tanker contract, which is subject to Spanish Government approval, calls for delivery of the two vessels by mid-1971.
The tankers will ply between El Sider, Libya, and Immingham, England, the site of the refinery, 140 miles north of London.
S&SR marine intelligence
Astilleros de Cadiz have received an order from Continental Oil Company for two 115,000-ton d.w. Delaware for shallow draught tankers. The 23,000 b.h.p. Sulzer diesels to be installed will burn low sulphur crude oil using a patented Conoco crude oil burning process.
The New York Times
NEW YORK, N. Y.
D. 840,496 SUN. 1,494,703
SEP 15 1968
CONTINENTAL OIL TO SPEED SHIPPING
Plans 2 New Tankers and a Terminal in England
Continental Oil Company has announced a $34-million program to speed crude-oil deliveries from Libya to Britain.
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The tankers will ply between El Sider, Libya, and Immingham, England, the site of the new refinery, 140 miles north of London.
THE OIL & GAS JOURNAL
September 23, 1968
Conoco to speed Libyan oil to U.K.
Continental Oil Co. is planning a $34-million program to speed crude-oil deliveries from its Libyan fields to its now-building 80,000 b/d Immingham, England, refinery.
Program calls for construction of two 115,000-dwt shallow-draft tankers, crude-oil-storage terminal in the U.K., a 17-mile crude line, and a single-point mooring discharge facility in the Humber Estuary—all pending approval by the U.K. Government.
Tankers will be built for Conoco's shipping subsidiary, World Wide Transport, Inc., by Spain's
THE MOTOR SHIP & SHIPBUILDING RECORD
TANKER
CARRIER
Incorporating PETROLEUM
FAIRPLAY
Convenio para la construcción de petroleros
MADRID (Cifra). — Dos petroleros de 115.000 toneladas construirá la Astillera española Astilleros de Cádiz, por encargo de la World Wide Transport Inc.
Toneladas para la
$34 Million Project
Conoco To Speed Libya Oil Exports
NEW YORK — (Sp) — A $34 million program designed to speed crude oil deliveries from Libya to the United Kingdom was announced Thursday by Andrew W. Tarkington, president of Continental Oil Co.
The new program involves construction of two 90-foot deadweight ton supertankers, 115,000 dwt, crude oil
Desal
astilleros de cádiz SPAIN
HEAD OFFICE: Zurbano, 70 - MADRID-10 - SPAIN - Telephone: 2232791 - Telex 27648 - ASTIL-E Telegrams ASTILLEROS
Serán los primeros con sistema de carga y descarga «Conoco», de libre flujo
*
se firmó en competencia con
las de Europa y Japón
ASTILLEROS DE CA
Astilleros de Cádiz, S. A., y World Wide Transport Inc. han firmado contrato para la construcción de dos petroleros de 115.00 T. P. M. World Wide Transport Inc., una de las filiales de Continental Oil Co., una de las más importantes petroleras
El contrato ha sido concedido a Astilleros de Cádiz, S. A., en competencia con los astilleros más importantes de Europa y Japón, y los buques serán construidos por dicha firma en su factoría de
Los citados petroleros están destinados al tráfico entre Libia y el terminal de Tetney, Reino Unido, donde Conoco está construyendo una de las refinerías más importantes de Europa. La fecha de entrega prevista es para mediados de 1971. Estos buques serán los primeros
Madrid, 24.—Se ha firmado el contrato para la construcción de dos petroleros de 115.000 toneladas de peso muerto entre los astilleros de Cádiz, S. A. y la World Wide Transport Inc. compañía subsidiaria de la Continental Oil Co una de las empresas petrolíferas más importantes del mundo.
El contrato en cuestión ha sido concedido a los Astilleros de Cádiz en competencia con los más importantes astilleros de Europa y Japón.
Los petroleros que se construir están destinados a
IMPORTANTE PEDIDO PARA ASTILLEROS DE CADIZ
MADRID, 2 — Astilleros de Cádiz ha obtenido un pedido de la compañía norteamericana World Wide Transport, Inc., subsidiaria de la Continental Oil Co., para la construcción de dos buques petroleros de 115.000 toneladas.—(S de D.)
Europa.
La propulsión de los buques se realizará por motores «Man-
ses-Sulzer» tipo 8RND-90, de 23.200 caballos, construido también por Astilleros de Cádiz en su factoría de Manises. Las principales de estos
Eslora total 275,70
puntal, 20 m.,
Serán buques
carga, adecuados convencionales
cuerpo central.
mo de una plataforma de helicópteros y llevarán un equipo de control remoto desde el puente y cámara de maquinas

A.G. "Weser" Delivers Cruise/Carferry Ship —Largest Built In Germany Since WW II

Largest passenger ship built in Germany since World War II, being outfitted at the "Weser" shipyard in Bremerhaven. The Starward will be used in Caribbean cruise service.

The biggest passenger liner built in Germany since World War II was delivered in December to her owners, Kloster's Rederi A/S, Oslo, Norway. The 13,000-gt cruise liner Starward also represents the biggest job that the builders—Aktien-Gesellschaft "Weser", Bremerhaven—has handled.

Intended for operation mainly from the southern coasts of the United States, the ship was constructed not only to Det Norske Veritas rules but also those of the U.S. Coast Guard and Public Health Service, the British Ministry of Transport and Method 1 of SOLAS 1960 for fire protection.

While the 525-foot vessel is classed by Det Norske Veritas as a carferry, the Starward is actually a cruise ship with the ability to carry trucks, containers or trailers. For this cargo service there are two 10-ton Atlas cranes on the forward deck to handle 20-foot containers and a stern ramp and side doors for wheeled vehicles. The trailer deck can accommodate about thirty 40-foot trailers, and the lower and suspension decks together can carry about 200 American cars.

Passengers are accommodated on the upper decks in 296 cabins (about 750 persons). There are special lounges, two swimming pools, health rooms and a three-floor-high glass superstructure on the sun deck, called the 'Tropicana.' All accommodations are air conditioned.

The crew consists of about 237 persons.

Twin-screw propulsion is provided by two MAN 16-cylinder, four-stroke diesel engines, type V8V 40/54, non-reversing, with turbocharger and boost intercooling. The engines are rated for use of heavy oil and develop 8,690 bhp each at 400 rpm. They drive variable-pitch propellers through single reduction gears, giving a maximum ship speed of 21.5 knots.

Centralized control is provided for the engines in a control room within the engine room. Normal operation of the engine speed and the c-p propellers is handled from the bridge. In order to provide maximum maneuverability, a 1,000-hp bow thruster is provided.

Five heavy-oil-burning diesel generator sets developing 525-kw each are installed.

Two oil-fired Spanner steam boilers and two Spanner exhaust-gas boilers are installed to provide steam for tank heating and the Atlas evaporators (manufactured under Griscom-Russell license).

A Denny-Brown-AEG fin stabilizer has been installed, in addition to an inert damping tank to control ship motions.

Due to the size of the Starward, the shipyard built it in three sections and joined the sections in a drydock.

Sonovision Installed On Research Vessel As Safety Measure

The MV Rio Das Contas, a 135-foot research vessel owned and operated by United Geophysical Corporation (a subsidiary of The Bendix Corporation), Pasadena, Calif., was outfitted in December with the very latest in seismic and navigation equipment, according to **Paul A. Dennis,** manager-technical equipment for the California firm. Included in the new equipment is a sonar unit that will be used to locate reef and other hazardous obstructions during geophysical work in the Arafura Sea. In this respect, installation of the sonar unit is considered to be a safety measure. It is also, however, expected to increase the vessel's efficiency and capabilities as a research boat by allowing it to probe areas previously designated too risky.

The sonar is the Model SS300 Sonovision manufactured by Western Marine Electronics (Wesmar) of Seattle, Wash. It is considered to be highly desirable for this type of research because of its automatic scanning capabilities and a stabilized sonar beam.

In addition to the Wesmar sonar, the Rio Das Contas was equipped with the most modern and efficient seismic energy sources and electronic instruments, and with ultra-modern navigation aids, including satellite navigation and sonar doppler equipment.

Value Engineering Paper Presented At San Diego Section, SNAME, Meeting

At the San Diego Section November meeting, from left to right: Mr. **Hand,** papers chairman; **John Angles,** National Steel and Shipbuilding Company, secretary-treasurer; Mr. **Schmitz,** author; **Peter Trapani,** Scripps Institute of Oceanography, past librarian, and **Dave Krepchin,** M. Rosenblatt and Son, vice-chairman, San Diego Section.

The San Diego Section of The Society of Naval Architects and Marine Engineers held their November meeting at the San Diego Yacht Club. There was a good attendance to hear **Don Schmitz'** paper entitled "Value Engineering in the Naval Shipbuilding Industry."

Mr. **Schmitz** is presently value engineer for the Supervisor of Shipbuilding, Conversion and Repair, USN, San Diego.

The topic was presented in three sections, (1) the history of value engineering, (2) the contractual aspect of value engineering and (3) the principles and application of value engineering. A question and answer period followed the technical presentation, at which time Mr. **Schmitz** and **T. S. Hand Sr.,** Naval Ship Engineering Center, San Diego, answered competently the questions which were asked. Among the discussers were **Carlos Dean,** National Steel & Shipbuilding Company and **J. F. Barnes,** retired.

The next meeting of the San Diego Section, on January 18, 1969, has an international flavor comprising a field trip to the new Aqua-Chem sea water conversion plant at Rosarita Beach in Mexico.

Catamaran Research Ship To Be Built By Todd Seattle Yard At Cost Of $13,950,000

Artist's conception of AGOR-16 Navy oceanographic research vessel (catamaran hull) being constructed for the U.S. Navy by Todd Shipyards Corporation, Seattle Division.

Todd Shipyards Corporation has won a competitive fixed-price contract for $13,950,000 to build the first of a new class of oceanographic research ships (AGOR) from the Naval Ship Systems Command, it was announced. Adm. **E. J. Fahy,** commander, Naval Ship Systems Command, and **J. T. Gilbride,** president of Todd, signed the contract in Washington on December 10, 1968. Also present at the signing were Adm. **O. D. Waters,** oceanographer of the Navy, CNO, and Rear Adm. **T. B. Owen,** Office of Naval Research.

The vessel, to be constructed at Todd's Seattle (Washington) Division for scheduled delivery in the spring of 1971, will have a catamaran hull. Designated T-AGOR-16, she will have an overall length of 246 feet, a beam of 75 feet, will displace 3,080 tons under full load and will be able to sustain a speed of 15 knots. Her complement will consist of 44 Military Sea Transport Service (MSTS) employees and 25 scientists.

Engineering work on the vessel has already begun at the Seattle Division, where the first of seven destroyer escorts for the Navy is scheduled for delivery in the first quarter of 1969.

Navy Plans Research Ships To Lease To Universities

The Navy has revealed tentative plans for the construction of six oceanographic ships which will be leased to oceanographic laboratories, both private and university-owned, in the 1970s. Each vessel will be approximately 165 feet in length.

Texas A&M University is expecting to receive the first two of the vessels—one in June 1971, and one in October 1972. Cost of the two ships, including equipment, is estimated at $2-million.

In addition, one vessel is scheduled for each of the following: Scripps Institution of Oceanography, Lamont Geological Observatory, University of Hawaii, and Woods Hole Oceanographic Institution.

Astilleros Awarded Contract For Two Grancolombiana Ships

As a consequence of a successful competitive bidding between several international shipyards, Astilleros de Cadiz, S.A. has been awarded a contract to build two ships for Flota Mercante Grancolombiana, S.A.

The contract was signed in Bogota, Colombia, by the director general of Grancolombiana, Dr. **Alvaro Diaz,** and by the vice-president and managing director of Astilleros de Cadiz, Engineer **Roberto Berga Mendez.**

The main features of these two modern ships are as follows: overall length, 525 feet; breadth, 77 feet 5 inches; depth, 41 feet 8 inches; draft, 30 feet 6 inches; deadweight, 11,750 tons. They are equipped with refrigerated holds with 95,000-cubic-foot capacity, as well as holds for liquids with 35,000-cubic-foot capacity. These ships will have a speed of 21 knots with a range of 10,000 miles.

The propulsion equipment will consist of a 16,000-hp type 8RND-76 Manises-Sulzer diesel engine.

These modern ships will be totally automated with electronic or remote-action controls.

They will have a special hold for containers; one 75-ton boom, twelve 5- and 10-ton booms and four 15-ton cranes.

The new ships will be built at the Sevilla Works of Astilleros de Cadiz, S.A.

Baltimore Awards Container Crane Contract To Paceco

The container systems division of Paceco has been awarded a contract to design and fabricate a container-handling crane by the Maryland Port Authority for installation at Dundalk Marine Terminal, Baltimore, Md.

Scheduled for delivery in mid-1969, the crane will join another Paceco 'Portainer' that has been in service at Baltimore for Sea-Land Service since July 1967. The crane will be fabricated at Paceco plants at Alameda, Calif., and Savannah, Ga.

Intended primarily for container-handling service, the new Portainer will also provide a unique heavy-lift capability for handling heavy machinery and general cargo. A Paceco patented quick-change device permits changing from container-lifting spreaders to cargo beam in less than five minutes.

Other world ports scheduled for installation of Paceco Portainers include Norfolk, Oakland, Wilmington (Calif.), Genoa, Rotterdam, Guam, Sydney, Fremantle, Brisbane and Melbourne.

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S. F. Marine Exchange Elects Five Executives To Board Of Directors

The Marine Exchange of the San Francisco Bay Region launched its 119th year in December, with the election of five new members to its board of directors.

Elected to three-year terms as directors of the Golden Gate shipping service and development agency are: **F. H. Bergtholdt,** president, Encinal Terminals, Inc., Alameda; **Edward D. Ransom,** senior partner, Lillick, McHose, Wheat, Adams & Charles; **John H. Robinson,** president, Harper, Robinson Shipping Co.; **Al J. Sehorn,** executive vice-president, International Paint Co., So. San Francisco, and **Ernest R. Senn,** executive vice-president and general manager, Grace Line, Inc.

Operating the regional shipping intelligence network, the Marine Exchange introduced two years ago the nation's first harbor ship position and movement plot system for navigational safety. Also known for its pioneering efforts to cut maritime and trade 'red tape,' the San Francisco-based organization recently released a draft intermodal format designed for door-to-door shipments, proposed for national adoption. A variety of other service and promotional programs include representation for California ports and harbors in seeking federal civil works improvements.

New Tugs Are Meeting Today's Challenges At Reduced Costs

Thomas E. Moran

Present-day powerful tugboats have had a significant effect on harbor and deepsea towing operations. The power and efficiency of new tugboats have made possible operations not possible with older vessels and at the same time have kept towing costs as low as possible. This was the key theme of a talk given before the Kings Point Merchant Marine Academy Alumni, New York Chapter, by **Thomas E. Moran,** president of Moran Towing Company, at a recent luncheon meeting.

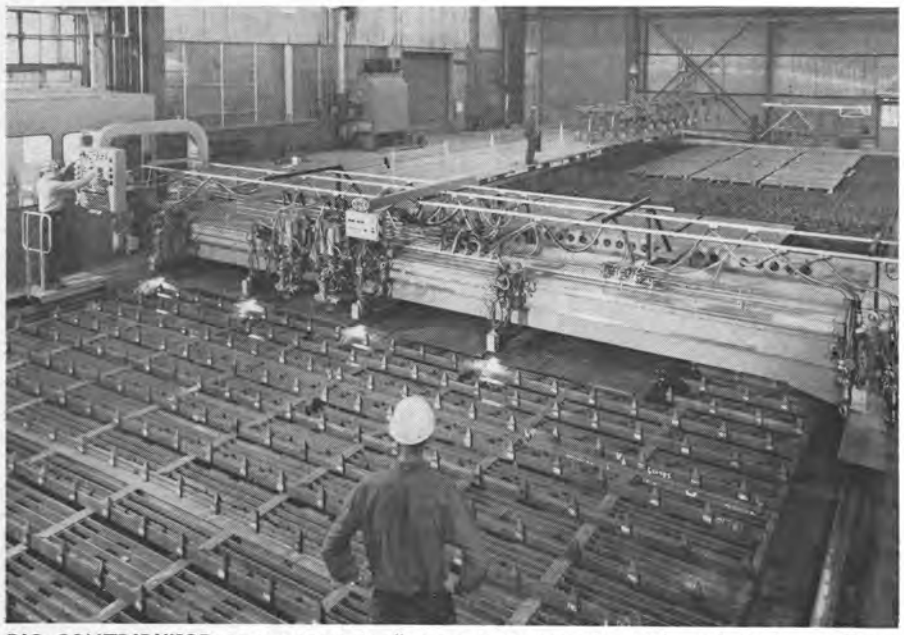
Mr. **Moran** pointed out that since 1961, 12 new tugs, all exceeding 3,500 hp have been delivered to the Moran fleet and that these boats have provided substantial savings to shipowners during periods of rising costs. As an example, he said, a major liner calling in the Port of New York had a docking charge of $580 in 1952-53 and $543 this year.

In this interval, Mr. **Moran** said, the cost to the owner for docking went down by some 9.2 percent—a saving made possible by the use of tugs with increased horsepower. With the increase in size of all ships, another problem has been apparent to marine underwriters, that of damage to ships and provision for rescue services. Thus, the large tugs brought on to the scene accounted for some reduction in damage to the big vessels while docking and undocking, and they were also available to go into deepsea traffic to rescue the bigger ships in distress.

The development of the offshore oil industry, with its tremendously large structures to be moved from one location in the world to another, put a demand on improved ocean towing services. To meet this need, the 9,600-hp tug Alice Moran was built, the towboat executive said.

Mr. **Moran,** in conclusion, suggested that perhaps the optimum in tugboat size has not been reached, but only time will tell.

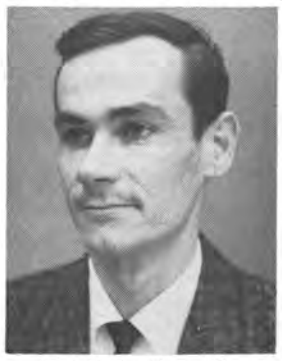
CONTAINER FACILITIES of Matson Navigation Company at Kobe, Japan, are expanded by the addition of a large building (center of photo) which will serve as freight station and equipment and maintenance shop. Loading at the pier is the Pacific Trader, one of Matson's two Pacific Coast-Far East containerships, which together have been carrying near-capacity loads to and from Japan in recent months. Note the tiers of Matson 24-foot containers on the pier. Matson began its unsubsidized intermodal container service to Japan in September 1967, first of its kind in the Far East trade.



BIG CONTRIBUTOR to increases in flame-cutting capacity and productivity at Dravo Corporation's Neville Island (Pa.) structural shop is this tape-controlled machine which the company uses to cut plates and slabs for a wide variety of products. Since its installation, flame-cutting capacity has increased by about 45 percent, and productivity of flame-cutting operations between 50 and 80 percent. Equipped with two master heads and eight slave heads on a 34-foot-wide gantry carriage, the completely automatic machine can handle plates and slabs up to 8-inches thick. Cuts are cleaner and produce less slag, thus reducing the number of descaling and cleaning operations. Cost of layouts is less because of automatic plate-marking punches on the machine.

AIR COVER—Solitary seagull accompanies United States Navy's newest ammunition ship, USS Butte, as she leaves Quincy, Mass., shipyard of General Dynamics for sea trials prior to her delivery on November 29. She was delivered at the South Boston Naval Annex, where she was commissioned into the fleet on December 14. The Butte, 564 feet long and displacing 18,000 tons, is the second of her class to be built by General Dynamics. The first, Kilauea (AE-26), was delivered June 12, 1968.

Raytheon Appoints McDuffie New England Marine Sales Manager



Ralph E. McDuffie

Ralph E. McDuffie has been named New England sales manager for Raytheon Company's marine products operation.

He will direct sales of Raytheon marine electronic equipment for navigation, communication, and safety in Rhode Island, Massachusetts, Vermont, New Hampshire, Maine and Canada's Maritime Provinces.

Mr. **McDuffie** will make his headquarters at 416 Cambridge Street, Allston, Mass. He joined Raytheon in 1967 as a marine radar maintenance engineer and has been service manager at the Fairhaven, Mass., service facility since March 1968.

From 1960 to 1967 he was a radar technician with Marine Radio and Electric Co., Inc. and for four years prior to that was an aviation electronics specialist in the U.S. Navy.

Water Transport Assn. Elects Charles Walker

Charles E. Walker

Charles E. Walker was elected chairman of the Water Transport Association at the annual meeting of the membership held in New Orleans. Mr. **Walker** is president of Union Barge Line Corporation of Pittsburgh, Pa.

In addition to Mr. **Walker,** other officers elected are: **Thomas B. Crowley,** president of Puget Sound Alaska Van Lines, to vice-chairman; **A. C. Sullivan Jr.,** president of Gartland Steamship Co., to secretary; **A. B. Cozzins,** vice-president of Columbia Transportation Division of Oglesbay Norton, to treasurer.

John A. Creedy was re-elected president of the association.

Members of the executive committee elected, in addition to the above, are: **George A. Peterkin Jr.,** president of Dixie Carriers, Inc.; **C. G. Willis Jr.,** president of C. G. Willis, Inc.; **Lew S. Russell,** president of Tidewater Barge Lines; **J. Scott Morrison,** vice-president of Sea-Land Services, Inc., and **Lewis H. Johnson,** president of Pacific Inland Navigation Co.

The Water Transport Association is made up of common carriers serving the Great Lakes, inland waterways, coastal and intercoastal trades.

Hoines To Manage Fleet Oiler Program For General Dynamics

Arnold H. Hoines

Arnold H. Hoines, who played key roles in General Dynamics missile and aircraft programs, has been named manager of the U.S. Navy replenishment fleet oiler (AOR) program at the corporation's Quincy, Mass., division shipyard.

Mr. **Hoines** was most recently site manager of the Convair division's Atlas Continental Ballistic Missile complex at Vandenberg Air Force Base, Calif.

He joined General Dynamics in 1955 as a Convair division flight test engineer. In 1959 Mr. **Hoines** became assistant test conductor for the Atlas ICBM program at Vandenberg. He held several managerial positions in the program, at various times directing missile site build-up, site sell-off demonstrations and Atlas launch operations. He was named site manager in 1962.

In his new position, Mr. **Hoines** will coordinate Quincy division efforts in building six replenishment fleet oilers, a new type of supply ship, for the Navy. Three of the vessels are currently under construction.

Mr. **Hoines** holds a degree in aeronautical engineering from the University of Minnesota, and also has studied at the University of California at Los Angeles and the University of Southern California.

Survey Boat Contract To Paasch Marine

Bids for the construction of a 55-foot diesel-powered aluminum survey boat were received by the Corps of Engineers, Chicago, Ill., on November 6. The contract for the construction of this vessel was awarded to Paasch Marine Service, Erie, Pa., at a cost of $153,000.

Chemical Industry Told How To Obtain New Savings Through Barge Transportation

A leading barge line spokesman described control of physical distribution by most corporations as "primitive" and predicted that better organization of the logistics of distribution would lead the chemical industry among others to greater use of water transportation and substantial new transport savings.

Louis R. Fiore, president of the Ohio River Company of Cincinnati, in a paper prepared for delivery to the annual convention of the American Institute of Chemical Engineers at the Biltmore Hotel, Los Angeles, Calif., said that "The chemical industry's present enthusiasm for barge transportation will shortly become much greater because I believe the savings that have been made in the past have only just begun to scratch the surface."

While chemical production has doubled in the last ten years, Mr. **Fiore** pointed out, water transportation of chemicals on the inland waterways has increased five times. About half the chemical plants built today are now located on the Mississippi River and Gulf Intracoastal Canal, he added, and much of this is due to improvements in barge operating efficiency which has been able to reduce rates 10 percent since 1960.

"Industry has done well in improving production and superbly in marketing. But we are only now evolving the idea of controlling the logistics of physical distribution as an integrated system from the supply of raw materials to the retail shelf," he said. Improved technology, improved physical distribution organization and the inherent economic advantage of water movement will accelerate the current trend of the chemical industry to greater use of water transportation, he said.

Mr. **Fiore** described as "startling" savings which could be made by shippers who understand the imperatives of transport economics. An optimum rate, he said, is frequently the product of heavy new investment. "Major improvements in utilization of equipment, reductions in loading and unloading time, back hauls, regularity of movement, large volume shipments all have their impact on the economics of the movement. Reasonable certainty as to pay-back and return which comes from a long-term contract opens up new sources of financing with debt capital, and greatly facilitates the installation of expensive but more productive and therefore cost-saving equipment. It is often more convenient and even cheaper to use the transportation company's credit in this way," he said.

He described a partnership between a railroad, a barge line and a major shipper which resulted in savings of 30 percent in transport costs. It required a complete reorganization of physical distribution, a new-type 26,000-ton barge, and high utilization of rail equipment. The new investment was covered by a long-term contract, he said.

Mr. **Fiore** proposed a similar reorganization of the physical distribution of Canadian potash, a major ingredient of fertilizers. He explained a proposal for a "willing partner" relationship with railroads that would place at the disposal of Canadian potash producers the low cost of barge transportation on the U.S. inland-river system. A suggested rail rate, higher than for most unit-train movements, the construction of storage facilities in Minneapolis, St. Louis and Guntersville, Ala., and year-round barge delivery could result in savings of from 30 to 34 percent over present all-rail service, he said. Canadian production of potash is expected to reach 9.5-million tons in 1969.

"Bring all that potash to the head of navigation on the Mississippi River and the Ohio River Company will do the rest, including investing in the most modern equipment and storage facilities necessary to make the most efficient use of both rail and water transportation," he said.

"The alternative may well be that potash from the Middle East and elsewhere will be brought to the other end of the river system at New Orleans and provide severe competition when distributed by barge on the very system available to the Canadians if the rail link can be negotiated," Mr. **Fiore** said.

"For much too long the United States railroads and barge lines have been business enemies. We are, it is true, business competitors. But we are also very often natural partners as I hope the potash analysis suggests. I expect the 1970s to be a decade of intermodal cooperation, higher earnings for transportation companies, and improved service at lower overall transport costs for shippers," he said.

Martinolich To Build Aluminum-Hull Ferry

Martinolich Shipbuilding Corp., Tacoma, Wash., has received a contract from Catalina Transportation Co., Catalina Terminal, Wilmington, Calif., for the construction of an aluminum-hull ferryboat at a cost of over $600,000. The vessel is to have dimensions of 160 feet by 26 feet and be of 85 gt. It will be propelled by four hydro-jet gas turbines (GE-100 model), producing a total of 5,000 horsepower and will provide a speed of 25 knots. Accommodating 500 passengers, the boat will operate between the Port of Los Angeles and Catalina Island.

The designs for this vessel were prepared by Philip F. Spaulding & Associates, Seattle naval architects.

Newport News Announces Three Appointments

D. M. Williams

D. C. Tolefson

Alfred C. Owens

Three appointments have been announced by Newport News Shipbuilding and Dry Dock Company, Newport News, Va., a subsidiary of Tenneco Inc.

D. M. Williams was appointed an assistant treasurer at a recent meeting of the company's board of directors.

A native of Kinston, N.C., Mr. **Williams** left the firm of Williams, Urquhart and Ficklin, certified public accountants, in Raleigh, N.C., in 1964 to join the Virginia shipyard.

Mr. **Williams** completed three years' work at North Carolina State University in Raleigh before entering the University of North Carolina in Chapel Hill, from which he received a B.S. degree in business administration in 1962.

Mr. **Williams** served in the U.S. Army from March 1958 to March 1960. He spent 13 months in Korea.

D. C. Tolefson, former supervisor in the engineering laboratory has been appointed chief of the shipyard's hydraulic laboratory and model basin. The announcement was made by **J. R. Kane,** director of engineering.

Mr. **Tolefson** joined the company in July 1957. Previously, he was an intructor in engineering mechanics at Virginia Polytechnic Institute. He has also worked for the Airborne Structures Group of the Douglas Aircraft Co. in Charlotte, N.C.

In 1957 Mr. **Tolefson** received a Ph.D. in engineering mechanics from Virginia Polytechnic Institute. He also completed all of his undergraduate work there. He is a recipient of the National Defense Education Act and United States Steel Fellowships, and is a member of several honor societies, Tau Beta Pi, Phi Kappa Phi and Sigma Xi.

His interests in numerical analysis techniques and other computer applications will be directed toward the solution of fluid-flow problems encountered in the testing and development of turbomachinery.

A native of Fargo, N.D., Mr. **Tolefson** co-authored a paper entitled, "Introduction to Finite Element Methods of Structural Analysis," presented at a meeting of the Hampton Roads Section of The Society of Naval Architects and Marine Engineers. The paper recently received the 'Vice Admiral E. L. Cochrane Award' for the best paper delivered to a section of the society.

Alfred C. Owens has been appointed foreman of the Hull Outfitting Shop department. The announcement was made by **R. S. Plummer,** acting general manager of the shipyard.

A native of Pender County, N.C., Mr. **Owens** joined Newport News Shipbuilding's ship carpenters department in 1952 and completed his apprenticeship in 1956. Prior to his appointment, he was assistant foreman in the hull outfitting shop department.

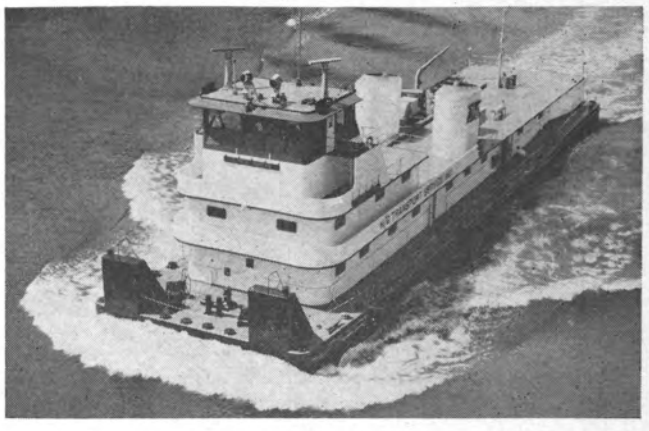
Mr. **Owens** replaces **W.C. Hogge** as foreman. Mr. **Hogge** has been transferred to the company's hull outfitting division staff, retaining his classification of foreman.

PACIFIC NORTHWEST SECTION of The Society of Naval Architects and Marine Engineers discussed a paper presented by Brig. Gen. **S. Mathwin Davis** entitled "Engineers and the Canadian Armed Forces" at its November meeting. The meeting was held in the HMCS Discovery's Wardroom, Vancouver, B.C., under the auspices of the British Columbia Area of the Section. Shown above are: **Michael Markey** of Markey Machinery Company and Section chairman; General **Davis; Jaques Heyrman** of Island Tug & Barge Ltd. and chairman of the Section's British Columbia area; Rear Adm. **W. S. Petrovic,** USN, commander, Puget Sound Naval Shipyard, and **D. R. LeRoyd,** host commander of HMCS Discovery's Wardroom.

M/G Transport Service's *J. Page Hayden*–

Pilot comes through loud-and-clear with Com/Nav SSB-M150

The recently formed M/G Transport Services, Inc., wanted the most advance-engineered communications system for its first new towboat and 18th vessel in its fleet. The 5000 hp. Dravo-built J. Page Hayden merited the best—Com/Nav VHF-FM and single sideband radiotelephones. The Com/Nav SSB-M150 not only maintains loud-and-clear SSB communications with headquarters, but also provides full 150-watt AM power. Capable not just compatible AM.



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Norfolk Terminals Scene Of Belgian Line's Inauguration Of Full Containership Service

Belgian Line's containership MV Rubens loads at Norfolk International Terminals.

The discharging and loading, recently, of the MV Rubens at Norfolk International Terminals, inaugurated the conversion of the four Belgian Line Painter-class vessels to full containerships.

Eric de Spirlet, president, and **Jacques LeBlanc,** executive vice-president of Belgian Line, were hosts to several hundred guests, including Norfolk Mayor **Roy B. Martin Jr.,** aboard the containership to announce the final conversion. The vessels are now entirely dependent on the shore cranes available at N.I.T. and other ports serviced by the line.

The Belgian Line two-port to two-port concept, which was started in June 1967, has been unusually successful. Container cargo has tripled and new market areas have opened. Mr. **LeBlanc** said, "Now we are getting goods which once moved through the Port of New York." The line is also getting goods from the deep South, an area never penetrated before.

Belgian Line Inc. also announced, at the same time, the formation of a joint trans-Atlantic container service to link the United States and Canada with ports in the United Kingdom and Continental Europe.

Compagnie Maritime Belge, Bristol City Line and Clarke Traffic Services, of Montreal, are forming a consortium which will render the joint service.

Orders have been placed for three new large containerships with deliveries expected in 1970. Each vessel will have a capacity of about 1,500 containers of the 20-foot equivalent.

In order to meet the increasing demand, and until the new consortium setup is finalized, an interim service will be started in 1969 with the four existing containerships which now service New York and Norfolk, and added chartered vessels.

Container Inspection Problems Being Studied

Adm. **John Harllee,** USN (ret.), chairman of the Federal Maritime Commission, stated recently that the Commission's staff has under active study the possible institution of a Container Inspection Trial Program in the North Atlantic continental trade.

"The Federal Maritime Commission staff undertook to make this study," Admiral **Harllee** said, "after receiving reports of the problems facing shipping companies who wish to devise meaningful procedures for inspecting containers in this, the container age. This concept of shipping has developed so rapidly that it has brought in its wake many problems peculiar to container shipping, not the least of which is the development of a system for verifying that the goods in the container conform to the description and quantity declared by the shipper in his bill of lading and related documents. The Federal Maritime Commission is glad to assist the industry to solve this problem believing that it is in the interest of the shipping public to do so."

Admiral **Harllee** said, "The Commission has been intensively studying the container-inspection problem and while the trial program is confined to the North Atlantic continental trade, it is felt that this will prove to be a bellwether for other trades in which containers will be used. In the case of the North Atlantic continental trade it is anticipated that the projected survey will be carried out with the full cooperation of both conference and non-conference lines."

"Let me stress," Admiral **Harllee** said, "that as of the moment while we are carefully studying this area, no firm program has yet been formulated, our efforts are directed toward identifying the problem areas, their magnitude and formulating programs to cope with such problems as may be disclosed."

100,000th Container Received At Bremen On AEIL Sea Witch

Ceremonies marking the passage of the 100,000th container through the port were recently held at the Port of Bremen, Germany. The celebration was attended by Bremen port officials and **W. J. Keely,** vice-president of American Export Isbrandtsen Lines, Inc., whose vessel the Sea Witch brought in the record-setting cargo handling unit.

APL Schedules Cruise Ship Upgrading

American President Lines' two cruise ships, the President Cleveland and President Wilson, will be altered to upgrade the economy cruise class accommodations. The improvement program will involve a new cabin layout and additional public rooms. The number of economy class cruise passengers will be cut from 380 to 200.

The estimated cost for these changes will be about $200,000 per ship.

Blue Water Marine Moves Headquarters To Larger Facilities

Blue Water Marine Supply, Inc. Houston-based distributors of equipment and supplies for the maritime and offshore drilling industries, will complete the move of its expanding operations to larger headquarters this month.

The firm's new Houston headquarters location is an 11,250-square-foot single-story building at 1000 Broadway, corner of Channelside Street, on a 29,000-square-foot site. The building provides ample space for showrooms, offices and warehouse facilities to maintain extensive stocks of equipment and supply items.

Walter Turner, president of the company, said the new location offers ample parking area, close proximity to the port city's shipyards and Ship Channel area and is on a main thoroughfare, easily accessible from all parts of the city.

The 14,500-square-foot paved yard area will be used to maintain large stocks of anchors sized through 30,000 pounds and chain sized through 3-inch diameter, Mr. **Turner** said.

Luckenbach Steamship Executive Changes

Robert J. Tarr

Luckenbach Steamship Company has announced the election of **Robert J. Tarr** to the office of vice-chairman of the board, and **Richard E. Barker** and **Robert Weiss** to the office of directors of the company.

Mr. **Tarr** will remain executive vice-president while **Edgar F. Luckenbach Jr.** continues as chairman, president, and chief executive officer.

Mr. **Barker** will continue as vice-president, traffic, as will Mr. **Weiss** retain his title of controller.

Mr. **Luckenbach** stated that these promotions were in recognition of outstanding service to the rapidly expanding 118-year-old company.

Prudential To Lease Lighters For New Ships

The Maritime Subsidy Board has approved in principle, Prudential Lines application to allow the line to lease, rather than own, the lighters required for its new LASH-type ships.

Prudential Lines has estimated that 425 lighters will be required to keep its five-ship system in operation. Avondale Shipyards is building the LASH ships for the line.

LIQUID LOADING DOCK on the Mississippi River at Plaquemine, La., capable of handling 95,000-dwt oceangoing ships is shown near completion in this aerial view. The 900-foot-long dock was built by Dravo Corporation, Pittsburgh, and will serve Hercules Incorporated's new methanol processing plant, shown in the right background.

Western Gear puts "2-way drive" in the Coast Guard's newest fleet

Power for 8 of the Coast Guard's largest cutters comes from *both* diesel engines and gas turbines (CODAG). Diesels for cruising. Gas turbines for speeds up to 29 knots. ☐ Western Gear's job: the whole gear drive system. Design it. Build it. Pretest it. Make it so the ships can shift from diesel to gas without missing a beat. Make the most of powerplants with up to 36,000 h.p. Deliver on time. And stay with it through installation and sea trials. ☐ We did. We're also turning out 20 ship-sets of main propulsion drives for Navy Destroyer Escorts run by steam turbines. ☐ So whether your engine is diesel, gas turbine, or steam, we can match our gear drive to it. We've proved it to ship builders the world-over. Have us prove it to you. Write today to: Precision Products Division, P.O. Box 190, Lynwood, California 90262.

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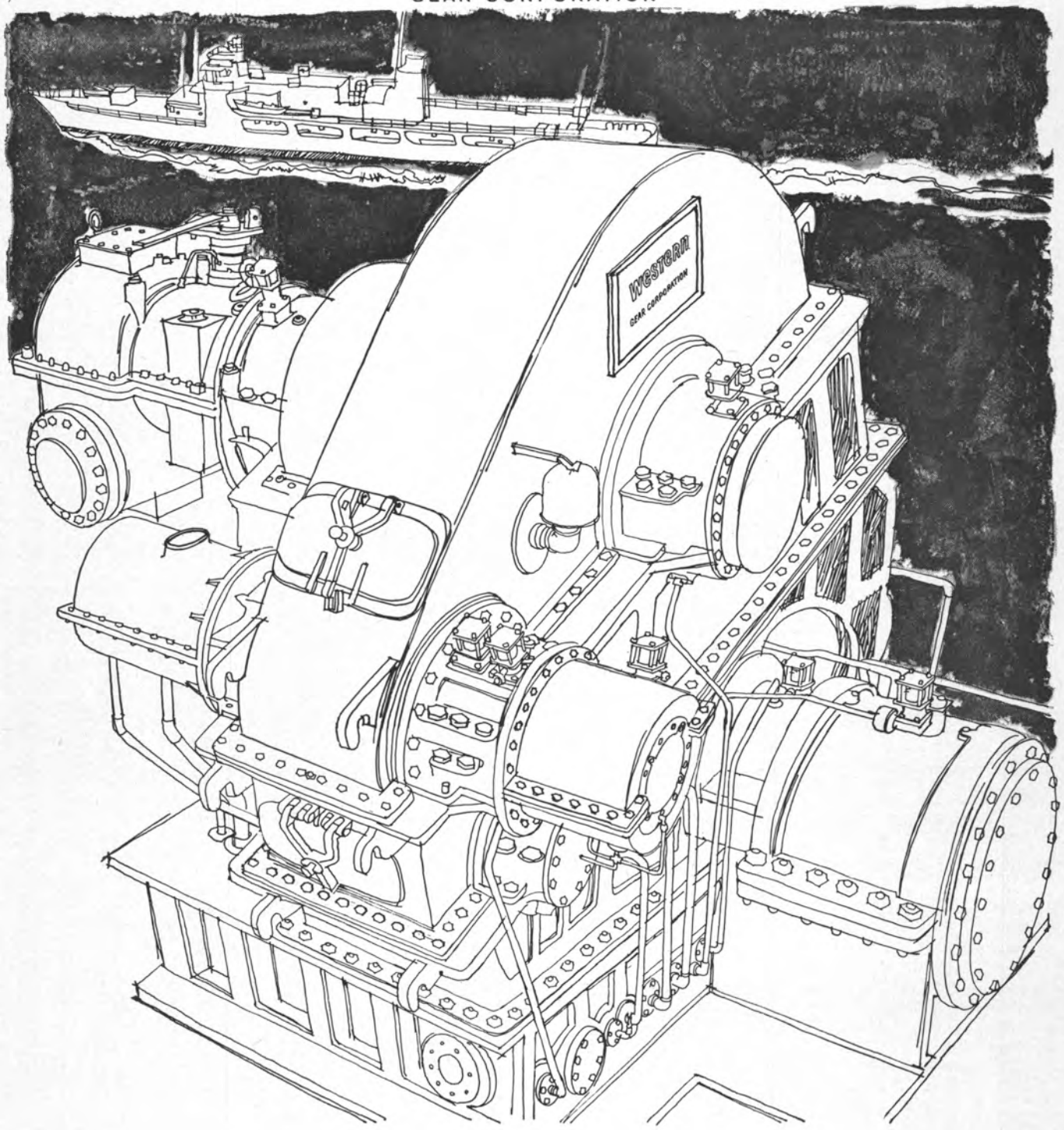


Tug Propulsion Control Includes Shaft Brake

A new marine propulsion control system using a shaft brake has been developed and put in operation by Mathers Controls Inc. The system was developed to meet requirements set forth by Foss Launch and Tug Company, West Coast tugboat operator, who worked closely with the Mathers' engineers to develop the present control system.

The problem as set forth by Mathers, covered diesel propulsion systems using a reverse-reduction gear. There are three different methods of operating the reverse-reduction, namely, manually, hydraulically and pneumatically. The manual operation is generally used only on the smaller engines. Higher horsepower, high-speed diesels use either the hydraulic or pneumatic system.

It was found that as a rule hydraulically operated gears are used up to 1,100 hp. From this point up to 3,500 hp, the reverse gears are generally pneumatically operated. Therefore, it was necessary to develop a control system which would work with either type of actuator.

The engineers developed an engine control system which included a shaft brake so that the propeller shaft can be stopped during a reversal and not throw high loads on the clutch or gears.

A shaft brake, properly applied, can reduce the clutch, reverse gear and engine load by more than 50 percent. It can stop the propeller shaft so that the clutch load is only from stop to idle rpm, and interlock the throttle so that it remains near idle until after the clutch is fully engaged.

The sequence of the Mathers propulsion control system is as follows:

As the operator moves the control lever from full ahead to full astern, the following functions take place simultaneously: (1) the throttle moves to idle; (2) the clutch is placed in neutral, and (3) the shaft brake is applied. The system remains in this condition until the propeller shaft is stopped, approximately two seconds. Then, the brake is released, the revolutions are raised to the proper rpm to prevent 'killing' the engine (usually about 100 rpm above idle), and the clutch is engaged. The throttle is not allowed to advance above a predetermined rpm until the clutch is fully engaged.

The result is a fast maneuver, yet this is excellent protection for the clutch and reverse gear.

The complete package developed by Mathers includes the wheelhouse control lever, an air drive unit that converts mechanical input signals to pneumatic signals, an air treatment panel, a timing box programmed to deliver the correct governor, clutch and brake signals in the correct sequence, a governor actuator, a clutch actuator and the shaft brake.

According to **Norris Mong**, port engineer for Foss Launch and Tug Company, "We have been able to maintain rapid maneuvering times and still provide first-class protection for the equipment."

This control system has been tested and improved over the last four years, based on experience gained on installations in operation ranging from 500 hp to 5,000 hp.

Further information may be obtained on the system from Mathers Control Inc., 902 N.W. Ballard Way, Seattle, Wash. 98107.

World-Wide Ltd. Orders Supertanker From IHI

A 212,600-dwt supertanker is to be built in Japan for World-Wide, (Shipping) Ltd., Hong Kong. A contract with Ishikawajima- Harima Heavy Industries Co. (IHI), Ltd., Japan, was signed in Hong Kong late in November by **Y. K. Pao,** World-Wide's governing director.

The new 1,073-foot supertanker will be completed in October 1971. It will be powered by an IHI cross-compound steam turbine giving a trial speed of about 16 knots.

New Firm Organized For U.S. Land-Bridge

A land-bridge service between Europe and the Far East across the United States will start this month. A newly formed company, The Land-Bridge Corporation, located at 11 Broadway, New York, has announced the new operation.

According to the firm's announcement, full loads and LTL cargoes will be carried in 20-foot and 40-foot containers. The U.S. gateway ports were given as New York and Norfolk on the East Coast, and Long Beach, Calif., and Seattle, Wash., on the West Coast.

International Marine Association Honors Henri Kummerman Of MacGregor International

The executive council of The International Marine Association pictured during the reception for its new patron, **Henri Kummerman.** Shown left to right are: **R. Kirton,** national treasurer; **W. C. Dawson,** general secretary; **A. V. Watt,** national chairman; Capt. **A. M. Chapman,** national vice-chairman, and Mr. **Kummerman.**

The International Marine Association had, following the death of its first patron, **Joseph MacGregor,** M.B.E., approached **Henri Kummerman,** president of The MacGregor International Organization, requesting that he become the Association's second patron. Mr. **Kummerman** agreed to accept the honor.

Mr. **Kummerman,** a Parisian, heads the MacGregor International Organization which comprises 24 closely linked companies strategically situated throughout the world and is responsible for some 70 percent of the world shipping specifications for MacGregor steel hatchcovers, bow doors, stern doors, side doors and cargo handling equipment.

Mr. **Kummerman,** following his association with the late Mr. **MacGregor** in 1947, has been responsible for the rapid development of the MacGregor International Organization.

The International Marine Association, the majority of members being deck officers, thus acknowledged the part played by Mr. **Kummerman** and his organization in their effort to benefit seafaring men the world over, by making 'former dreams' a commercial proposition.

At a ceremony recently held in MacGregor House, Whitley Bay, Northumberland, England, a presentation of Association paraphernalia was made to Mr. **Kummerman** by the executive council.

OIC Appoints Hemming Marine Sales Manager

Harry E. Hemming

Harry E. Hemming has been appointed manager, marine sales for OIC Corporation, a subsidiary of Kearney-National Inc., according to **Charles A. Mathews,** OIC assistant general sales manager.

Mr. **Hemming,** with 20 years' experience in the marine field and in the sale of valves, will direct OIC's marketing efforts in this area, ranging from direct sales calls on major United States shipbuilders, to spearheading the development of a broader range of OIC valves and flow-control devices for marine applications. Mr. **Hemming** will be coordinating his sales programs with the OIC Engineered Products Division which produces the versatile Twin-Power valve actuator that has already made large inroads for OIC in the field of shipboard and industrial automation.

OIC valves were installed on the world's first nuclear-powered commercial ship, the NS Savannah. Numerous vessels of the U.S. Navy, from destroyer escorts to giant carriers, have also been equipped with OIC products.

Anglo Norness Orders Five Special Ships In Fleet Realignment

Anglo Norness Shipping Company Limited, the recently acquired shipping subsidiary of Zapata Norness Incorporated, has announced that it is expanding its activities in the fields of chemical and oil/bulk/ore (OBO) carriers.

Norness has recently placed orders for five new vessels totaling about 485,000 dwt, representing a total investment exceeding $55,000,000. Two of the vessels will be about 17,000-dwt chemical carriers and three will be OBOs of approximately 150,000 tons each.

The first chemical carrier is scheduled for delivery in October 1969 and the second in June 1970. Both are under 15-year time charter to begin as soon as the carriers are ready for service.

Delivery of the three OBO vessels is expected to be made in June, September and December 1971, respectively.

All three vessels are under 20-year time charter to Associated Bulk Carriers, the company jointly owned with the P. and O. Company of London, England. Associated Bulk Carriers in turn has arranged contracts of affreightment, in respect to these vessels, for the transportation of coal and ore for a period of eight years, beginning with their completion.

Approximately 80 percent of the cost of the five vessels is being financed by the shipyards at interest ranging from 5½ percent to 6¼ percent.

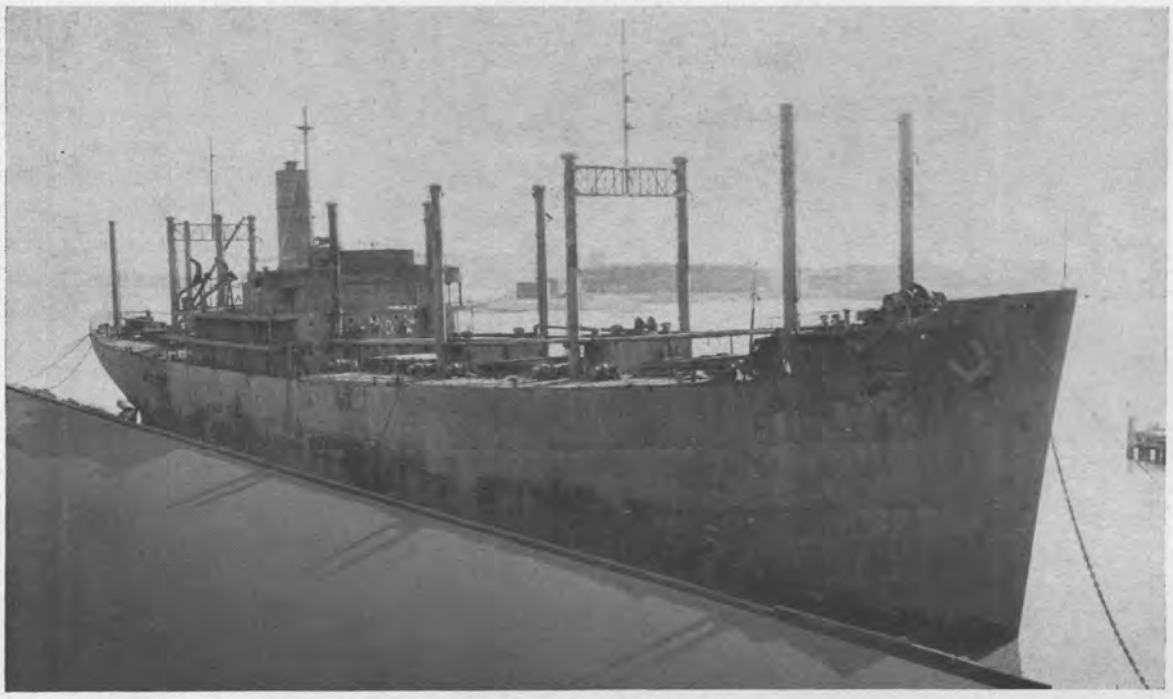
To help finance the aforementioned purchases, Anglo Norness has sold a turbine tanker of 49,800 dwt at above book value and has negotiated the disposal of an additional tanker of 35,200 dwt, also at a price above book value. Prior to their sale, both tankers operated in the spot market.

In addition, one tanker of about 25,000 dwt, which previously operated in the spot market, has been converted to a chemical carrier at a cost of about one-million dollars. The vessel has entered a five-year time charter.

The combined effect of these steps will be to reduce Anglo Norness exposure in the open tanker market and increase its long-term contract business.

Over 90 percent of the outstanding stock of Anglo Norness was acquired in recent months by Zapata Norness Incorporated of Houston, Texas.

AP2/AP3 VICTORY C2/C3 NEW, US RECOND



EQUIPMENT FROM MOORE DRYDOCK C-3 EX-MORMACSEA — HULL 197

350 KW TURBO GENERATORS: **Turbine**—De Laval 503 HP—10,000 RPM—6-stage—440#—282° superheat—28½" exhaust. **Gear**—De Laval—10,000/1200 RPM. **Generator**—Crocker-Wheeler 350 KW—120/240 DC—1458 amps—1200 RPM—compound wound—#230194 & 230195. Also fits Federal Hull 198. BOILERS: Foster-Wheeler type D—2-pass design —525# pressure. FORCED DRAFT FAN MOTORS: Westinghouse SK—46.5/13.81—2400/1660/960 RPM—230 VDC. PROPELLERS: 21'8" diameter—21.669 pitch. REDUCTION GEAR: De Laval 5015/3461/729/85—serial 228972. SHAFTING: 24'x19" diam. STEADY BEARINGS: 19¼" o.d. EVAPORATOR: Paracoil 36-17/48-23/28-11. MAIN FEED TRIPLEX: Worthington—4½"x8"—160 GPM @ 510#—72 HP—230 VDC—975/1750. MAIN CIRCULATOR: Worthington 20" LAS—12,000 GPM—19' head—100 HP Westinghouse motor—frame 184.5—230 VDC—485/645—365 RPM. ALSO TAILSHAFT & RUDDER, KINGPOSTS, 16" PORTLIGHTS, BOOMS, DOORS, WINCHES, WINDLASSES, STEERING GEAR.

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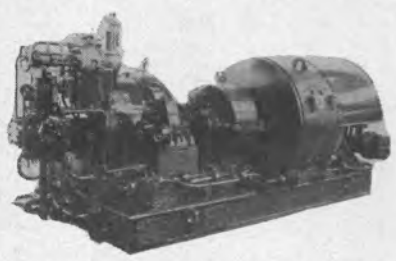
MATERIAL FROM MOORE-BUILT C-2 MORMACWREN — HULL 271

Specification class C2-S-B1—Maritime Commission Hull #1184. **Main Turbine Rotors:** HP & LP—HP serial 75382—LP serial 75363. ALSO, ALL MOTORS FOR FEED PUMPS, BILGE, CIRCULATORS, ETC.

TURBO-GENERATORS



300 KW — From AP2 Ex-Medina Victory

TURBINE: Worthington-Moore—serial 7547 & 7548—440 lbs.—740°TT—28½" vacuum—type S4—5-stage—6097 RPM. GEAR: Type 14x7—6097/1200 RPM. GENERATOR: Crocker-Wheeler 102-HD—120/240 VDC—125 amps—40° rise—serial No. 973643 & 999795—compound wound. Armature flange 8¼" —B.C. 7"—12 holes. NEW ARMATURE AVAILABLE FOR THIS GENERATOR. SEE 3RD PAGE FOLLOWING.

300 KW — From AP3 Ex-Ridgefield Victory

TURBINE: Worthington-Moore type S4—5-stage—6097 RPM—740°TT—440#—serial No. 7108 & 7106. GEAR: 6097/1200—type 14x7—serial No. 7108—5.081:1 ratio. GENERATOR: Crocker-Wheeler 102-HD—300 KW—120/240 DC—6-pole—3-wire—stab. shunt—1200 RPM—type CCD—serial 973583. Suitable for units 7541 & 7543 and 7089 & 7188. WILL SELL ARMATURE SEPARATELY: 12-Hole flange—⅝" bolt holes—8.247" diam.—7" B.C. —flange & shaft 5".

300 KW Murray

TURBINE: G.E.—DORV—325M—440#—740°TT—5645 RPM. GEAR: S-192—5645/1200. GENERATOR: Ideal—120/240 VDC—1250 amps—stab. shunt.

300 KW GENERAL ELECTRIC

TURBINE: G.E.—DORV—325M—440#—740°TT—reduction gear S-192. GENERATOR: G.E. 120/240 VDC—1250 amps—stab. shunt.

TURN TO 3RD PAGE FOLLOWING FOR 300 KW SPARE ARMATURES

BOILER SOOT BLOWER ELEMENTS

12 Units—Diamond Power Specialty Corp.—type FM-1220—for blower units S-3, S-4—84¼" overall—2" tubes—22 jets —calorized metal.

11 Units—Diamond Power Specialty Corp.—used with type FM-1220 coupling—2" tubes—Dialoy element—S1&S2—26 jets—12'6" OA—2x2 steel coupling.

3 Units—2" ID tubes—15 jet—8'10½" OA—with 2" steel coupling—with FM-1220 unit blower.

ENTIRE LOT $450.00

SHIPS SERVICE AIR COMPRESSOR

VEE-type—Sullivan—7x4½x4½—60 CFM—15 HP—230 volts—1850 RPM—light compound—with starter. **INGERSOLL-RAND ALSO IN STOCK**—model 15—type 40—5x4x4.

AP2 Victory Main Condenser Water Boxes

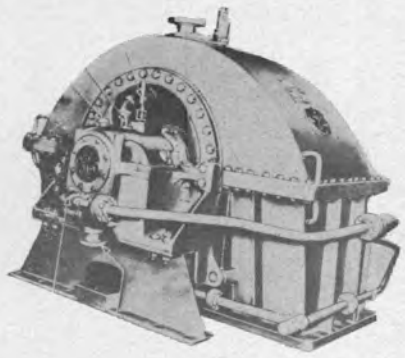
Mfg. by Graham—unused ABS and reconditioned ABS. Main condenser water boxes—AP3—Allis-Chalmers.

Aux. Condenser Water Box & Return Cover

Reconditioned ABS—Graham design—mfg. by Ross.

NEW AP2 VICTORY ENG

6600 HP Main Propu



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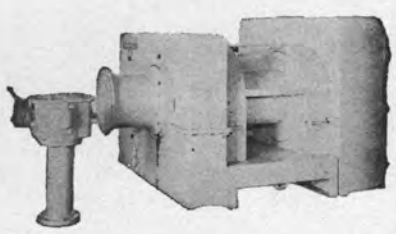
VICTORY SHIP UNIT WINCHES



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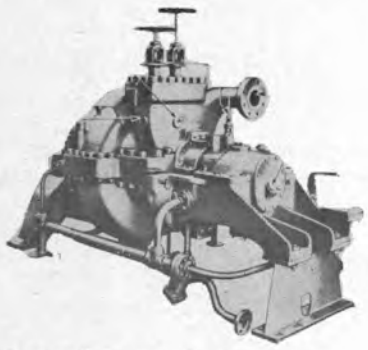

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FORCED DRAFT BLOWERS–22-TD-18
Westinghouse—230 PSI—430° TT—back pressure 15 lbs.—normal capacity 8900 CFM—4.8" of water pressure. RPM 2875—9.6 HP—total steam 697—overload capacity—13,-700 CFM at 10.7.
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10/15 HP—230 VDC—250 GPM @ 43 lbs.—980/1750 RPM. MOTORS: G.E. or Reliance.

MAIN CIRCULATOR & MOTOR FOR AP2 VICTORY
Ingersoll-Rand 18VCM bronze pump—20" suction—18" discharge—vertical. Flanges opposite each other. Distance flange-to-flange 4'5". Suction bolt circle 25"—discharge bolt circle 22¾". Suction (20) ¼" holes—discharge (16) ¼" holes. PUMP WEIGHT: 5100 lbs. MOTOR: 5700 lbs.—Allis-Chalmers 75 HP—230 VDC—500/670 RPM—frame E-Bu-162—drawing No. 31099.
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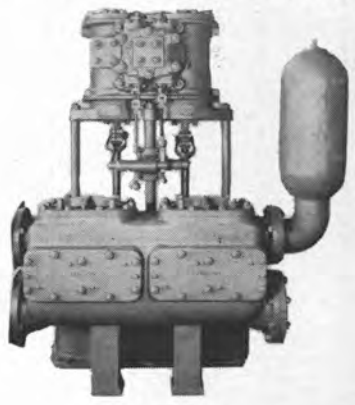
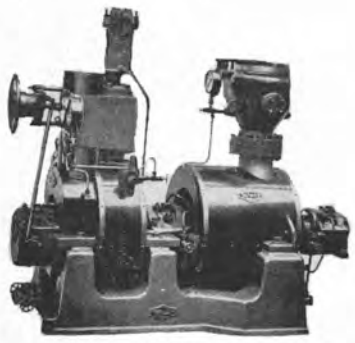
INGERSOLL-RAND 2VHM MAIN CONDENSATE PUMP
120 GPM—85 PSI—Pump only

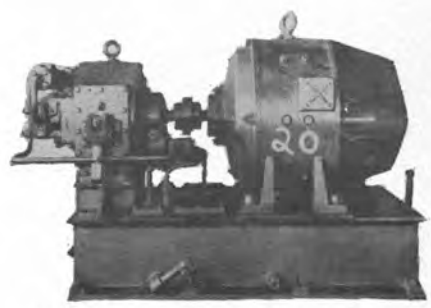
Motors for Above
15 HP Motors and Terry or Coppus turbine drive.



VERTICAL DUPLEX PUMP
10x11x12 Fire, Bilge, Fuel Oil and General Service pumps.



WEIR TURBINE-DRIVEN FEED PUMPS TMFP7
PUMP: 7000 GPH—585 PSI—1380 ft. head—5600 RPM. TURBINE: 480 PSIG—750°TT—exhaust 5 PSIG.



AP3 Steering Gear Pumps **$1750**
Northern Hydraulic (variable stroke) and Hele-Shaw Hydraulic.

Motors For Above Pumps **$1750**
Reliance: 40 HP—230 VDC—147 amps—type T—900 RPM.

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Ingersoll-Rand 1-VHM—with 5 HP 230 VDC motor.
Will Sell Pump separately.

LUBE OIL STANDBY
Vertical Duplex—Worthington—7½x9x12.

FEED PUMPS
Worthington—vertical simplex—11x7x24.

HORIZONTAL DUPLEX PUMPS
Size 6x6x6 pumps.

AUX. CIRCULATOR MOTORS: 25 HP—230 VDC—96 amps—658/875 RPM—G.E. and Reliance

AP3 LARGE VICTORY MATERIAL

PROPELLER: DORAN—Seattle—4-blade—20'6" diam.—6' pitch—heal #4931—ABS (59) 645R.
ALSO TAILSHAFT—RUDDER—RUDDER CARRIER—UPPER STOCK

FORCED DRAFT FANS & TURBINES: Westinghouse type 25-TD-18—231.6 lbs. steam—exhaust 15.6 lbs.—superheat 31°F—max. capacity 19,000 CFM—static pressure 10.7—3950 RPM—45.8—serial nos. 5A2167-11 & 5A2167-12.

SPECIAL FROM RIDGEFIELD VICTORY

G.E. HP & LP TURBINES & REDUCTION GEAR—8500 HP—9350 HP Oregon Shipbuilding Hull #1224—Instruction Book 16263

TURBINES: G.E.: L.P.—8-stage—3509 RPM—#62043 H.P.—8-stage—6159 RPM—#62042 REDUCTION GEAR: #75143—type MD-48-A—8500 HP—9350 max.—6159/3509/763/85 RPM. Maneuvering valve, operating cylinder, etc.

TURBINE FEED PUMPS

Pacific Pump Works. PUMP: Size 1½NTM—185 GPM—1415 ft. head—4825 RPM—serial 8984—8993
TURBINE: Westinghouse—112 HP—440#—740°TT—4825 HP—5A2743-6 and 5A-2744-6.

A 300 KW VICTORY SHIP & C-2 GENERATOR ARMATURES

CROCKER-WHEELER

New—as pictured above—with ABS certificate. From VC2-S-AP2 Ex-Medina Victory. For Crocker-Wheeler generator 102-HD-DP—type CCD—compound—serial 973-643; 999-795 and others in this group. Bearing shaft size commutator end—3½"; Flange size 8¼" OD; Bolt Circle 7", with 12 holes ½" diameter.

ALLIS-CHALMERS

120/240 volts DC—type MCW 21-11—1200 RPM—stab. shunt—148171 & 148173—from ex Stamford Victory—completely re-wound anuary 10, 1968—ABS—(1).

WESTINGHOUSE

120/240 volts DC—1250 amps—1200 RPM—stab. shunt—frame CB 208.4—Instruction Book 8301—51-S-20P-923 and 18-83H-313.

GENERAL ELECTRIC

120/240 volts DC—1250 amps—1200 RPM—stab. shunt—serial No. 2222725-2222807—In G.E. Instruction Book G.E.I. 16584.

C-2 ARMATURES

North Carolina C2-S-AJ-I—General Electric—120/240 volts DC—type MPC—stab. shunt.

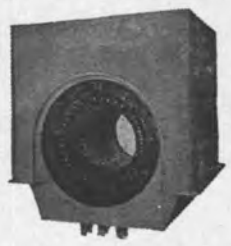
T2-SEA-1 TANKER MAIN STEAM & AUXILIARY EQUIPMENT

B MAIN TURBINE ROTORS

Large Turbine Rotors—Lynn
Large Turbine Rotors—Schenectady
Elliott Turbine Rotors—Fit G.E. small Schenectady turbine

C G.E. MAIN PROPULSION GENERATOR REVOLVING FIELD

G.E. reconditioned—June 1967



D G.E. MAIN GENERATOR STATORS

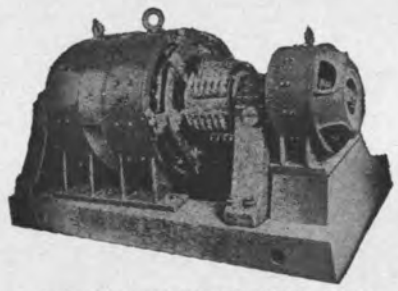
E WESTINGHOUSE MAIN PROPULSION GENERATOR REVOLVING FIELD

Westinghouse reconditioned—May 1967

F WESTINGHOUSE MAIN GENERATOR STATOR WITH OR WITHOUT COOLER

G T-2 TANKER WATER BOXES

Graham or Westinghouse, with ABS certif. In stock, for immediate delivery.



H WESTINGHOUSE EXCITER SETS

110 KW—28 KW—5 KW available
110 KW—32.5 KW—5 KW available

I 75 KW—55 KW ARMATURE ASSEMBLIES FOR G.E. 525 KW GENERATORS

J PROPELLOR

Reconditioned by Baldwin in 1957 and since that time has been carried by Esso on deck, on pedestal, as emergency spare.

K WINDLASSES UPPER RUDDER STOCK RUDDERS

L TERRY TYPE Z FEED PUMP TURBINE

Will interchange with G.E. feed pump turbine. It is 1" higher at center of shaft. Steam exhaust same side—steam inlet opposite side.

M MAIN CIRCULATING PUMP MOTOR

125 HP—Westinghouse—Frame 876C—type CS—squirrel cage — 440/3/60 — 585 RPM. Reconditioned to ABS. Ready to go immediately.

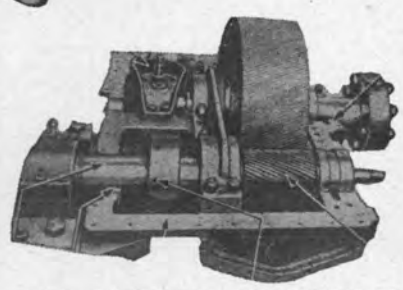
N LORIMER EMERGENCY GENERATOR ENGINE AND GENERATOR PARTS

O G.E. GEAR TYPE PUMP

Used with reduction gears on 525 KW generator

P AUX. TURBO-GENERATOR THROTTLE VALVE

G.E. for 525 KW generators

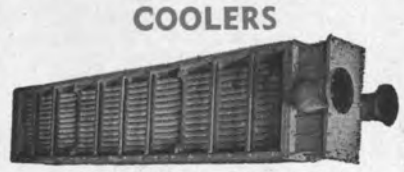


Q G.E. AUX. TURBO-GEN. REDUCTION GEARS

Bull gear & pinion. With ABS.

R WESTINGHOUSE AUXILIARY GENERATOR REDUCTION GEARS AND BEARINGS

COOLERS



S MAIN MOTOR AIR COOLER

Westinghouse—ABS—ready to ship

T MAIN GENERATOR AIR COOLER

Westinghouse — reconditioned with ABS—ready to ship

U ANADALE OIL COOLERS FOR AUXILIARY GENERATORS

V G.E. MAIN GENERATOR COOLER

type G4—bronze heads—AL brass tubes

ALL MACHINERY FROM U.S.M.C. NORTH CAROLINA C2-S-AJ1

INCLUDING MASTS, BOOMS, KINGPOSTS, AND RIGGING

Send us your inquiries

CENTRIFUGAL PUMPS

— ALLIS-CHALMERS —

MAIN CIRC. PUMP

9500 GPM @ 27'—800/600 RPM—type S.B. 20x20 — horizontal. MOTOR: Allis-Chalmers 100 HP—230 volts—600 RPM—Frame EB-162.

TURBINE DRIVEN MAIN FEED PUMP

Allis-Chalmers type BK-4—150 GPM @ 1465' head—180 GPM @ 1342' head. TURBINE DRIVE: Type ZS-1—94 HP normal—440 PSI —740°TT—4400 RPM.

AUXILIARY CIRCULATOR

Allis-Chalmers 8x6 — SE — 1500 GPM — 27' head—1200/1600—15 HP motor—horizontal.

MAIN CONDENSATE

6x3 CF2V — Allis-Chalmers — vertical — 120 GPM—185' head—1310/1750 RPM—15 HP.

AUXILIARY CONDENSATE

3x1½ SSL — 20 GPM — 185' head—1310/1750 RPM—7½ HP—vertical.

FIRE PUMP

4x3 B-2 — Allis-Chalmers — 400 GPM—280' head—1425/1900 RPM—50 H.P.

CIRCULATING PUMPS

Hot water & auxiliary sea water circulating pumps—1½x1½ SSH—20 GPM—10' head —1750 RPM—½ HP—and 80 GPM—70' head—2620/3500 RPM—3 HP.

— WORTHINGTON —

MAIN FEED PUMP

2 UQS-2—150 GPM @ 1465 T.D.H.—4000 RPM—115 HP. Turbine. Form S2RM—Moore steam turbine—1½" steam inlet—440 lbs WP —750°F @ 10 lbs gauge. Water rate 26.8 lbs BHP/HR.

MAIN CIRCULATOR

20-LAL-18 — 20" suction — 20" discharge — horizontal—9500 GPM—27' TDH—800 RPM — 100 HP. MOTOR: 100 HP — 360 amps — 800/600 RPM—horizontal—Frame 183 SK—light compound.

6-L-1 AUXILIARY CIRCULATING

1500 GPM—27' head—1450 RPM—horizontal —8" suction—6" discharge—15 HP—230 DC —56 amps—1450/1090—frame 83SK.

2½UZS-1 MAIN CONDENSATE

Vertical—6" suction—3" discharge—120 GPM —185' T.D.H. — 1750 RPM — 15 HP — 230 VDC—56 amps—1750/1310—ambient 50°C —frame 83SK.

3-UB1—FIRE SERVICE

Horizontal — 4x3 — 400 GPM — 281' head—1750—50 HP Motor—230 VDC—178 amps —1310/1750 RPM—frame 133SK.

AUX. SALT & HOT WATER CIRCULATING

1½ D—20 GPM—10' TDH—1750 RPM—3 HP salt water circ.—1 HP hot water circ.

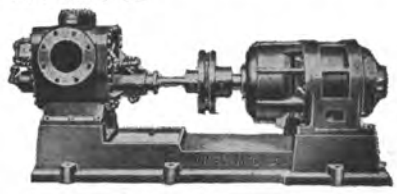
RECIPROCATING STEAM PUMPS

— WORTHINGTON —

- **Port Feed — 8½x5¼x15 — 50 GPM—600 lbs.—VS**
- **Fire Service & Standby — 12x11x18 — 400 GPM—125 PSI—VS**
- **Dirty Ballast—Clean Bilge 10x11x18—400 GPM—50 PSI—VS**
- **Fuel Oil Standby—7x4x10—11 GPM—400 lbs—VS**
- **Lube Oil Standby—7½x9x12—250 GPM—47' head—VD**
- **Make-up Evaporator Feed—3x2 3/4x3—20 GPM—50 lbs.—HD**
- **Contaminated Evaporator Feed—20 GPM—75 lbs—HD**
- **Salt Water Evaporator Feed—3x2 3/4x3—20 GPM—35 lbs.—HD**

— POWER RECIPROCATORS —

- **Drinking water—2½x2—10 GPM—70 lbs—¾ HP—230 volts DC**
- **Sanitary—2½x2—30 GPM—80 lbs—2 HP —230 volts DC**



KINNEY MOLASSES PUMP

430/215 GPM—size 8x8—pressure 60 lbs.—142/280 RPM—Motor RPM 875/1750—Reducer Falk 6.25:1. GE Motor—30/15 HP.

STEERING GEAR

McKiernan-Terry — size 10½ RAM Electro-Hydraulic. MOTOR: 40 HP. Westinghouse—frame 143S—690 RPM—230 volts.

— REFRIGERATION EQUIPMENT —

- CARGO REFRIGERATION PLANT

Compressor 7G8-EF—size 240—897 cu. inches —minimum displacement 39.2 tons—Carrier. Has 365 sq. ft. 3-pass Freon 12 condenser. MOTOR: 35 HP — 230 VDC — 1310/1750 Westinghouse—type 113-SK.

- SHIP SERVICE REFRIGERATOR

York 4x4—type Y-38—model 44-Fe—50 sq. ft. condenser. MOTOR: 10 HP—230 VDC—type SK—frame 43—1750 RPM—37.3 amps.

- COLD DIFFUSER

York type 4—Fan-Fin unit 1155 CFM—82 sq. ft. York type 2—543 CFM—36.8 sq. ft.

- CARGO WINCHES

North Carolina built type 73-S — mfg. by AH&D—50 HP—230 volts DC.

- BAILEY BOARD COMPONENTS

G.E. 300 KW TURBO GENERATORS

GENERATOR: Type DORV-325M — 5645 R.P.M. — 440 Lbs.—740° TT—18" exhaust. GEAR: Type S-192—right hand—5645/1200 —G.E. GENERATOR: G.E. 300 KW—120/240 —1200 RPM—type MPC—stab. shunt. WILL SELL ROTORS — GEARS — ARMATURES SEPARATELY.

SPRAY DEAERATING HEATER

54000 lbs. water/hour. Elliott Co.

FEED WATER HEATERS

- **FIRST STAGE—Shell & tube—45000 lbs/hr —100°—172°F—305 sq. ft.—Heat Transfer Products.**
- **THIRD STAGE—5400 lbs/hr—240° to 318° 200 sq. ft. effective surface. Heat Transfer Products Co.**

EVAPORATORS

Contaminated water — 36-14 Paracoil-Davis Eng.—Distiller 2F72D Davis.

EMERGENCY DIESEL GENERATOR SET

Heavy duty—75KW—120/240 DC—720 RPM Ideal. ENGINE: Lorimer 115 HP—7½x9½—720 RPM—4-cycle—radiator cooled. With all switchgear. OAL 12'4"—OAW 49"—OAH 79" Weight 10,500 lbs.

M.G. SET

D.C. final AC—Bus—MG set—5.5 HP—230 Volt 1800 RPM input—Diehl's—3 KW 120/1/60 output.

AIR EJECTORS

Ingersoll-Rand main air ejector and auxiliary air ejector.

AIR COMPRESSOR

Ship service — type PB-2 — 7x4x4 — Chicago Pneumatic—15 HP—230 volts—1750 RPM.

COMBUSTION CONTROL

Worthington—4¼x2½x2¾—2-stage — 17.9 CFM at 100 lbs.—5 HP—230 volts DC.

FORCED DRAFT BLOWER

Type 6-SL — 12000 CFM — 8.1 S.P. — 1830 RPM— Buffalo Forge. MOTOR: Allis-Chalmers type EB-100—20 HP—1190/1830 RPM—230 volts—75 amps.

FUEL OIL BURNER

Todd HexPress—3 per boiler.

FUEL OIL HEATERS

ALCO—4400# fuel oil—from 100° to 230° —shell & tube type—unit in four sections.

FUEL OIL METER

2"—DVHP—30 GPM—Buffalo.

SEPARATOR

Oil and water—50-ton—McNab Victor.

DeLAVAL OIL PURIFIERS

Unimatic model designation 55-N-13—for turbine or light oils—200 GPH. Powered by 2 HP 230 volt DC Allis-Chalmers motor—frame 224.

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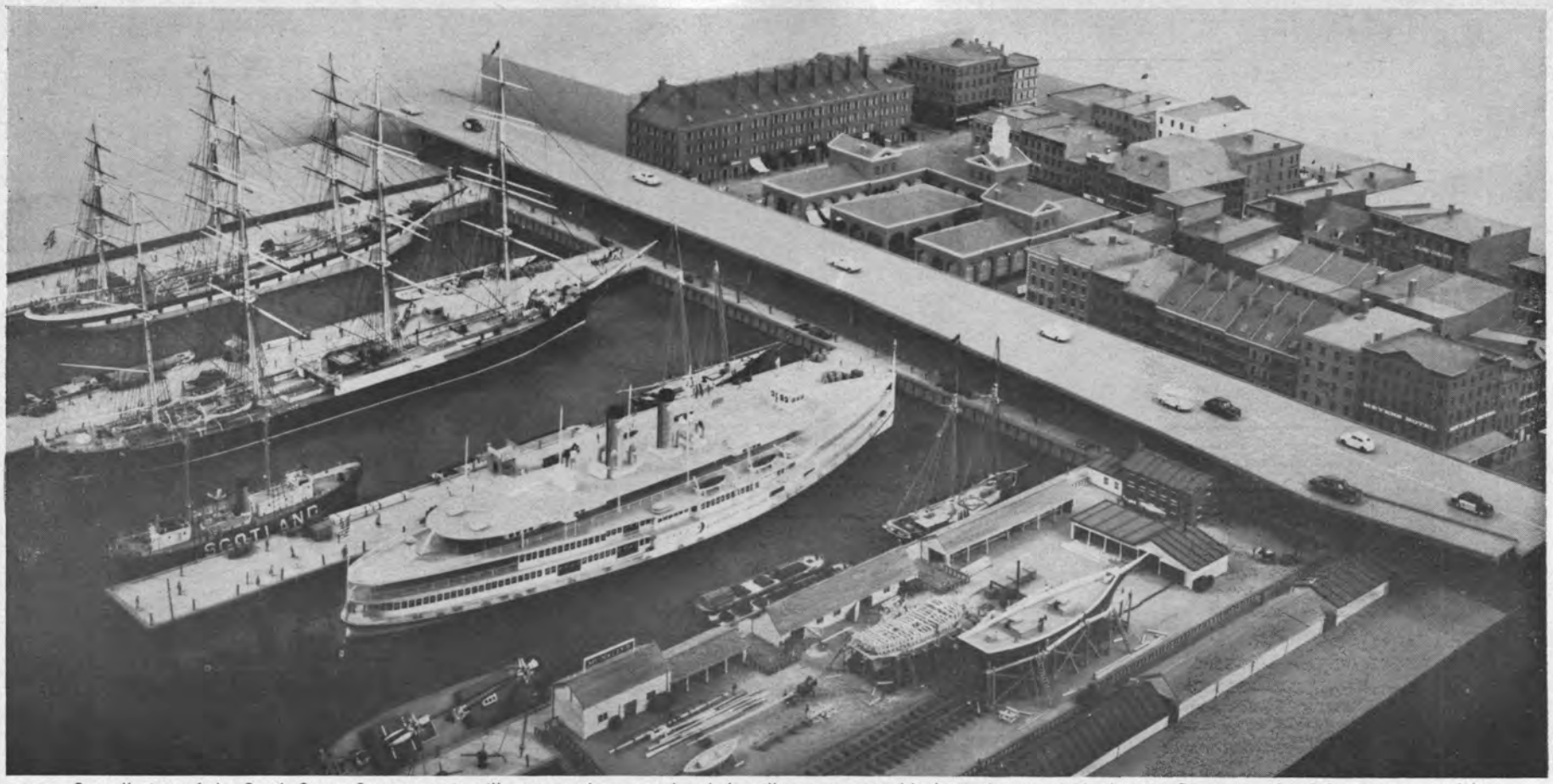


Overall view of the South Street Seaport as it will appear when completed. It will occupy seven blocks in downtown Manhattan. Picture is of a 9-foot-square model.

A Little Bit Of Old New York Will Be Reborn In

South Street Seaport

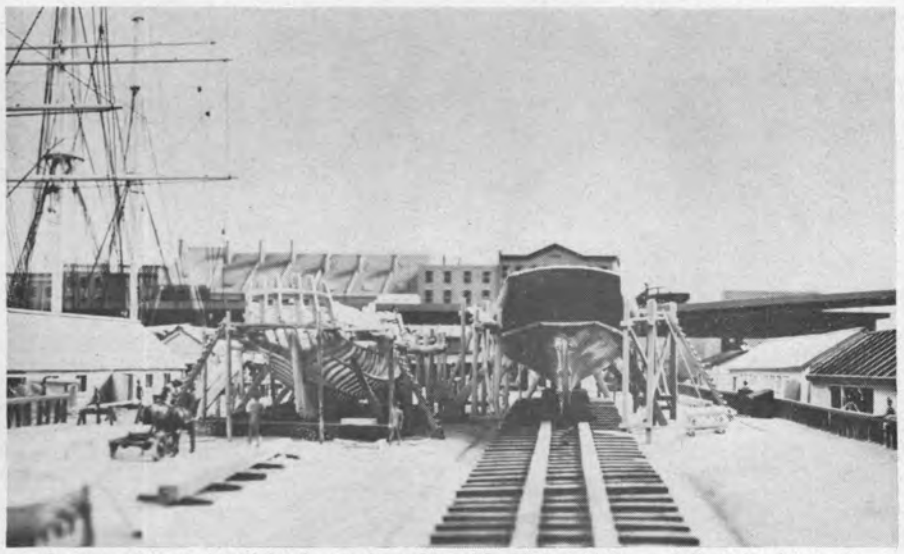
New York City's South Street Seaport, designed to revive pride in America's maritime heritage, is rapidly taking shape. When completed, the Seaport is expected to attract at least 3-million people a year. Already, this striking restoration project is attracting New York visitors, residents and school children.

Long a dream of many maritime people, the non-profit South Street Seaport organization has obtained official New York City backing. Maritime industries have been giving their support by donating employee time and by financial assistance.

The realistic pictures appearing on this page are actually photographs taken of the 9-foot-square model of the Seaport. Some of the ships shown are already at the piers and open to the public. The other ships are lined up for acquisition and will be coming to the Seaport during the next year. Restoration of certain buildings is underway.

Historic ships will occupy Piers 16, 17, 18 and 19. Schermerhorn Row (the large building at top center of the overall photograph) will house the State Maritime Museum. A rebuilt Fulton Market and other restored buildings, occupying seven blocks, will be used by small museums and small maritime-oriented private businesses.

Information about the center is available from the South Street Seaport, 16 Fulton Street, New York, N.Y. 10005.



Seaport shipyard will be located on Pier 19. This will be a full-scale shipyard.

Ships will make the Seaport one of America's great tourist attractions. Elevated highway bypasses through traffic.

A view down Beekman Street indicates the extent of the restoration project, including cobblestone streets.

View of restored buildings as they will appear from foredeck of a square rigger. Schermerhorn Row is on the left.

No. California Section Hears Paper On Value Engineering

Principals at Northern California Section Meeting, left to right: **William Hickman,** Ocean Machinery, vice chairman, Northern California Section; **J. T. Nichols,** U. S. Maritime Administration, author; **Graham Fraser,** PACECO, secretary-treasurer, Northern California Section, and **William New,** Matson Navigation Co.

The November meeting of the Northern California Section of The Society of Naval Architects and Marine Engineers was held at the Engineers Club in San Francisco.

The meeting was opened by the vice chairman, **William Hickman,** in the absence of Chairman **Hugh Downer.**

William New of Matson Navigation Co., introduced the author, **J. T. Nichols,** chief of the value engineering branch of the U.S. Maritime Administration, Washington, D.C. The paper was entitled "Value Engineering—Key to a More Economical American Merchant Marine."

The paper traced the accomplishments of the Maritime Administration's value engineering program which in the span of a few years' operation has saved the cost of a cargo ship. It showed how value engineering is accomplished in Maritime's subsidized ship-construction programs and described some specific areas of savings.

The author described some of the limitations on the success of cost-reduction programs in the marine industry due to resistance to change by some segments of the industry. The paper demonstrated the insignificance of past accomplishments when related to the potential that exists for greater savings throughout the industry, by wide application of value engineering techniques.

Comments were given by **B. V. Andrews** of Stanford Research Institute, **R. E. Meyers** and **M. S. Zauss** of San Francisco Bay Naval Shipyard, **W. B. Swan** of General Electric Company, **K. Kasschau** of Westinghouse Electric Company, and **Vincent Van Riper** of American Bureau of Shipping.

It was suggested that the principals of value engineering be applied to specifications published by the Maritime Administration which were considered out of date. Most comments favored the value engineering approach, although it was recognized that in most shipbuilding contracts today, little time was available to apply it.

Attending the Northern California Section Meeting, pictured above left to right are: **Vincent Van Riper,** American Bureau of Shipping, executive committeeman, Northern California Section; **L. A. Harlander,** vice-president engineering, Matson Navigation Co., and **David B. Brown,** Atomic Power Department, General Electric Co.

Discussers of value engineering paper, left to right: **Jack Troyer,** Todd Shipyards Corp., meetings chairman, Northern California Section; **R. E. Meyers,** value engineer, San Francisco Bay Naval Shipyard; **Michael S. Zauss,** assistant value engineer, San Francisco Bay Naval Shipyard, and **William Swan,** General Electric Co., executive committeeman, Northern California Section.

Sperry Systems Management Appoints Marketing Team In Ocean Systems Field

C. William Whall

John G. Donovan

Richard Neuendorffer

Robert R. Rupp

Reflecting the increased activity of the Sperry Systems Management Division in the ocean systems field, the following appointments were announced by **Basil Staros,** manager of ocean systems for this division of the Sperry Rand Corporation:

C. William Whall was named manager, ocean systems, Washington operations. His responsibilities cover all project activities in the Washington area dealing with ocean systems programs.

In addition, three ocean systems marketing managers were named: **John G. Donovan** for marine science and technology systems, **Richard Neuendorffer** for undersea warfare systems, and **Robert R. Rupp** for deep submergence vehicle systems.

Mr. **Whall** joined Sperry in 1942 in the Field Engineering Department, subsequently serving in a number of engineering positions on avionics and naval ordnance programs. In 1954, he transferred to the Sperry marketing operations and was named a marketing manager in 1960. His activities have centered on the Washington, D.C., area since 1964.

Mr. **Whall** has a B.S. degree in engineering administration from Texas A & M University. He is a member of the Navy League, the Navigation Subcommittee of the National Security Industrial Association, and the Kenwood Country Club.

John G. Donovan came to Sperry in 1950 as a project engineer. In 1961, he transferred to the marketing department and was made a senior contracts representative in 1962. He was assigned to Sperry's ocean systems programs in 1965.

Mr. **Donovan** received a B.S. degree in mechanical engineering from the University of Maine in 1949. He also attended Franklin & Marshall College in Lancaster, Pa., prior to his service in the Navy during World War II. He is a member of the U.S. Naval Institute, International Oceanographic Foundation, and the University of Maine Alumni Association.

Richard Neuendorffer recently came to Sperry from General Dynamics Corporation where he was international marketing manager in Paris and Brussels. He previously held positions in research and development and customer relations with General Dynamics' Electric Boat Division.

Mr. **Neuendorffer** has a B.S. degree in engineering from the U.S. Naval Academy and an M.S. degree from the University of Rhode Island.

Robert R. Rupp joined Sperry in 1955 as a contracts representative and was made a senior marketing representative in 1963. He holds a B.B.A. degree from Hofstra University.

Hillman 195-Foot Tank Barge Delivered To F. P. Thomas III

F. P. Thomas III recently accepted delivery of a 195-foot by 35-foot by 12-foot semi-integrated, single-skin, tank barge at the Hillman Barge & Construction Company's Brownsville, Pa., shipyard.

The tank barge is designated FTS 10 and has six independent cargo compartments. Designed for varying conditions of both the Gulf Intracoastal Canal and river service, this barge features 5/8-inch bilge knuckle plate, deadrise and camber, underknees at the bow end and ample rub plates for side protection. The cargo piping is located externally with expansion domes and clean out hatches provided for all cargo tanks. Deck fittings include eight 42-inch kevels, four heavy-duty 48-inch cleats and two 10-inch double bitts.

Hillman designed and built, this barge is certified by the U.S. Coast Guard for service on rivers, lakes, bays and sounds, and has a cargo capacity of 12,000 barrels.

Newport News Shipbuilding Will Install Largest U.S. Gantry Crane For Outfitting

Artist's conception of the new crane (weighing more than 4 million pounds) at Newport News Shipbuilding and Dry Dock Co. shows how its 440-foot-long bridge will clear the superstructures of vessels docked in the two shipways it will serve. On the left is the liner SS United States and at the right is the nuclear aircraft carrier USS Enterprise.

A gantry crane, largest of its type in this country, has been ordered by Newport News Shipbuilding and Dry Dock Company from The Alliance Machine Company. The mobile structure, which will tower nearly 19 stories and have a span of about two city blocks, is expected to enter operation at the nation's largest shipyard, now a Tenneco Inc. subsidiary, by the fall of 1969.

The bridge of the more than 4-million-pound crane will have a span of 440 feet. The crane will measure 458 feet, 9 inches long, and extend across the company's shipways 10 and 11, easily clearing the island structures of the nuclear carrier Enterprise, the recently commissioned John F. Kennedy and the forthcoming nuclear carrier Nimitz, or the stacks of the passenger liner United States, all built by Newport News Shipbuilding.

Rated capacity of the crane will be 310 long tons or 694,400 pounds. The shipyard disclosed that the new crane will be used to lift large steel assemblies, heavy machinery and propulsion components now in use, or contemplated.

The Alliance Machine Company, engineers, and 'World's Largest Builders of the World's Largest Cranes,' will manufacture component parts at its main plant at Alliance, Ohio, and ship them to Newport News. Alliance is also responsible for the erection and testing of the crane.

Height of the new crane will permit six 28-ton, and two 84-ton whirler cranes, which now serve the two shipways, to continue in operation, primarily that of transferring heavy components from nearby assembly areas onto the shipways.

Preparations for erection of the new crane have been under way at the shipyard for the past several weeks. McLean Contracting Co. of Baltimore, Md., has completed the driving of 120-foot-long concrete test pilings along parallel lines stretching 150 feet into the James River, marking the future runway or tracks for the crane's 64 wheels. By extending beyond the end of the shipways, the crane will be able to offload materials from barges or vessels for direct transfer to a ship under construction.

On land, the runway will extend an additional 1,200 feet along the shipways.

Erection of the crane is scheduled to begin this spring on the outboard portion of the then completed runway. This will avoid interference with shipbuilding and ship repair work. High tensile and mild steel plate will be utilized for the crane's mammoth leg and bridge structure.

The new gantry crane will be powered by 10,000 volts of electricity supplied by a flexible below-surface cable which is reeled onto a power-operated cable drum as the crane moves along its tracks.

Two 155-long-ton trolleys, which house the crane machinery, will operate along the crane's bridge. The trolleys are arranged so that one trolley may pass under the other. One will have a cab from which the crane operator can observe all areas served. The cab is reached by an elevator in one of the crane legs.

The crane will have four hoists, each having a 77½-long-ton capacity and a lowering speed at load of up to 20 feet per minute. A 13½-long-ton hammerhead cantilever type crane at one end of the bridge will be used for crane maintenance. Wheelbase of the crane will be 159 feet 2 inches and its 64 equalized wheels will each measure more than two feet in diameter.

A wind gauge, mounted high on the bridge, will trigger an alarm should winds exceed 35 miles per hour, although the crane is designed to withstand hurricane-force winds. Aircraft warning lights will be located at each end of the bridge; eight 1,000-watt floodlights will light the working area on the underside of the crane.

Barge Construction

Albina Engine & Machine Works, Inc., Portland, Oregon, is to build a deck cargo barge, designated Hull No. 413, for Young Brothers, Ltd., Honolulu, Hawaii. The 2,600-dwt barge will be 197 feet by 52 feet by 15 feet. Albina is also building an 1,800-dwt oil barge for Foss Launch & Tug Co. of Seattle, Wash. The barge, which has been designated Hull No. 409, will be 180 feet in length, 42 feet in width, and 13 feet in depth.

Barker Barge Line, Inc. of Lockport, La., is building a 1,200-dwt oil barge for Cenac Towing Co. of Houma, La. The dimensions of the barge, which has been designated Hull No. 17, will be: length—160 feet; beam—42 feet, and depth—8 feet.

Halter Marine Fabricators, Inc., Moss Point, Miss., will build a 180-foot by 50-foot by 14-foot deck cargo barge for Southeastern Drilling, Inc. of Dallas, Texas. The 1,600-dwt barge has been designated Hull No. 216.

Intercoastal Shipyard, Inc., Morgan City, La., is building a 500-dwt deck cargo barge for stock purposes. The vessel will be 120 feet by 30 feet by 7 feet.

Jeffboat, Inc., Jeffersonville, Ind., will build 12 covered hopper barges for stock purposes. The 195-foot by 35-foot by 12½-foot vessels will be of 1,500 dwt.

Levingston Shipbuilding Co., Orange, Texas, has been awarded a contract by West India Shipping Co., West Palm Beach, Fla., for two 2,500-dwt cargo barges. Each barge will be 260 feet in length, 51 feet in beam, 16 feet in depth. Designated Hull Nos. 682 and 683, they will be named Wisco Trader and Wisco Ranger.

Reliance Marine Transportation & Construction Co., Kingston, N.Y., will construct a cargo barge, Hull No. 774, for Horan Transportation Corp. of New York City. The 1,000-dwt barge will have the following dimensions: length—130 feet; width—40 feet; depth—11 feet 3 inches.

St. Louis Ship, Division of Pott Industries, Inc., St. Louis, Mo., will construct five covered hopper barges, designated Hull Nos. 2569 through 2573, for undisclosed interests. They will each be 200 feet by 35 feet by 12 feet.

R. P. Delrich Appointed To Container Sales By Stanray Division

Raymond P. Delrich

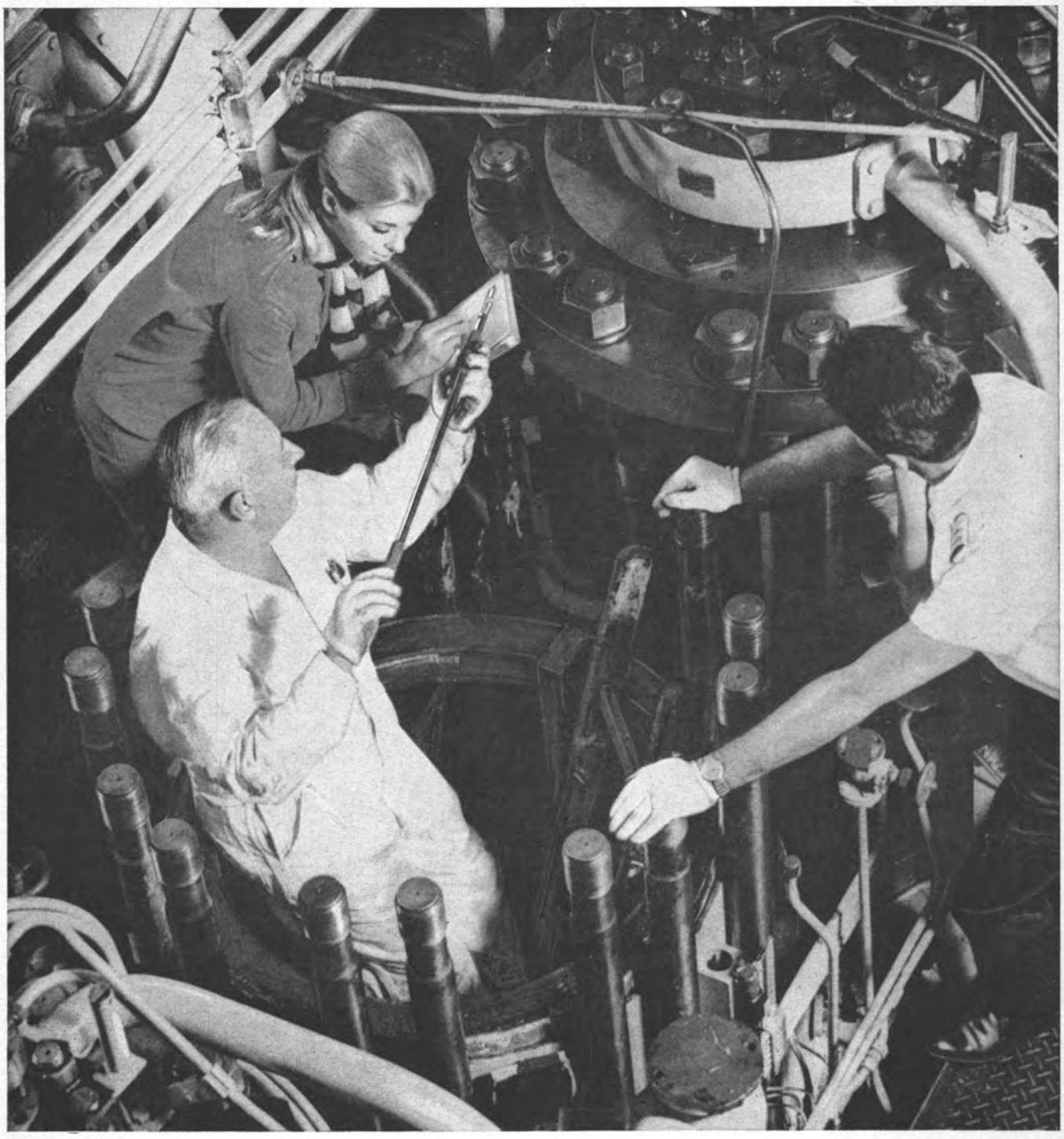
Raymond P. **Delrich** has been appointed vice-president, container sales, by Standard Railway Equipment Division of Stanray Corporation, it was announced by **John W. Bergen,** president of the division.

Mr. **Delrich** will be responsible for marketing transportation equipment produced by Litewate Transport Equipment Corporation, Milwaukee. Litewate, partially owned by Stanray, manufactures intermodal refrigerated containers, molded in one piece of foam and fiberglass reinforced plastic, for air, rail, ship and truck transport.

Prior to his appointment by the Stanray division, Mr. **Delrich** was manager of research and planning activities for American President Lines Ltd., where he coordinated development of the company's container program. Previously he had been on-site director of the San Francisco Port Study of the Maritime Cargo Transportation Conference.

A graduate of the U.S. Merchant Marine Academy and Georgetown University, Mr. **Delrich** was a ship's officer in World War II and served with the Navy's Military Sea Transportation Service during the Korean War.

He is a director of the Containerization Institute and a member of The Society of Naval Architects and Marine Engineers. His professional affiliations also include the Institute of Marine Engineers, Operations Research Society of America, and the American Management Association.



Essomarine® knows your Lady's measurements.

Liner wear in the big diesels... a major interest of the ship operator—and of Essomarine.

Our premium cylinder oils are designed to keep wear rates to a minimum. We check to see that they do.

Ship Call Reports are used for routine data. Operating conditions are recorded in our *Diesel Engine Service Report*. Detailed wear figures go into the *Essomarine Cylinder Report*. All are relayed to local and international offices that follow your ship's performance.

Essomarine wants your seagoing lady to stay in shape.

ESSO

FUELS AND LUBRICANTS

Special-Purpose Ship For Paper Products Delivered To Peralta Carriers By Japanese

The William R. Adams will operate between U.S. and Europe carrying St. Regis Paper products out of Jacksonville, Fla., and general cargo on return voyage.

The William R. Adams, a new ship named for the president of St. Regis Paper Company, was christened by **Mrs. Adams** at ceremonies held at the Namura Shipyard Company, Osaka, Japan, early in October. In December the ship arrived in Jacksonville, Fla., to take on its first cargo.

The St. Regis officials who were present at the ceremonies were: Mr. **Adams; Reginald L. Vayo,** group vice-president-international; **Michael J. Walsh,** assistant vice-president-traffic of New York; **Victor T. Grabar,** regional marketing manager-Pacific International Division of Tacoma, Wash., and their wives.

Armando de Peralta, president of Peralta Carriers Corporation of New York, owner of the ship, accompanied the St. Regis group.

St. Regis has contracted with Peralta for the transportation of approximately 120,000 tons of cargo annually from its southern kraft paper and linerboard mills through Jacksonville, Fla., to United Kingdom and Continental range ports. Peralta has designed the vessel specifically for the transportation of kraft linerboard and paper. The 14,000-ton ship is 482 feet long, 67 feet wide with a speed of 16 knots.

The modern design of the ship includes a flume stabilizer to minimize roll of the vessel, five revolving electro-hydraulic cranes of 10-ton capacity each, as well as materials handling equipment designed especially for the safe loading and unloading of the cargo.

It is expected that the ship will make one trip a month with a cargo of 9-10,000 tons of kraft linerboard and paper.

Passenger accommodations include an owner's apartment and two double staterooms which are air conditioned throughout. The ship is equipped with the latest navigational, safety and automatic control equipment.

The Adams was the first ship to call at the first wharf built at Blount Island, Jacksonville's port of the future which was opened in late November.

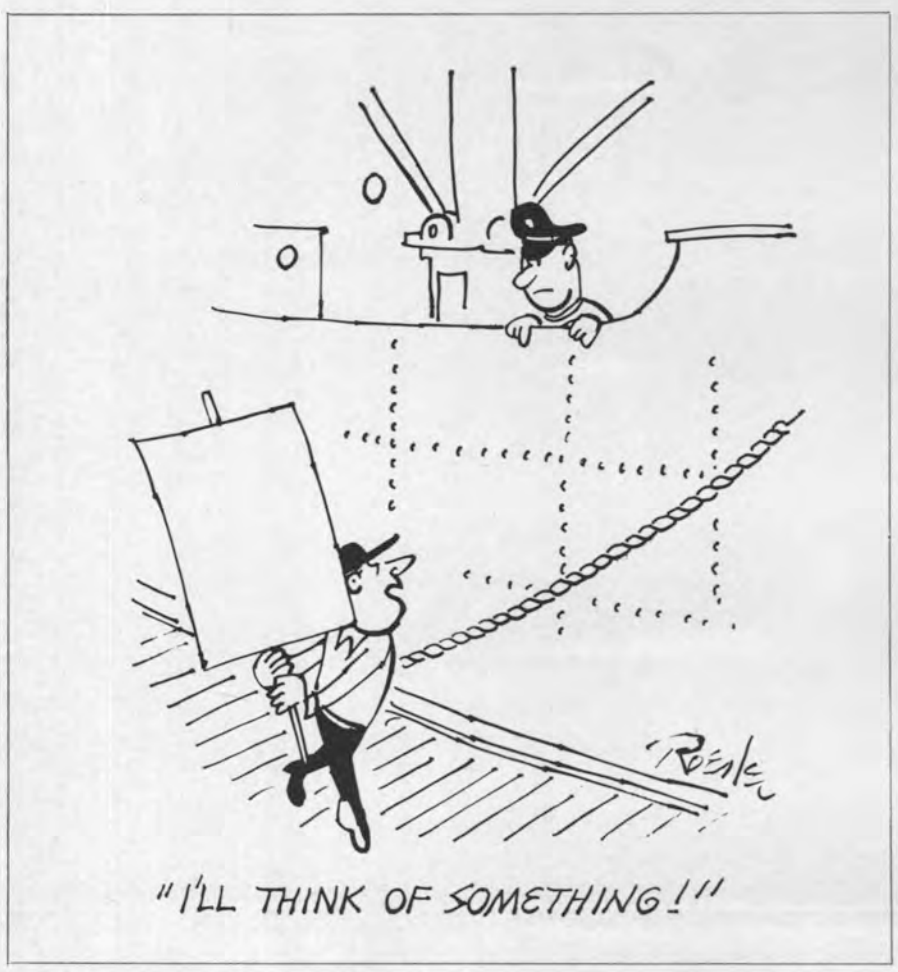
ALAMO 3004 COMMISSIONING—Participating in the recent commissioning of the propane-propylene barge Alamo 3004 at Bethlehem Steel Corporation's Beaumont, Texas, shipyard, were, left to right: **J. O. Crooke,** general manager of the Beaumont yard, **Ed A. Smith,** president of Alamo Barge Lines and vice-president of Alamo Chemical Transportation Co., his wife, who commissioned the barge, **Mrs. J. O. Crooke, Mrs. W. A. Stockard,** and her husband, Mr. **Stockard,** who is president of Alamo Chemical Transportation Co. and vice-president of Alamo Barge Lines. Constructed as a box barge for an integrated tow movement, the Alamo 3004 is the fifth LPG barge of this class built by the Bethlehem yard for the Alamo organization. The barge has an overall length of 355 feet, width of 53 feet, depth of 12 feet 9 inches, and its three cylindrical steel tanks have a capacity of approximately 1,176,000 gallons.

Lohmann & Stolterfoht Appoints Arnold Co. U.S. Representatives

Lohmann & Stolterfoht, subsidiary of Mannesmann Aktiengesellschaft, a leader in designing and producing gear units, shaft couplings, clutches, journal and thrust bearings for marine and industrial applications, has announced the appointment of W.B. Arnold Co. Inc. of Hoboken, N.J., as its exclusive sales and engineering representatives in the United States.

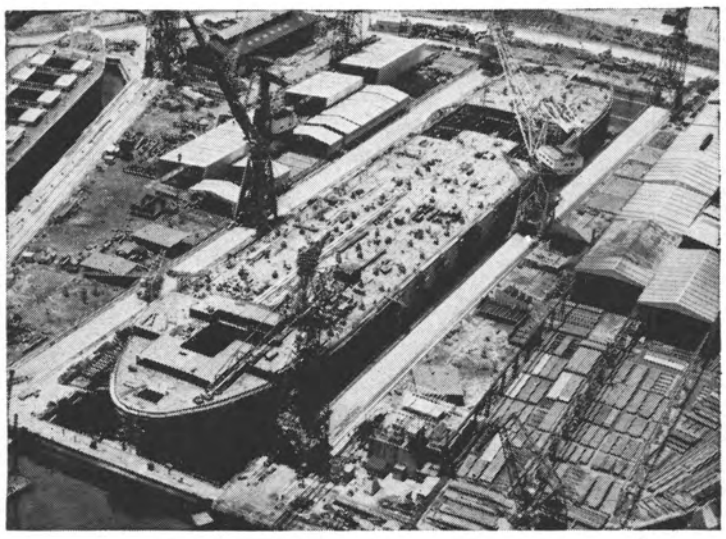
Representing the companies during the negotiations were **H. M. Hierzig** and **G. Rosler,** directors for Lohmann & Stolterfoht and **William B. Arnold,** president of W. B. Arnold Co. Inc. Mr. **Arnold** said, "This agreement, in conjunction with agreements in force at the present time with other overseas companies, gives our company an enviable opportunity to provide the American-based marine industry with engineering service from 'stem to stern' on new construction, ship modification, jumboizing and repairs in the U.S. and abroad."

In addition to Lohmann & Stolterfoht, Arnold is the exclusive sales and engineering representative for the pump and compressor division of Hamworthy Engineering, Ltd., Poole, England; Clarke-Chapman & Co., Ltd., Gateshead, England; Hydraulics & Pneumatics Ltd., Wolverhampton, England, and Strom-Ljusne, Ljusne, Sweden. A sister company, Propellers, Inc., Hoboken, N.J., represents Escher Wyss, G.M.B.H., manufacturers of controllable pitch propellers.



NEW THREE-FLOOR LIBRARY was recently dedicated at the U.S. Merchant Marine Academy, Kings Point, N.Y. The library is named after the late Rep. Schuyler Otis Bland, who was called 'father of the Merchant Marine Act of 1936.' Acting Maritime Administrator **James W. Gulick** accepted the building for the government. The new building was erected under the direction of Rear Adm. **Gordon McLintock,** Academy superintendent. Greetings were presented by Dr. **Mason W. Gross,** president of Rutgers University, the chairman of the Academy Advisory Board, and Rep. **John M. Murphy,** chairman of the Congressional Board of Visitors.

Foster Wheeler sells two more reheat boilers to Island Navigation



Just like those being installed at Sasebo.

The two reheat boilers make a total of four that Island Navigation Corp. has purchased from Foster Wheeler for steam reheat-powered tankers.

All of these tankers will be built at Sasebo. Each is rated at 175,000 DWT and 30,000 shp.

The first will go to sea in October, 1968. The second in the spring of 1969. The two new units are for ships to be delivered late in '69 or early '70.

Each of these vessels will save its operators as much as $175,000 a year over a diesel system. And up to $45,000 over a conventional system. (Guaranteed fuel rate is less than 0.4 lb/shp hour when FW reheat boiler is used with GE MST-14 propulsion system or equivalent.)

This is the first modern boiler to offer shipowners a practical, fail-safe reheat cycle.

During maneuvering or in-port operations, when no steam is in the reheater, completely automatic shut-off and by-pass dampers direct the flow of hot gases away from the reheat zone to a by-pass zone cooled by bare tube economizers.

Simultaneously, cooling dampers, operating on the same shaft as the shut-off dampers, direct air from the burner wind-box through the reheater. This protects the reheater from thermal shock when steam flow is resumed.

Further fail-safe protection comes from the reheater's strategic location in a low gas-temperature zone. Even without by-passing, the boiler can operate for extended periods without reheater tube failure. Fan speed changes are not required during ahead-astern operation.

If you'd like to know more about how our new reheat boiler can increase efficiency and decrease operating costs of your propulsion system, talk to Foster Wheeler. We've got a lot of engineering worth talking about. Foster Wheeler Corporation, 666 Fifth Avenue, N.Y., N.Y. 10019.

FOSTER WHEELER

Jeffboat Delivers Esso Texas To Humble Oil & Refining

The 154th vessel delivered by Jeffboat in 1968 is put through her paces before delivery to Esso.

Jeffboat, Inc., has delivered a new 1,700-hp, twin-screw, diesel towboat, Esso Texas, to the Humble Oil & Refining Company. Capt. **Charles Edwards** took command of the vessel for the owner's trial and maiden voyage from the shipyard.

Designed and built at Jeffboat, the Esso Texas was the 154th vessel delivered by the Jeffersonville, Ind., shipyard in 1968. The vessel's principal dimensions are 90 feet by 28 feet by 10½ feet, with a normal operating draft of 8 feet.

The Esso Texas is unusually well outfitted for a vessel of this size, and uses the most modern equipment in all phases of its construction. It boasts monitering, navigational, and communication equipment normally found only on the larger, 5,000-hp class towboats.

Another unusual feature is the towboat's hull design. Most towboats are designed to use a single method of towing. The Esso Texas is designed to adapt to both push towing and hawser towing, the two principal methods.

Propulsion is provided by two Caterpillar Model D398 diesel engines, each rated at 850 shp at 1,225 rpm, driving 75-inch stainless steel propellers through a 4:1 Lufkin No. 1818 reverse-reduction gear. Two 75-kw generators, driven by Caterpillar Model D330 diesels, provide 440-volt, 3-phase, 60-cycle electric power for the vessel.

The Esso Texas is equipped with two steering rudders and four flanking rudders, all operated by independent hydraulic steering engines. Hydraulic power is provided by two Racine variable volume pumps, each driven by a main propulsion engine.

The auxiliary machinery includes Simplex generator-control panels, Dunham-Bush air conditioning and electric heaters, Quincy air compressors, Trabon grease lubrication system, Fairbanks-Morse potable water pressure set, McNaulin incinerator, Marlow fire pump (together with a Walter Kidde fixed fire extinguishing system in the engine room), and a Pall sewage plant.

Deck machinery consists of two Link Belt pull-pak capstans and two Nabrico single-drum hydraulic winches.

For engine monitoring and generator control a National Marine Service Tugmonitor system is installed.

The navigation and communication systems include two Motorola SSB, VHF and public correspondence radios, two RCA radars, Raytheon fathometer, Executone intercom, Henschel sound-powered telephones, Carlisle & Finch searchlights, Kahlenberg air horn, and a Decca rate of turn indicator.

Captain **Edwards** delivered the new towboat to Houston, Texas, for christening and from there to the Gulf Intracoastal Canal where it was put in service between Baytown and Baton Rouge.

Jeffboat, Inc. is an integral part of the Inland Waterways Services Division of Texas Gas Transmission Corporation.

Matson Navigation To Spend Nearly $4-Million To Improve Container Carrying Capacity

Matson Navigation Company, San Francisco, will spend nearly $4-million for container freight service improvements and additions to meet the increasing needs of Pacific trade, it was announced by **Norman Scott**, executive vice-president.

The company's board has authorized $3,855,-300 for new containers, trailers, equipment, and vessel alterations to increase container carrying capacity, Mr. **Scott** said. This is in addition to nearly $3-million spent last year for containers and vessel modifications to provide more container capacity.

The continued expansion program is needed, Mr. **Scott** said, "to accommodate projected growth trends and to meet the continuing surge of cargo from West Coast ports."

Matson's latest plans call for 11 new straddle-carriers, modification of five Hawaii vessels to provide additional space for a total of 400 containers a month, stainless steel tank containers for the Far East service and improvement of the Honolulu refrigerated container maintenance facility.

Eight of the new straddle-carriers will be used in West Coast ports, the rest in Hawaii. The ships to be modified for extra capacity are the Hawaiian Queen, Hawaiian Monarch, Californian, Hawaiian and one of the company's C-3 type freighters.

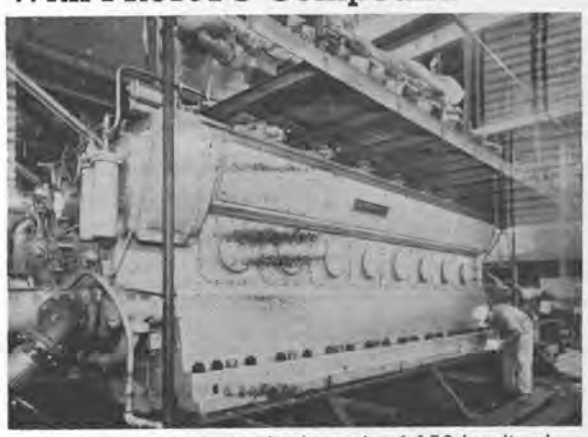
B&W Boilers To Provide Steam For Most Powerful Cargo Ships

Babcock & Wilcox will design and manufacture the boilers for the most powerful cargo ships ever built.

Under a contract award valued at approximately $1.5-million from General Dynamics (Quincy) shipyard, a pair of B&W boilers will power each of three 36,000-shp ships being built for Lykes Brothers Steamship Company. Each new boiler will produce 123,050 pounds of steam per hour at 875 psig and 955°F.

In port, power from the boilers will drive a submersible freight elevator at the ship's stern. Rated at 2,000 tons, the world's heaviest lift capacity ashore or afloat, the elevator is the key to a new concept in ocean cargo transportation. The 'sea barge clippers,' designed by the J.J. Henry Co., Inc., can carry 38 loaded barges, each almost 100 feet long. By lifting or launching the barges two at a time on the elevator, the 44,300-ton ship will take on or discharge a full cargo in 13 hours—15 times faster than most present-day cargo carriers. The new vessels are expected to enter service in 1971.

V-16 Diesel Engine Chocked With PR610TC Compound



Workman pours resin chocks under 6,150-hp diesel.

Chocks for a 251,000-pound V-16 Enterprise diesel engine recently installed on the T.L. James BT-100 hydraulic dredge, were cast with PR610TC chocking compound. Lower installation cost, better alignment, reduced vibration and high impact and compressive strength are the main features given by the manufacturer for this chocking method. Considerable time and expense is saved because tedious machining of metal chocks is eliminated.

The chocking resin, designated as PR610TC and supplied by Philadelphia Resins Corp., was poured into dams constructed of neoprene and sheet metal strip. The engine was previously leveled with jacking bolts. The two areas to be chocked were each 14 inches by 216 inches divided into eight chocks of approximately equal length and averaging 1½ inches in thickness. Damming time required 16 man-hours and mixing and pouring took 30 man-hours.

The PR610TC system provides a 100 percent contact liquid level chock that resists chemical action, will not shrink or burn, and can be machined if required. The compound hardens in 4 to 8 hours depending on ambient temperature, dams are removed, and the machinery is ready for use. This epoxy chock casting system has found wide use and acceptance, not only for marine engines, machinery and equipment, but also in industrial applications for chocking stamping presses, lathes, milling machines, large motors and other equipment.

For further information, contact Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936.

Walter M. Maclean Named Maritime Man Of The Year By Kings Point Alumni Assn.

Walter M. Maclean (left), receives the 'Maritime Man of the Year' award from last year's winner, **Ted Kedzierski.**

Walter M. Maclean, professor of naval engineering at Webb Institute of Naval Architecture, Glen Cove, N.Y., has been honored as 'Maritime Man of the Year' by the United States Merchant Marine Academy Alumni Association. The presentation by **Ted Kedzierski,** naval engineer and last year's winner, was made at a breakfast in the Hotel Berkshire during the recent New York annual meeting of The Society of Naval Architects and Marine Engineers.

The annual award, "for outstanding achievement in the field of marine engineering," recognizes Mr. **Maclean's** professional achievements since his graduation from the U.S. Merchant Marine Academy at Kings Point in 1945. After a decade at sea as an engineering officer, largely in the employ of American President Lines, he served for four years as a draftsman, engineer, and naval architect with a consulting firm and six years at the University of California as a resident naval architect before joining Webb Institute in 1965 as professor of engineering. He holds the degrees of B.S. in mechanical engineering, master of engineering, and doctor of engineering in naval architecture, belongs to numerous professional societies, and is the author of a paper "On Cushioning of Water Impact by Entrapped Air."

The award consists of an engraved desk set, inscription of Mr. **Maclean's** name on a permanent bronze plaque, and presentation to the Kings Point Engineering Department of a fund of $1,500, contributed by the following sponsoring companies: Owens-Corning Fiberglas Corp. of New York, Kings Point Machinery Co. of San Francisco, Isaacson Corp. of Seattle, Gate Construction Co. of Little Ferry, N.J., Leslie Co. of Parsipanny, N.J., and White Packing Co. of Jersey City.

Robert Vevoda of the Kings Point class of 1945, chaired the breakfast, which was addressed by **D. D. Strohmeier,** vice-president, Bethlehem Steel Co., and Rear Adm. **Gordon McLintock,** USMS, Academy superintendent.

British Shipbuilding Federation Elects Huskisson Chairman

Robert A. Huskisson, a director and general manager of Shaw Savill Line, has been elected chairman of the British Shipping Federation. He succeeds **Ford Geddes.**

Active since 1954 in federation affairs, particularly in National Maritime Board matters, Mr. **Huskisson** became a member of the federation's council in 1958 and was appointed a vice-chairman in May 1965.

Three Offshore Supply Boats Ordered From American Marine

American Marine Corp., New Orleans, La., is under contract for the construction of three offshore, oil-well supply boats—one for Otto Candies, Inc., Des Allemands, La., and two for Tidewater Explorations, Inc., New Orleans, La.

The vessel for Otto Candies will be powered by 1,500-total-bhp diesels and will have the following dimensions: 157 feet by 38 feet by 14 feet. It has been designated Hull No. 1017.

Tidewater Explorations' boats, designated Hull Nos. 1022 and 1023, will be 156 feet 4 inches in length overall, 38 feet in beam, and 13 feet in depth. Diesels of 1,500 total bhp will power the vessels, which are to be named Shap-Tide and Queen-Tide.

Initial Ship Design And Cost Prepared In Two Days By NKK With New Computer System

Technician at Nippon Kokan monitors operation of computer-controlled equipment automatically preparing hull form line drawings for ship designs and cost estimates.

A unique computer system for preparing initial ship designs and cost estimates within two days rather than the conventional period of one month has been introduced by Nippon Kokan K.K., Japan's only integrated shipbuilder-steelmaker.

Computers have previously been used on a piecemeal basis in initial ship design work but the NKK-developed system is the first to combine these functions in an integrated operation according to **Satoru Suzuki,** the company's New York general manager.

The new system also improves the accuracy of preliminary designing and enables NKK to rapidly formulate revisions to original specifications.

Upon receipt, owner specifications are applied to the characteristics of a standard type vessel which have been previously fed into the computer, an IBM 360/75. The computer then calculates various data for the new design, including draft, trim, stability, displacement, deadweight, and longitudinal strength factors such as bending moment and shearing force.

Following this procedure, several initial designs are prepared by Numericon and Panac units, computer controlled equipment made by Muto Kogyo Co. Ltd. and Essi Kinzmatic. Each design includes slight alterations of configuration. The system enables NKK to present multiple initial designs to owners with detailed explanations, backed by computer-prepared statistics and recommendations for optimum design.

After the initial design is selected, complete plans are drafted by each section of NKK's basic ship design department.

NEW FLOATING DRYDOCK put into operation by Martinolich Shipbuilding Corporation, Tacoma, Wash. The 1,250-ton lifting-capacity dock is provided with four centering posts controlled from the control tower, enabling the dockmaster to center the vessel quickly. The bilge blocks are attached to the centering posts and are cranked in from the vessel instead of the wingwall. The drydock is new in every respect and has been certificated by Philip F. Spaulding & Associates, Inc., of Seattle.

Alaska Ferry Lengthening Awarded To Bethlehem Steel

Capt. **H. J. Lockert,** director, Division of Marine Transportation for the State of Alaska, has announced that Commissioner **Harold D. Strandberg** of the Department of Public Works has awarded a $1.9-million contract to Bethlehem Steel Company, San Francisco, for the lengthening of the Alaska ferry MV Tustumena, which currently serves the south central Alaska ports of Seward, Cordova, Homer, Valdez, Seldovia and Kodiak Island areas.

Philip F. Spaulding and Associates, Inc., Seattle naval architects, who designed the original vessel and prepared this modification, states a 56-foot midsection is to be added to the vessel which will increase the overall length to 296 feet. This increased length will provide 14 additional spaces for passenger cars, or space for 9 more truck trailers. Staterooms for 16 passengers and 4 crew have also been added.

This modification also provides for the installation of a Pacific Sea Leveler Mark X Retractable Fin Stabilizer System which will give comfortable travel in some of the world's most active seas. A 400-hp KaMeWa bow thruster is being installed to assist in docking. Two new 450-kw Waukesha ship service generators are being installed to handle the increased electrical demand created by the jumboizing. Additional ship stores, reefer spaces, and crew's laundry facilities have also been added.

The vessel modifications are scheduled for completion before next summer's season begins.

367,000-Dwt Super Tanker Will Be Constructed By IHI In 400,000-Dwt Building Dock

IHI (Ishikawajima-Harima Heavy Industries Co., Ltd.) of Japan has received an order for a 367,000-dwt super-mammoth tanker from the Tokyo Tanker Company.

This tanker will be the world's largest, exceeding the 312,000-dwt tanker Universe Ireland, the world's present largest ship, which was completed last September at IHI's Yokohama Shipyard for National Bulk Carriers, Inc. of the United States and is now in service.

To be built at the No. 2 building dock (capacity: 400,000 dwt) of IHI's Kure Shipyard, she will be completed towards the end of 1971. After her completion, she will be engaged in carrying crude oil from the Persian Gulf to the Nippon Oil Group's Central Terminal Station (an oil storage complex) now under construction at Kiiri, in Kagoshima Prefecture, Japan.

The new super-mammoth ship will be capable of carrying about 3,000,000 barrels of oil in a single voyage.

IHI and Tokyo Tanker have for a long time been examining various types of ship hull forms in order to obtain the most economical hull form. For the new tanker, the companies have decided to use a hull form with a draft of 88 feet 7 inches, which will be more economical than that of the Universe Ireland.

The ship will be powered with a steam turbine plant developing 40,000 shp at 90 rpm. This power will give a service speed of 14.5 knots.

The principal particulars of the ship are:

Length, overall	1,133 feet 7 inches
Length bet. perp.	1,082 feet 9 inches
Breadth	178 feet 10 inches
Depth	114 feet 10 inches
Draft	88 feet 7 inches

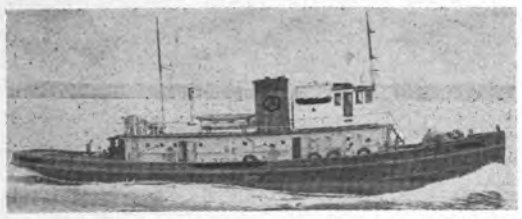
ONE OF THE LARGEST rubber bearings ever made in one piece frames **Bonnie Baine,** who holds a standard ¾-inch 'Cutless' bearing in her hand. Two of the 1,200-pound bearings, made by B. F. Goodrich Industrial Products Company, Akron, Ohio, support a shaft which drives the 38-ton cutter head of one of the world's most powerful dredges, the Triton, with 6,000-hp on the cutter and 17,000-hp on the pumps. The 180-foot dredge is being used to straighten and enlarge a 33-mile stretch of the Kissimee River in Florida. Water, which lubricates the soft tough rubber inside the bearing, rolls abrasive particles into the grooves where they are flushed away, enabling the rubber bearings to provide extremely long life. B. F. Goodrich Cutless bearings, ranging in size from the one held by **Miss Baine** to multi-segment models weighing more than 12,000 pounds, are distributed by Lucian Q. Moffitt, Inc., Akron.

BETHLEHEM-BEAUMONT LAUNCHES huge midbody cargo-tank section to be used in the conversion and jumboizing of the former U.S. Navy Hospital Ship Haven to the Union Carbide liquid chemical carrier Clendenin. The new midbody, 330 feet long, 71 feet 6 inches wide and 43 feet 6 inches deep, will replace the original midbody of the 496-foot, 15,000-dwt C4 type vessel and increase its deadweight by more than 50 percent. Upon completion of the conversion, scheduled for spring 1969, the ship will have a length of 641 feet between perpendiculars and a deadweight of approximately 24,000 tons. Her breadth and depth will remain unchanged. Replacement of the midbody is being carried out in the Bethlehem Beaumont yard's big dry dock. Union Carbide officials estimate that the conversion will cost $6-million.

Multi-Million-Dollar Project To Philadelphia Naval Shipyard

The Naval Ship Systems Command has assigned a multi-million-dollar project to the Philadelphia Naval Shipyard for the modernization of the guided-missile frigate Dewey (DLG-14).

STEEL WELDED TUG FOR SALE BARGAIN



1800HP Fairbanks Morse OP diesel tug 125'X25'X13.5' rebuilt 1951 Farrel Drive 2:14-1 272RPM on 102"X56" wheel-Fine accommodations for crew—2 each 100KW 220/440DC G.M. 3-268A Auxilaries—leach 25KW 110DC Generator Shaft-Electric Anchor winch—Electric towing machine 2000' 2" cable—RADAR—DEPTH SOUNDER—Sperry Steering equipment — Radio telephone — RDF — 43,000 fuel—10,000 water-speed 11 knots—$99,000.00.

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WESTINGHOUSE	250 KW
WORTHINGTON	150 KW
WESTINGHOUSE CA 20	100 HP
WESTINGHOUSE HP & LP TURBINES	4,400 HP
ALLIS CHALMERS HP & LP TURBINES	4,400 HP
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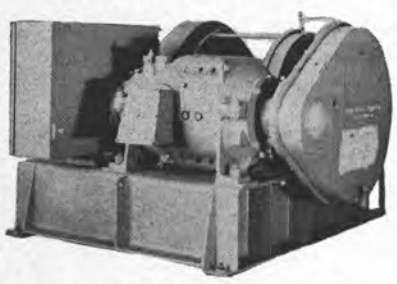

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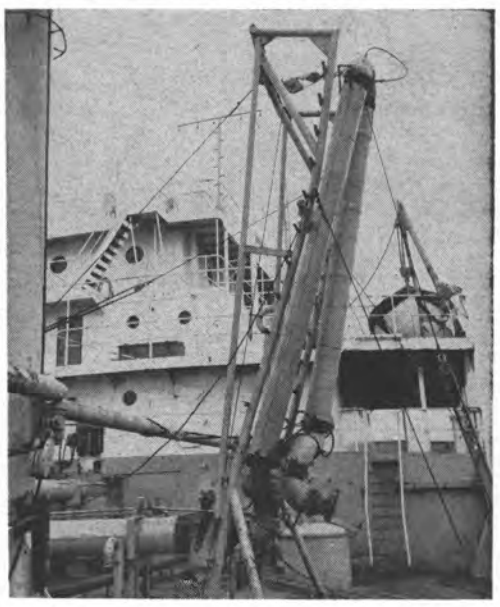

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Model 38D-26½—20 HP—1750 RPM—440/3/60—38" ID—adjustable blades

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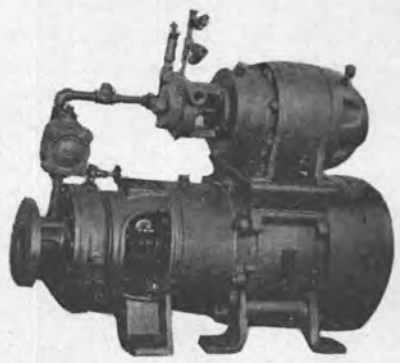
313 E. Baltimore St. Baltimore, Md. 21202
685-1900 (301) 355-5050

INGERSOLL-RAND
PUMPS
From Ex-Naval Vessels

FIRE & FLUSHING PUMP

200 GPM—total head 224'—discharge pressure 100 PSI — 3½" suction — 3" discharge — 3500 RPM—bronze construction—flanged. MOTOR: 20 HP — 440/3/60/3600 RPM — G.E. type K.F.—frame 326 — full load amps 28 — fan cooled — ambient 50°C—class B insulation—totally enclosed — Navy Service A. DIMENSIONS: OAL 37¼"—OAW 18 31/32"—OAH 18½"—total weight 1225 lbs. Reconditioned.

$397.50



FIRE & BILGE PUMP
Self-Priming

200 GPM—bronze—224' head—90/100 lbs fire service—suction lift 23'—3500 RPM. MOTOR: 20 HP—440/3/60/3500 RPM—28 amps—G.E. type KF—frame 326—class B—totally enclosed—Navy Service A — 3½" suction — 3" discharge. PRIMER MOTOR: 1½ HP — 440/3/60/3600 RPM—fan cooled—totally enclosed—2.2 amps. Nash priming pump complete with priming valve. Reconditioned.

$497.50

THE BOSTON METALS COMPANY

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

NEW — UNUSED
ROSS COOLERS
FOR LUBE OIL SERVICE

Screw connections — copper jacket — cupro-nickle tubes. 8" diameter x 6'3" length—84 sq. ft. surface. Water inlet 3"—outlet 3". Oil inlet 2½". Two Pass. Complete with zinc plugs.

$695

THE BOSTON METALS COMPANY

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

Wanted - Tug Boats

Well qualified company wishes to obtain tug boats with long term contracts on charter/purchase basis.

We are well qualified to operate worldwide.

Interested parties please contact

MOSS TOWING, TRANSPORT & SALVAGE
456 Post Street Suite 708
San Francisco, California 94102
Houston, Texas 713 CL 3-5353

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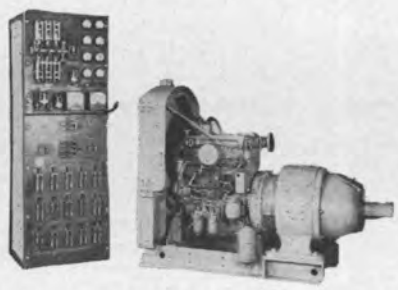
15 KW DIESEL
GENERATOR SET



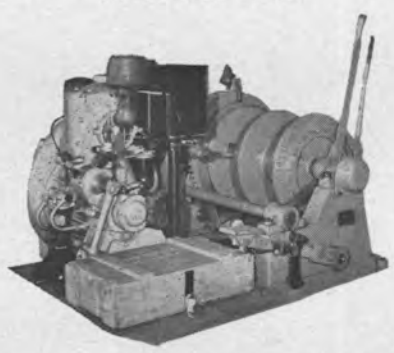
Hercules DOCC 4" X 4½" diesel engine. Generator: Fidelity Electric — LCD3 — 15 KW — 120/240 Volts DC—62.5 amps. With switchboard and automatic transfer switch. From C2-S-AJ2—North Carolina built. Good operating condition.

$1650

THE BOSTON METALS COMPANY

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

NEW
2500 LB DIESEL WINCHES



Small general purpose winches, mfg by Jaeger. Rated 2500 lbs @ 75 FPM. Driven by air-cooled Enfield single Cylinder diesel engine. Declutchable free spooling drum has center flange which can be removed if required. Excellent for small vessel use and general purpose service on all vessels. Has spare parts box. Weight about 1500 lbs.

$1095 EACH

THE BOSTON METALS COMPANY

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

RENT, LEASE OR SALE!

BARGE MOUNTED REVOLVING CRANE 50-Ton capacity, Barge dimensions: 57' wide x 190' long.
CRANES-WHIRLEYS: One American 1956 model R20 HHE heavy duty 50 Ton. One practically new American model 254 capacity 90 Tons at 50', 25 Tons at 140'. One Clyde model 24E 50 Tons at 45'.
CONTINUOUS LIBERTY SHIP DISMANTLING—Marine parts always available.
STEEL BARGES AVAILABLE IMMEDIATELY—180'x42'x12' and 150'x42'x12'—A.B.S. Newly Constructed. OTHER SIZES ALSO AVAILABLE.

SCHNITZER INDUSTRIES
American Ship Dismantlers, Inc.
3300 N.W. Yeon Avenue, Portland, Oregon 97210
Phone: (503) 224-4321 Cable: Schnitzerbro Telex: 503-224-1002
Ft. of Adeline St., Oakland, Calif. Phone: 415-444-3919

T-2 TANKER VALVES

24" OVERBOARD DISCHARGE VALVES

Reconditioned to ABS standards

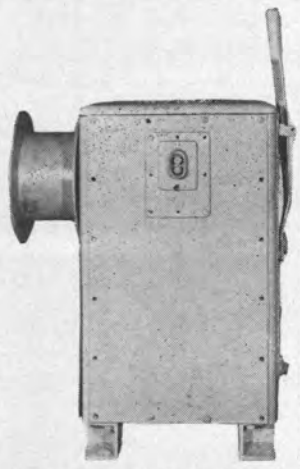
LOW INJECTION VALVE

Rebuilt to ABS and Coast Guard requirements

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
LExington 9-1900 (301) ELgin 5-5050

OCEANOGRAPHIC TYPE WINCH



Designed for use with Bathythermograph—Submarine Signal Co.—type E/2/S—without cables—single speed 300 lb. pull @ 360 FPM—single drum 9" X 6¾"—with 14⅞" flanges—clutch controlled with pawl & ratchet. Designed for use with 1200 ft. of ⅛" stainless cable. Motor: 3 HP—440/3/60—1700 RPM—intermittent. 5 Available—Navy surplus—show little use.

$349.50 EACH

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
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ZIDELL EXPLORATIONS, INC.

Marine Equipment

3121 S.W. MOODY, PORTLAND, ORE. 97201 • PHONE 503/228-8691 (TELEX 036-701

MARINE DIESEL GENERATORS

HERCULES, 10 KW, 120/240 Volts DC, radiator cooled.

BUDA, radiator cooled, 15 KW, 120/240 Volts DC.

FAIRBANKS-MORSE, radiator cooled, 25 KW Continental Generator, 120/208/3/60.

Hercules DJXC. 25 KW, 120 DC

GM 3-71, 30 KW, 120 DC

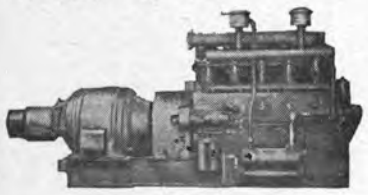
Cummins A1, 30 KW, 120 DC

MURPHY, Model ME 66, radiator cooled, 75 KW, 120/240 Volts DC.

CATERPILLAR DIESEL ENGINE, Model D17000, 167 HP, 900 RPM, Heat Exchanger cooled, with Louis-Allis Generator, 85 KW, 220/3/60

SUPERIOR GBD-8, 100 KW, 125 DC.

LORIMER 100 KW 450/3/60 Volts DC

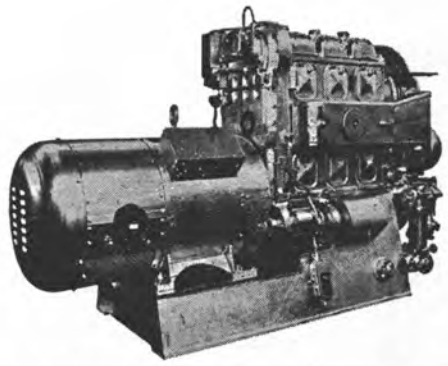


BUDA 6DHG691, 60 KW, 120 Volts DC.

GM-3-268A, 100 KW, 240/120 Volts DC.

SUPERIOR GBD-8, 100 KW, 240/120 Volts DC.

SUPERIOR, Model IDB-8, 100 KW, 450/3/60.



GENERAL MOTORS Diesel Generator Sets Model 3-268A, 152 BHP, 1200 RPM, heat exchanger cooled, with 100 KW Generators, 450 volts AC, 3 phase, 60 cycles.

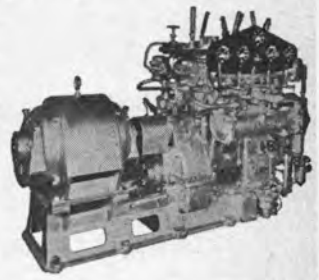
GM 8-268A, radiator cooled, air start with Westinghouse Generator, 250 KW, 440/3/60, complete with switchboard.

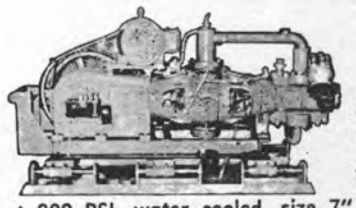
GENERAL MOTORS DIESEL ENGINES, Model 8-278, with 500 KW Generators, 115/230 DC.

AIR COMPRESSORS

WORTHINGTON HIGH PRESSURE

4 stage, rated 20CFH at 3000 PSI (17 CFH at 3500 PSI), with General Electric Motors, 50 HP, 440/3/60.





JOY CLASS WG82

JOY Air Compressors Class WG82, 2-stage rated 100 CFM at 300 PSI, water cooled, size 7" x 3⅜" x 7", Typical Shop #75652, with Reliance motor, 30 HP, 220/440 AC/3/60.

SULLIVAN, 60 CFM, 110 PSI, with 15 HP Motor, 440/3/60.

Ingersoll-Rand, 150 CFM, 600 PSI, 75 HP, 230 DC.

WESTINGHOUSE Air Brake, 246 CFM, 140 PSI, with 50 HP Motors, 440/3/60.

WORTHINGTON, 175 CFM, 125 PSI, with 50 HP Motors, 440/3/60.

STEAM AIR COMPRESSORS
Westinghouse Air Brake Company, Size 11 x 11 x 12, Vertical, rated 66 CFM at 100 PSI (2 available).

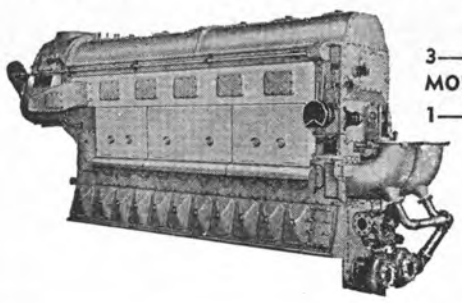
REDUCTION GEARS

Farrel-Birmingham; as originally used on Two 1375 HP electric Motors, in submarine, 2 pinions, Single Output Gear, Pinion RPM 1302, Gear RPM 280; ratio 4.65:1.

FALK REDUCTION GEARS

Port and Starboard, interchangeable with T-3 Tanker Gears, Falk No. 148-300. Also interchangeable with Falk Gears on A051 Class Tankers (14 ships). Also on A097 to A0100 Tankers. Gears are available as complete assemblies and/or rotating elements in sets. Gears offered with a current inspection report of condition by a representative of Falk Corporation.

MARINE DIESEL ENGINES



3—FAIRBANKS-MORSE MODEL 38D8-⅛

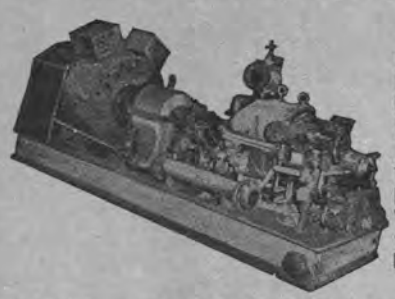
1—Port; 2 Starboard

Used condition, 1800 HP, 800 RPM, 2 cycle, 8½" bore, 10" stroke, Air Start. Complete with Westinghouse Reduction Gears, 2.216:1 ratio—with hydraulic coupling.

4—COOPER-BESSEMER, MODEL LS-8-DR
1300 HP, 277 RPM, direct reversing, turbo charged.

HYDRAULIC PUMPS (STEERING)
Hele Shaw, Type JLP 12, 1000 PSI, 850 RPM. Northern radial piston, Size 5430, 44 GPM, 1500 PSI, 850 RPM.

TURBINE GENERATORS



WESTINGHOUSE Turbines, 440 PSI, 740° F, with Westinghouse Generators, 250 KW, 120/240 DC.

WESTINGHOUSE Turbines, 200 PSI, with Westinghouse Generators, 60 KW, 120 Volts DC.

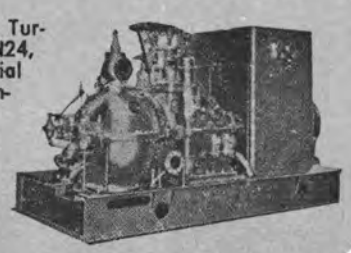
Westinghouse Turbines, 440 PSI, 740°F, with 250 KW Westinghouse Generators, 120/240 DC.
DE-LAVAL Turbines, 450 PSI, 750° F., with Crocker-Wheeler Generators, 300 KW. 120/240 DC.
Worthington Steam Turbine, 440 PSI, 740° F, 6537 RPM, Serial #4989, with Reduction Gear, Form 15.5 x 12, ratio 5.447:1, with General Electric Generator, 600 KW, 440/3/60, Type ATI, 6 pole, 1200 RPM.

JOSHUA HENDY TURBINES, 300 PSI, temperature 550° F. with Westinghouse Generators, 300 KW, 120/240 Volts, DC.

WORTHINGTON Turbines, Form S-4, 440 PSI, 740° F, driving on same common shaft a 250 KW Generator, 440/3/60, and a 90 KW Generator, 125 Volts DC.

WORTHINGTON Turbines, Form S-4, 440 PSI, 740° F, with Crocker-Wheeler Generators, 300 KW, 120/240 Volts DC.

GENERAL ELECTRIC Turbine, Type FN3-FN24, Steam 265#G., Serial 54110, with G.E. Generator, 750 KW, 440/3/60, Frame 985 Y, Serial 5840447.



WATERTIGHT DOORS

As removed from reserve "mothballed" vessels. Huge inventory of practically all sizes and types ready for immediate delivery . . . and more on the way. These doors have the frame trimmed and are suitable for re-use. Doors are available in 4, 6, 8 and 10 dog types; many are "Quick-acting-wheel controlled."

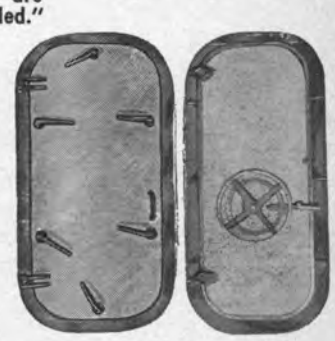
USED, GOOD STEEL

"QUICK-ACTING WHEEL TYPE" and DOG TYPE

Save over new replacement costs as shown in the "Typical Price" listing below . . .

26" x 48"—4 dog type $ 60.00 ea.
26" x 66"—6 dog type $ 85.00 ea.
26" x 66"—Quick Acting $150.00 ea.

Other sizes and prices quoted on request.



Need it now? — Contact ZIDELL EXPLORATIONS . . . Ralph E. Ingram . . . 503/228-8691 MORE

FAIRLEADS

Designed and Manufactured by ZIDELL EXPLORATIONS, INC

To Give You These Features

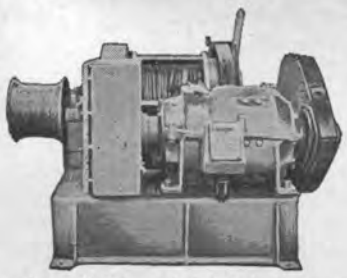
- One size fairlead with universal type sheave to accommodate wire rope sizes 1" up to and including 2".
- Self Aligning, Swivel Type Head.
- Dependable and Ruggedly built to perform consistently year after year with minimum of maintenance.

STANDARD Design ..... $995 each

DELUXE Design .....$1250 each

MODEL Design .....$1350 each

CARGO WINCHES



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

Type 66—single speed, single drum
7450# at 218 FPM
3720# at 287 FPM

Type 67—two speed, single drum
14430# at 107 FPM
7450# at 220 FPM
3700# at 284 FPM

CENTRIFUGES

SHARPLES OIL PURIFIERS—Diesel oil and lube oil types, 1½ HP, various voltages: 440 AC, 120 DC, 230 DC.

STOCKLESS ANCHORS

USED GOOD

3,000 pound size 4,000 pound size
8,000 pound size

ANCHORS

Unused, surplus 3000# size, Danforth.

ANCHOR CHAIN

Used—good—with or without test certificate

1½"size	2-1/16" size
1⅜" size	2¼" size

SPERRY GYRO COMPASSES

SPERRY MARK 14, Model 1 Gyro Compasses, used, good, complete with Master Compass, with Binnacle Amplifier panel, control panel, carbon pile voltage regulator, motor generator set, alarm panel, repeater panel, and repeaters with mounts.

AXIAL FLOW FANS

RE-BUILT GUARANTEED

LaDel, STURTEVANT etc.

In 440 AC, in 115 DC, and in 230 DC, and in sizes 1 HP through 20 HP. Rebuilt and guaranteed.

ANCHOR WINDLASSES

1—LIDGERWOOD horizontal Anchor Windlass, double wildcat—for 2-1/16" Chain, double gypsy, with 50 motors, 230 volts DC, complete with controls.

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

American Engineering, horizontal, double, 2⅛" Chain, 65HP, 230 DC, complete.

7—American Hoist and Derrick Company, horizontal, double wildcat—for 2¼" chain double gypsy, 70 HP, 230 Volts DC, with electric controls.

3—Hesse-Ersted, horizontal, double wildcat, 2⅛" chain, 60 HP, 230 DC.

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

ANCHOR WINCHES

2—Jaeger, single drum—capacity approximately 900' of 1½" wire rope, double gypsy, with 35 HP Motors, 230 Volts DC, complete with electricals.

CAPSTAN WINDLASSES

Model CWP-3, Vertical 24" Planetary Capstan Windlesses, Single Wildcat—using 1¼" Anchor Chain, Single Gypsy with 20 HP motor, 230 volts DC, complete with Contactor Panel, Master Switch, and Resistors.

3—Hesse-Ersted Vertical, Single Wildcat—for 1⅜" Anchor Chain, single gypsy, with HP General Electric Motor, 230 Volts DC, complete with Controller equipment.

Hyde, Vertical, Single Wildcat, for 1⅛" Anchor Chain, single gypsy, with 20/5 HP Motor, 440/3/60.

McKiernan—Terry, Single Wildcat—for ¾" chain, Single Gypsy, with underdeck drive with Star Motor, 7½ HP, 115 DC, with Electrical control equipments.

PROPELLERS AND PROPELLER SHAFTS

Liberty Ship Propellers and Propeller Shafts
LST Propeller Shafts
AP 2 Victory Propeller
C2-S-B1 Propeller, and Propeller Shaft.
C2-SU Propellers and Propeller Shafts

MARINE PUMPS

AC PUMPS
Horizontal Centrifugal

2-GOULDS, 2000 GPM, 470' head, 8 x 10, with Westinghouse Motors, 350 HP, 2300/3/60 Volts AC.

1—WORTHINGTON, 400 GPM, 150 PSI, 5½" suction, 4½" discharge, with G.E. Motors, 73 HP, 440/3/60, 3550 RPM.

1—GOULDS, 300 GPM, 336' head, 3" suction, 2" discharge, with G.E. Motors, 50 HP, 440/3/60, 3550 RPM.

2—WORTHINGTON, 80 GPM, 60 PSI, 2½" suction, 2" discharge, with G.E. Motors, 8 HP, 440/3/60, 3420 RPM.

2—WORTHINGTON, 200 GPM, 100 PSI, 3½" suction, 3" discharge, with Star Motors, 25 HP, 440/3/60.

3-Worthington, 650 GPM, 9PSI, 6" suction, 6" discharge, 6 HP, 440AC.

AC PUMPS
Vertical Centrifugal

8—WORTHINGTON, 275 GPM, 56.6 PSI, 8½" suction, 3½" discharge, with G.E. Motors, 22.9 HP, 440/3/60. 1180 RPM.

4—WORTHINGTON, 100 GPM, 40 PSI, 5" suction, 3" discharge, with G.E. Motors, 7.37 HP, 440/3/60, 1750 RPM.

6—DAYTON-DOWD, 1160 GPM, 15 PSI, 10" suction, 8" discharge, with 10 HP Wagner Motors, 440/3/60.

AC PUMPS, Horiz. Rotary

3—NORTHERN, size 7020, 10 GPM, 200 RPM, for fuel oil, with G.E. Motors, 5 HP, 440/3/60, 1720 RPM.

4—WARREN, 175 PSI, 197 GPM, with Electro-Dynamics Motor, 30 HP, 440/3/60, 1750 RPM.

DC PUMPS
Horizontal Centrifugal

6—Worthington, Size 3UB1, 400 GPM, 280' head, 15 HP, 230 DC.

6—Worthington, Size 4L1, 400 GPM, 83' head, 50HP, 230 DC.

4—WEIL, 400 GPM, 100 PSI, with 40 HP Motors, 230 D.C.

4—GARDNER-DENVER, 900 GPM, 30' head, with 10 HP Crocker-Wheeler Motors, 230 DC, 1150 RPM.

1—Westco, 2" suction, 2" discharge, 100 GPM, 100 PSI, with Imperial Motors, 10 HP, 120 Volts DC.

2—WESTCO, 20 GPM, 50 PSI, with Century Motors, 1½ HP, 115 DC.

DC PUMPS
Vertical Centrifugal

2—Worthington circulating pumps, vertical volute, type 16"—LAS-2, 5600 GPM, 10PSI, with GE motors 20/40 HP, 230 VDC.

2—Ingersoll-Rand, 4" suction, 3" discharge, 450 GPM, 15PSI, with GE motor 10/15 HP, 230VDC.

DC PUMPS, Horizontal Rotary

NATIONAL TRANSIT, fuel oil transfer, 3" suction, 2½" discharge, 50 GPM, 50 PSI, 3 HP, 230 Volts DC.

DC PUMPS, Vertical Rotary

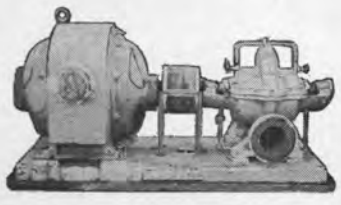
1—DE-LAVAL-IMO, 250 GPM, 40 PSI, for lube oil, with G.E. Motors, 15/20 HP, 230 volts, 1310/1750 RPM.

4—WORTHINGTON Fuel Oil Transfer Pumps, Type 4-GRVS, 225 GPM, 35 PSI, with G.E. Motors, 15/20 HP, 230 Volts DC.

For Victory Ships, C1 Ships, C2 Ships, Etc.
Ingersoll-Rand Main Circulating Pumps, size 18 VCM, vertical centrifugal, 8500 GPM, with 20/40 HP Electro Dynamics Motors, 230 DC.
Worthington Main Condensate Pumps, size UZS-3, vertical volute, type 1½", 70 GPM, 75 PSI, with 5/7.5 HP G.E. Motor, 230 DC.
J. C. Carter Horizontal Centrifugal Pumps, stainless steel, 365 GPM, 250' head, 3" suction, 3" discharge, with enclosed 25 HP Motor, 220/440 AC.
Worthington Vertical Simplex Fire and General Service Pump, steam, size 12 x 11 x 18, 400 GPM, 125 PSI, steam pressure 150 PSI.
Warren Vertical Simplex Boiler Feed Pump, steam, size 12 x 8 x 24, 180 GPM, 545 PSI, steam pressure 375 PSI.

2—Joshua Hendey, Size 14 x 14 x 12, vertical duplex Steam Pumps.

MOTOR PUMPS
Horizontal Centrifugal



Ingersoll-Rand, 3000 GPM, 250' head, Size 8ALV, with Westinghouse Motor, 250 HP, 2200/3/60, Frame 875G, 1775 RPM. (Quantity-2)

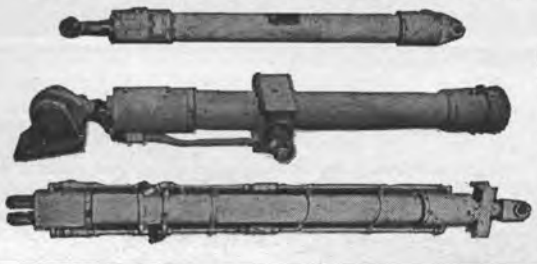
STEAM PUMPS
Horizontal, Duplex

Size 16 x 9 x 12—Buffalo
Size 12 x 8½ x 12—American Marsh
Size 10 x 10 x 12—Worthington
Size 10 x 10 x 12—Wagner

(Many other sizes available)

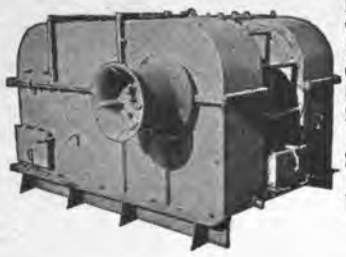
HUNDREDS OF OTHER PUMPS IN OUR STOCK PHONE OR MAIL REQUIRED SPECIFICATIONS

HYDRAULIC CYLINDERS-3000 PSI



Bore	Stroke	Rod Diameter	Overall retracted length	Action
10"	12"	3.75"	45½"	double
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
13"	9'7"	5½"	14'	double

UNIWINCHES



LAKESHORE UNIWINCHES, with Allis-Chalmers Motors, 50 HP, 230 Volts DC, complete with Control Equipment.
Single speed, double drum
7450# at 220 FPM
Single speed, single drum
7450# at 220 FPM
Two speed, single drum
7450# at 220 FPM
14400# at 105 FPM

Contact Ralph E. Ingram

ZIDELL EXPLORATIONS, INC.

MARINE DIVISION, 3121 S.W. MOODY, PORTLAND, ORE. 97201
PHONE 503/228-8691 (TELEX 036-701)

MACHINERY & EQUIPMENTS

As Removed From . . .

S.S. "JAMES O'HARA" (AP-179)

C3-S1-A3

✓For Immediate Sale

H. P. TURBINE—Allis Chalmers Mfg. Co.

MFG. 1942
TYPE: Impulse Reaction
RPM: 5003
SUPERHEAT: 740° F.
STEAM PRESSURE: 440 PSI
VACUUM: 28.5"
SERIAL: 1737

L. P. TURBINE—Allis Chalmers Mfg. Co.

MFG: 1941
TYPE: Straight Reaction
RPM: 4289
SUPERHEAT: 740° F.
STEAM PRESSURE: 440 PSI
VACUUM: 28.5"
SERIAL: 1738

TURBINE GENERATORS—Allis Chalmers Mfg. Co.

TURBINES—Impulse Condensing Type
Normal Steam Pressure: 440 PSI
Normal Temperature: 740° F.
Normal Vacuum: 28.5"
RPM: 8,000

GENERATORS
K.W.: 300
Voltage: 240 DC—2 Wire
Frame: 105 Type: HC
Amperes: 1250 RPM: 1200
Winding: Compound—Cont. Duty

SERIALS	TURBINE	GENERATOR
#1	2822	134870
#4	2960	134826

CARGO WINCHES

2—JAEGER MACHINE COMPANY
2 Drum, 2 Gypsy, 2 Speed, 1-R.H., 1-L.H.
Rating: 12500 lbs. pull at 110 FPM
7500 lbs. pull at 175 FPM
Motors: Westinghouse, 50 HP, 230 DC, 600 RPM

2—PARKERSBURG
2 Drum, 2 Gypsy, Single Speed, 1-R.H., 1-L.H.
Rating: 7500 lbs. pull at 185 FPM
Motors: General Electric, 50 HP, 230 DC, 525 RPM

2—O. C. S. MFG. CO. (Parkersburg)
2 Drum, 2 Gypsy, Single Speed, 1-R.H., 1-L.H.
Rating: 9000 lbs. pull at 125 FPM
Motors: General Electric, 50 HP, 230 DC, 525 RPM

2—VULCAN
1 Drum, 1 Gypsy, 2 Speed, 1-R.H., 1-L.H.
Rating: 14,000 lbs. pull at 105 FPM
7,500 lbs. pull at 185 FPM
Motors: Westinghouse, 50 HP, 230 DC, 600 RPM

2—AMERICAN HOIST & DERRICK CO.
1 Drum, 1 Gypsy, 1 Speed, 1-R.H., 1-L.H.
Rating: 20,000 lbs. pull
Motors: Westinghouse, 50 HP, 230 DC, 600 RPM

CONTAMINATED WATER EVAPORATOR

Davis Engineering Company
Paracoil Size: 36-17
Shell Test: 110#.....Tube Test: 400#
S.O. #21874....Rating: 2500 lbs. per hour

FEED WATER MAKE UP EVAPORATOR

Davis Engineering Company
Paracoil Size: 26-8
Shell Test: 60#.....Tube Test: 300#
Serial #21872....Rating: 1500 lbs. per hr.

TOPPING WINCHES

4—Lakeshore Engineering Company
Single Speed, Capacity 10,000 lbs. at 67 FPM
Motors: 5 HP, 230 volts DC, 1050 RPM, Reliance

ANCHOR WINDLASS—Markey

Type: CWA-4 Enclosed Spur Gear Horizontal—Double Wildcat—for 2-5/6" Chain
Designed for use with 12,500 pound Anchors
Motor: 70 HP, 230 volts DC, 600 RPM, Westinghouse

WARPING CAPSTAN—Markey

Type: CCE-2-B of Worm and Spur Gear Type, with Capstan above deck and Drive unit underdeck, Rated 2,000 lbs. pull at 30 FPM. Motors: 35 HP, 230 volts DC, 600 RPM, Westinghouse.

MAIN CONDENSER—Allis Chalmers

2 pass, Horizontal, Cooling Service 7800 Sq. Ft., Tube Nests—2, Number Tubes each Nest—1530, Size Tubes ¾" O.D. by 13'2¾" long, 18 BWG.

LUBE OIL PURIFIER—Sharples

Type M-34-W-22U43, 350 GPH, Serial #4155832, with 230 volts DC General Electric Motors (2 HP driving Bowl assembly, ¾ HP driving Pumps).

FUEL OIL STANDBY PUMP—Worthington (Standby)

Size: 5½" x 3" x 6" Horizontal Duplex, 13 GPM, 410 PSI.

GENERAL SERVICE PUMP—Worthington (Standby)

Size: 12" x 14" x 18", Vertical Simplex, 600 GPM, 50 PSI

FIRE AND STANDBY PUMP—Worthington (Standby)

Size: 12" x 8½" x 12" Vertical Duplex, 400 GPM, 150 PSI.

AUXILIARY BOILER FEED PUMP—Worthington

Size: 11" x 7" x 24" Vertical Simplex, 120 GPM, 550 PSI.

FRESH WATER PUMPS—Worthington (2-Pumps)

Size: 4" x 6" Horizontal Duplex, 100 GPM, 80 PSI, with Allis Chalmers Motors, 7½ HP, 230 volts DC.

BALLAST PUMP—Allis-Chalmers, Type SGV,

Size: 5" x 5", double suction, Vertical Centrifugal, 600 GPM, 30 PSI, with Allis-Chalmers Motors, 20 HP, 230 volts DC.

SUBMERSIBLE BILGE PUMPS—Worthington (2-Pumps)

5" vertical centrifugal, 600 GPM, 30 PSI, 1200 RPM, with G.E. Motors, 25 HP, 230 volts DC.

BILGE PUMP—Allis-Chalmers

Size: 5" x 5", Type SGV, double suction, Vertical Centrifugal, 600 GPM, 30 PSI, with Allis-Chalmers Motors, 20 HP, 230 volts DC.

EVAPORATOR TUBE NEST DRAIN PUMPS Allis-Chalmers (2-Pumps)

Type SS-LH, Horizontal, Size 2½" x 2", 17 GPM, 127', with Allis-Chalmers Motors, 5 HP, 230 volts DC.

MAIN CONDENSATE PUMPS—Allis-Chalmers (2)

Type CF-2V, Vertical Volute, Size 6" x 3½", 170 GPM, 208' head, with Allis-Chalmers Motors, 20 HP, 230 volts DC, 1310/1750 RPM.

DISTILLER CONDENSATE PUMPS Allis-Chalmers (2-Pumps)

Type SS-L, Size 4" x 2", Horizontal Centrifugal, 45 GPM, with Allis-Chalmers Motors, 2 HP, 230 volts DC, 1900 RPM.

AUXILIARY CONDENSATE PUMPS Allis-Chalmers (2-Pumps)

Type CF-2V, Size 2½" x 1½", Vertical Volute, 30 GPM, 208' Head, with Allis-Chalmers Motors, 7½ HP, 230 volts DC, 1750 RPM.

DIESEL OIL PUMP—Viking

Model ZKK, Gear Type, Size 3" x 2½", 40 GPM, 30 PSI, with General Electric Motor, 2 HP, 230 volts DC, 850 RPM.

DISTILLER FRESH WATER DISTRIBUTION PUMPS Allis-Chalmers (2-Pumps)

Type SS-DH, Horizontal Centrifugal, Size 2½" x 2", 55 GPM, 51', with Allis-Chalmers Motors, 2 HP, 230 volts DC, 2200 RPM.

FIRE PUMPS—Allis-Chalmers (2-Pumps)

Type B2-V, Size 4" x 3", Vertical Centrifugal, 400 GPM 280' head, with Allis-Chalmers Motors, 50 HP, 230 volts DC, 1425/1900 RPM.

MAIN FEED PUMP

Terry Turbine Type ZS-1, 124 HP, 4150 RPM, 440 PSI, 740' with Ingersoll-Rand Horizontal Pump, 4" x 3½", 4 stage, 250 GPM, 1340' head, Size 2 NT-4.

STEERING GEAR PUMPS—Waterbury (2-Pumps)

Size 5, Type K, with Westinghouse Motors, 55 HP, 230 volts DC.

LUBE OIL SERVICE PUMP—Quimby (2-Pumps)

Type: Vertical Screw, Size 5, 400 GPM, 48 PSI, 6" x 5", with Allis-Chalmers Motors, 25 HP, 230 volts DC, 575/1150 RPM.

FUEL OIL TRANSFER PUMP—Quimby

Type: Vertical Screw, Size 4D, 225 GPM, 50 PSI, with Allis-Chalmers Motor, 15 HP, 230 volts DC, 500/700 RPM.

FUEL OIL SERVICE PUMP—Quimby

Type: Vertical Screw, Size 2½", 20 GPM, 400 PSI, 2½" x 1½", with Allis-Chalmers Motor, 10 HP, 230 volts DC, 575/1150 RPM.

ICE WATER CIRCULATING PUMP—Allis-Chalmers

Type SS-RH, Size 1" x ¾", 10 GPM, 81' head, Vertical Volute, with Allis-Chalmers Motor, 1 HP, 230 volts DC, 3500 RPM.

HOT WATER CIRCULATING PUMP—Allis-Chalmers

Type SS-HH, Size 1¼" x 1¼", 35 GPM, 70' head, Vertical Volute, with Allis-Chalmers Motor, 2 HP, 230 volts DC, 3500 RPM.

REFRIGERATION CONDENSER CIRCULATING PUMP Allis-Chalmers (2 Pumps)

Type SJK, Size 2½" x 2", 180 GPM, 81' head, Horizontal Volute, with Allis-Chalmers Motors, 7½ HP, 230 volts DC, 2600/3500 RPM.

MAIN CONDENSER CIRCULATING PUMP Allis-Chalmers

Type LS-V, Size 20" x 20", 12,550 GPM, 20' head, Vertical Volute, with Allis-Chalmers Motor, 100 HP, 230 volts DC, 540 RPM.

AUXILIARY DISTILLER CIRCULATING PUMPS Allis-Chalmers (2-Pumps)

Type SG, Size 5" x 5", 650 GPM, 29' head, Horizontal Volute, with Allis-Chalmers Motors, 7½ HP, 230 volts DC, 1750 RPM.

AUXILIARY CONDENSER CIRCULATING PUMPS Allis-Chalmers (2-Pumps)

Type SE-V, Size 12" x 12", 2820 GPM, 29.2' head, Vertical Volute, with Allis-Chalmers Motors, 40 HP, 230 volts DC, 860/1150 RPM.

AIR COMPRESSOR—Ingersoll Rand

Type 40, 2 stage, Air Cooled, 7" x 6¼" x 5", 110 PSI, 194 CFM, with Allis-Chalmers Motor, 40 HP, 230 volts DC, 1750 RPM.

STEAM WHISTLE—Leslie Co.

Typhon-300 DVE, Bul. 421, Dwg. #T842, Inlet Size 1½", voltage 115.

FORCED DRAFT BLOWER—American Blower Co. (2)

Sirocco Size 5½", Capacity 17560 CFM, with Allis-Chalmers Motors, 75 HP, 230 DC, 510/1275 RPM.

DIESEL GENERATOR—Caterpillar

D17000, Diesel, 167 HP, with G.E. Generator, 75 KW, 120/240 volts DC, 900 RPM, Model 25G257.

COURSE RECORDER—Sperry

Mark 65091, Serial #1047

AUTOMATIC PILOT—Sperry

Mark 642840, Serial #1865

LIFE BOAT DAVITS—Welin (8 Sets)

Size 135, Gravity Trackway Type, Capacity 21,500#.

LIFE BOAT DAVITS—Welin (2 Sets)

Size C-65, Crescent Type, Capacity 6500#

ANCHORS (1)

Stockless, Weights; 10,150#

ANCHOR CHAIN—(18 Shots)

Stud Link, Size 2-5/16"

LIFE BOAT WINCHES—Welin (8)

Type BWB, with G.E. Motors, 25 HP, 230 volts DC.

LIFE BOAT WINCHES—Welin (2)

Type CWB, with G.E. Motors, 12.5 HP, 230 volts DC.

AIR COMPRESSOR—Chicago Pneumatic

Size 9⅜" x 5½" x 5½", 100 PSI, 161 CFM, 2 stage, Air Cooled, Model PB2, with G.E. Motor, 40 HP, 230 volts DC, 1800 RPM, Type CDM, Frame 95.

ZIDELL EXPLORATIONS, INC.

for Electrical Equipment

3121 S.W. MOODY AVENUE, PORTLAND, OREGON 97201. CONTACT H. S. "MAC" McINTOSH, 503/228-8691 (TELEX: 036-701)

ELECTRIC MOTORS

Miscellaneous D.C. Motors

1—Westinghouse, 304 HP, 115 V., D.C., 900 RPM, Sh. Wd., 2 pedestal bearings.

3—Allis-Chalmers, 50 HP, 230 V., D.C., 600 RPM, Comp'd Wd., Mod. MDS-11975

6—Westinghouse, 50 HP, 230 V., D.C., 600 RPM, Comp'd. Wd., Type CK, Fr. 9

4—Westinghouse, 9.3 HP, 230 V., D.C., 640/852 RPM, Type SK, Fr. 93

20—Westinghouse, 7½ HP, 120 V., D.C., 1750 RPM, Stab. Sh. Wd., Type SK, Fr. 43

Others in stock: 5 HP & up . . . 115 & 230 V.

Motors for C-1-B Forced Draft Blowers

2—Westinghouse, 15 HP, 230 V., D.C., 1150/2300 RPM, Stab. Sh. Wd., Type SK, Fr. 83

Motor for C-2-S-B1 Boiler Feed Pump (Aldrich)

1—General Electric, 25 HP, 230 V., D.C., 1800/2400 RPM, Stab. Sh. Wd., Type CDM, Fr. 86

Refrigeration Compressor Motors

3—Electro-Dynamic, 18/25 HP, 230 V., D.C. 1225/1750 RPM., Comp'd. Wd., Fr. 7½-S

5—Allis-Chalmers, 15 HP, 230 V., D.C., 1225/1750 RPM, Stab. Sh. Wd., Type EB90

2—Allis-Chalmers, 10 HP, 230 V., D.C., 1225/1750 RPM, Comp'd. Wd., Type EB80

Many more for all types compressors from 1 HP & up

Steering Gear Motors

2—General Electric, 30 HP, 230 V., D.C., 600 RPM, Stab. Sh. Wd., Type CDM, Fields Continuous Duty, Armature 1 Hr

1—Westinghouse, 35 HP, 230 V., D.C., 850 RPM, Stab. Sh. Wd., Type SK, Fr. 123, Fields Continuous Duty, Armature 1 Hr.

UNUSED G.E. ELECTRIC MOTORS

3—General Electric, 25 HP, 115 V., D.C., 1200 RPM, Type CDM, Ball Bearing, Drip Proof Motors, Unused.

High Pressure Air Compressor Motors

2—Electro-Dynamic, 55 HP, 250 V., D.C., 550 RPM, Comp'd. Wd., Fr. 25-SL, Single Ball Bearing.

INQUIRIES INVITED ON:

DRY TRANSFORMERS • AC & DC GEAR MOTORS • CENTRIFUGAL FANS • PROPELLER FANS • PORT HOLE FANS • BRACKET FANS • SALINITY PANELS • SALINITY INDICATOR CELLS • ELECTRIC TELEGRAPHS • RUDDER ANGLE INDICATORS • DIESEL ENGINE STARTING CONTACTORS • AC & DC SWITCHBOARDS

UNUSED G.E. GENERATORS

3—General Electric, 15 KW., 1000 A., 15 V, Type CDM, Ball Bearing, Drip Proof Generators, unused.

D.C. MARINE CONTROLLERS

1—Cutler-Hammer, 250 HP, 230 V., D.C., No. 232 793A14

2—General Electric, 225 HP., 230 V., D.C., CR 5430-B32D

1—Cutler-Hammer, Unused, 50 HP, 230 V., D.C., No. C280981A290, Contactor Panel for Stern Anchor Haulage Winch.

Many others from .25 HP & up—115 & 230 V.

ROTOTROLS

15—Westinghouse Rototrols, driven by 5 HP, 440 V., 3-phase, 60 cycle, 1700 RPM, A.C. Motors.

SPARE ARMATURES

For C-3 Auxiliaries . . . Send for List A-1.

D.C. TRANSFER PANEL

Cutler-Hammer, 3-pole, 300 A., 120/240 V., D.C., Bul. 6007, No. B870102A2.

CIRCUIT BREAKERS

2 and 3 Pole Air Breakers. 1, 2, & 3 Pole Molded Case Navy Type Breakers. 2 & 3 Pole Trip Elements for Molded Case Breakers.

Ship's Lighting M-G SETS

2—General Electric, 220 HP, 230 V., D.C., 1800 RPM, Stab. Sh. Wd., Driving 150 KW, 120 V., D.C. Generators. These are 4 bearing units.

1—General Electric, 250 HP, 230 V., D.C., 1200 RPM Motor, Driving 150 KW, 120 V., D.C. Generator. This is a 4-bearing unit.

D.C. GENERATORS

1—Westinghouse, 500 KW., 120/240 V., D.C., 750 RPM, Fr. CB 813.7, 2 Pedestal Bearing with Balance Coils.

6—Westinghouse, 100 KW, 120/240 V., D.C., 1800 RPM, Type SK, Fr. 143.8, Single B.B.

3—Delco, 100 KW, 120/240 V., D.C., 1200 RPM, Single Bushed Bearings.

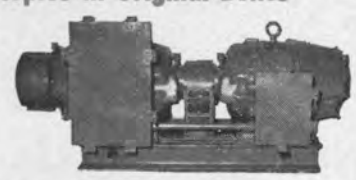
2—Westinghouse, 250 KW., 120/240 V., D.C., 1200 RPM, single pedestal Bearing, less Balance Coils.

1—Allis-Chalmers, 100 KW, 120/240 V., D.C., 1200 RPM, Single Bearing

10—Westinghouse, 90/165 KW., 125/400 V., 1200 RPM., Type SK, Fr. 185, 2-B.B., Separately Excited—125 V.

Wide Selection from 250 Watts & up—In 115 & 230 V.

MOTOR-GENERATOR SETS, Unused Surplus In Original Boxes



Janette M-G Sets. Input: 1.75 HP, 230 V., D.C., 7.2 Amperes, 1800 RPM. Output: 1-KVA (.85 KW), 115/1/60, 4 ball bearing, with speed regulator, and with noise filters. Navy Type CJM—21151, continuous duty Net weight 435#, Dimensions 44" L, 19½" W. 18⅝" H. Instruction book and parts list included.

TRACTION GENERATORS

6—General Electric Mod. 5GT581C1

1—General Electric Mod. 5GT567B1

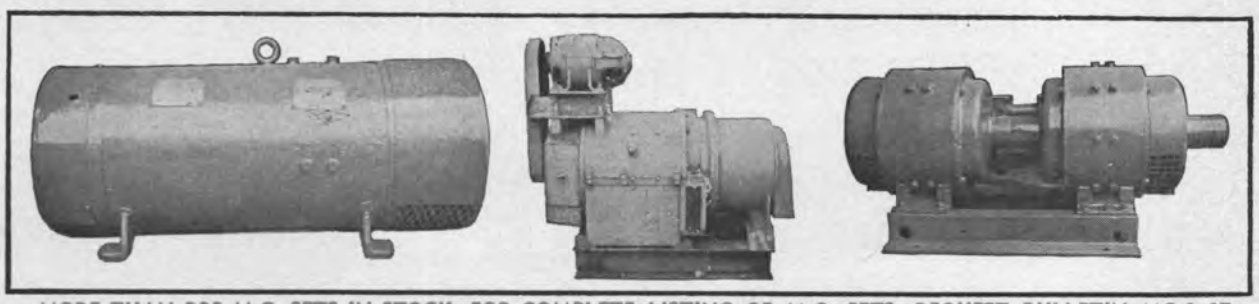
Motor-Generator Sets . . . immediate service

DC to AC:

1—Star. Input: 125 HP, 230 DC. Output 75 KW, 440/3/60
1—Ideal. Input: 40 HP, 115 DC. Output: 25 KW, 440/3/60
1—Hallett. Input: 25 HP, 230 DC. Output: 15 KW, 120/3/60
2—Barke. Input: 20 HP, 230 DC. Output: 12.5 KW, 120/1/60
2—Bogue. Input: 15 HP, 230 DC. Output: 12.5 KW, 120/1/60
1—Hertner. Input: 5.5 HP, 115 DC. Output: 3.6 KW, 120/1/60
1—Fidelity. Input: 15 HP, 230 DC. Output: 10 KW, 120/1/60
1—Electric Specialty Input: 12 HP, 120 DC. Output: 5 KW, 440/3/60
1—Electric Specialty. Input: 4.5 HP, 115 DC. Output: 3.5 KW, 120/1/60
2—Star. Input: 7½ HP, 230 DC. Output: 3.75 KW, 120/1/60
26—Janette. Input: 1.75 HP, 230 DC. Output: 1 KVA, 115/1/60

AC to DC:

2—General Electric. Input: 125 HP, 440/3/60. Output: 75 KW, 120 DC
2—General Electric. Input: 85 HP, 440/3/60. Output: 60 KW, 120 DC
1—General Electric. Input: 75 HP, 220/440/3/60 Output: 50 KW, 230 DC
1—Delco. Input: 30 HP, 220/440/3/60. Output: 20 KW, 120 DC
1—Westinghouse. Input: 15 HP, 220/440/3/60. Output: 7.5 KW, 120 DC
1—Westinghouse. Input: 10 HP, 220/440/3/60. Output: 6 KW, 120 DC
1—Westinghouse. Input: 7½ HP, 220/440/3/60. Output: 5 KW, 120 DC



MORE THAN 200 M.G. SETS IN STOCK; FOR COMPLETE LISTING OF M.G. SETS, REQUEST BULLETIN MG-1-67

FOR PROMPT SERVICE ON ALL ELECTRICAL EQUIPMENT, CONTACT H. S. "Mac" McINTOSH....

503/228-8691

All other marine equipment, please call Ralph Ingram!

NEW-UNUSED LIBERTY SHIP
Troy-Enberg 20 KW Generators

WHILE THEY LAST

$695 CLOSE OUT PRICE

Factory Packages

120 volts DC—400 RPM—drip-proof marine type. 2-Wire direct connected set. Reciprocating 6 x 7 type E vertical self-oiling steam engine—plug & piston valve—220 lbs PSI—80 lbs. BP.

THE BOSTON METALS COMPANY

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

VERTICAL BOILER

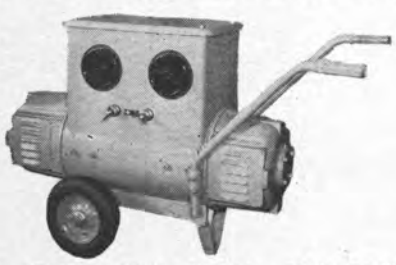
Suitable for
Pile Drivers
Steam Cranes
Hoists
etc.

100 HP @ 100 PSI. Water heating surface 747 sq. ft.—total heating surface 1144 sq. ft. A.S.M.E. Built by International Boiler Works—East Stroudsburg, Pa.—Height to top of cylinder 12'0"— Diameter 66"—4" main steam line—two 1½" safety valves—practically new—very little if any use. Oil burning.

THE BOSTON METALS COMPANY

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

FACTORY-NEW
200 AMP WELDERS



Motor: 10 HP—230 volts DC—2800 RPM. 200 amps max. continuous welding. Range regulation 15/200 amps. Dimensions: 38" X 30" X 20". Weight: 514 lbs. Shipping case—48" X 35" X 25". Complete with 100 ft. welding cable—ground clamp & electrode holder. Built to Lloyd's—Register BS 638—1954.

$1495 EACH

ASK FOR FLEET PRICE

THE BOSTON METALS COMPANY

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

DIESEL PROPULSION UNITS

MURRAY & TREGURTHA HARBORMASTER

3 Model 0-7 units in stock. Powered by twin GM 6-71 diesels with hydraulic clutch & electric steering. Propeller diam. 64" pitch 48". Tailfin raised & lowered mechanically. 7' from bottom of unit to propeller hub center. Weight about 20,000 lbs. Propeller speed 308 RPM. Unit can develop up to 500 HP. Formerly used on Cargill Grain Co. barge "Carpolis". Actual photo on request. Can be demonstrated running in shop.

1—0-6 Series — Single engine — GM 6-71. Hydraulic controls—electric steering. PROPELLER: Maximum RPM 308—64" diameter—48" pitch. Deck to centerline of propeller 7½'.

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
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BERGER
Self-Aligning
MARINE FAIRLEADS

Model 626—for 2" wire. 26" Sheave—shank opening 9½"—4960 lbs.—BASE: 36" long—50" wide—throat 9½".

THE BOSTON METALS COMPANY

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

WINDLASS FOR 1" CHAIN

New—unused. Single wildcat—P.C. type—gypsy head 19" diam. x 12" high—driven by 7½ HP 120 volt DC motor, with all controls and spare parts, including spare motor armature. Mfg by McKiernan-Terry.

THE BOSTON METALS COMPANY

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

LESLIE PUMP GOVERNOR VALVE

New—in original crates. For U.S. Naval Vessels—type CT-HNS-3. For merchant vessels—type CTHS. Size 2". Typical serial 241-423. For immediate delivery.

$495

THE BOSTON METALS COMPANY

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

AXIAL FLOW FANS

NEW
UNUSED
230 V. D.C.

Navy size A10D2W6—LaDel Co., 10,000 CFM @ 3" S.P. MOTOR: Reliance Motor Co.—7.5/3.1 HP, 230 VDC—1310/1750 RPM. DIMENSIONS: 32⅛" OD—31¼" BC—29¼ ID—40¾" length.

$4500

Navy size A8D2W5—Buffalo Forge Co.—8000 CFM @ 3" S.P. MOTOR: G.E. 6/1.8 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 30 9/16" OD—29¼" BC—27¼ ID—37¾" length.

$3295

AF80—Sirocco—8000 CFM @ 2" S.P. MOTOR Welco 4/1.9 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 30½" OD — 29¼ BC — 27¼ ID—37¾" length. U.S. Maritime type fan.

$3295

AF100—Sirocco—10,000 CFM @ 2" S.P. MOTOR: Welco 5/2.2 HP—230 VDC—1310/1750 RPM. DIMENSIONS: 32½" OD—31⅛" BC—29¼ ID—40⅝" length. U.S. Maritime type fan.

$3750

NEW — UNUSED — 115 V.D.C.

20000 C.F.M. — 115	10000 C.F.M. — 115
16000 C.F.M. — 115	5000 C.F.M. — 115 (explosion-proof)
12000 C.F.M. — 115	4000 C.F.M. — 115

RECONDITIONED — 440 V.A.C.

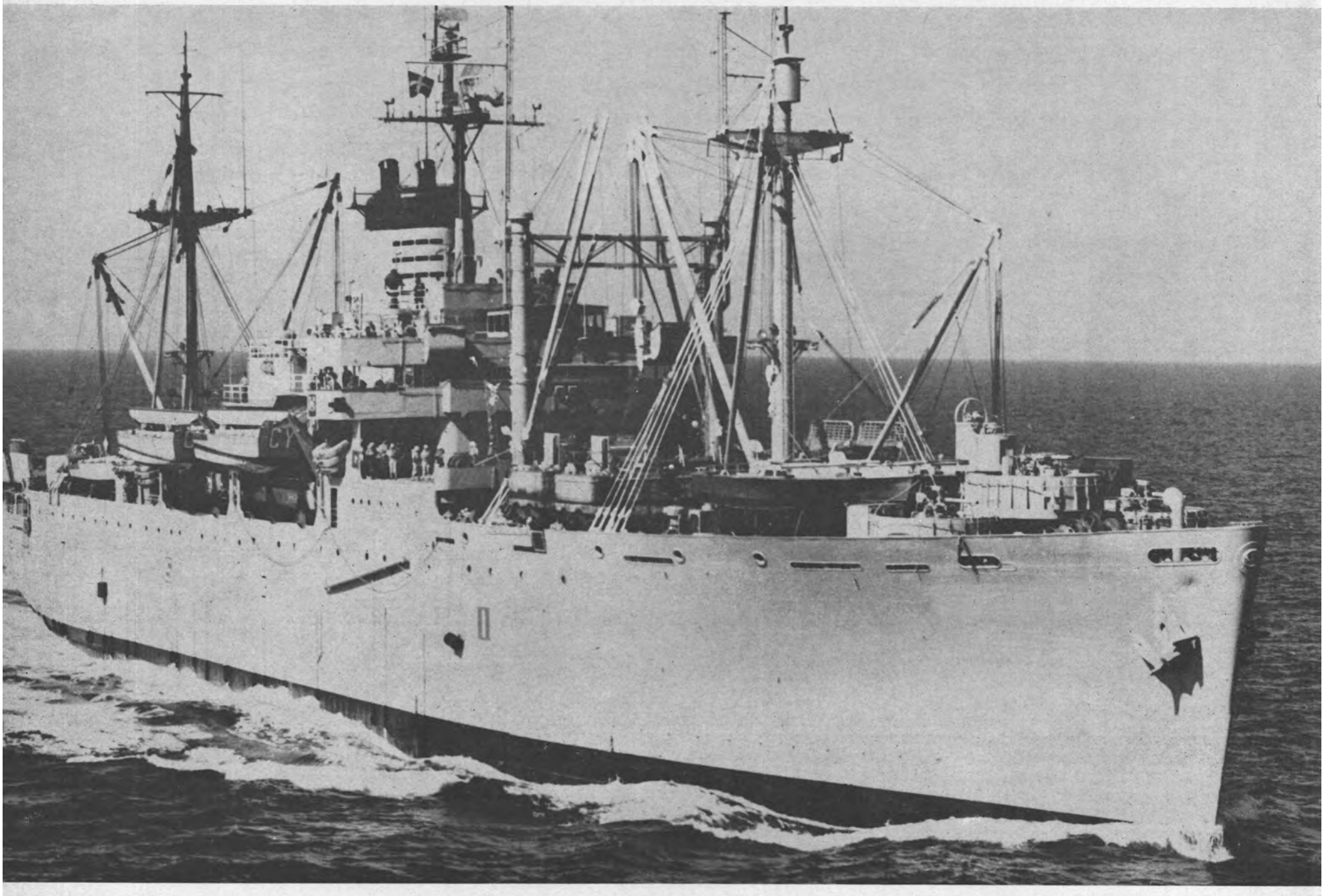
A1A4W5 to A16A4W5—with starter—440/3/60

1000 C.F.M.	6000 C.F.M.
2000 C.F.M.	8000 C.F.M.
3000 C.F.M.	10000 C.F.M.
4000 C.F.M.	16000 C.F.M.

THE BOSTON METALS COMPANY

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

NOW DISMANTLING
C-3 SHIP



USS GEORGE CLYMER

"EX-AFRICAN PLANET BASIC TYPE C3P (P&C)"

Constructed by Ingalls Shipbuilding Corp.

Hull Number 267
General Electric Cross Compound Turbine with Double Pinion
Double Reduction Locked Reduction Gear
Single Screw 8500 SHP, 2 Foster Wheeler Type D Boilers

MAIN PROPULSION TURBINES
General Electric 8500 S.H.P.

High Pressure Turbine: 6159 RPM, 440 lbs., 740 F., 8 Stage non-condensing, Serial Number 45733, Instruction book 11729.

Low Pressure Turbine: 3509 RPM, 39.6 lbs., 360 F., 8-2 Stages, Condensing, Serial Number 45734, Instruction Book 11729.

General Electric Main Reduction Gear: Ratio 6159/3509/763/85 RPM, Double Reduction, Forced Lubrication.

BOILERS (2)

Main Boilers: Foster Wheeler Type "D" Boilers, 2 Drum, Designed Pressure, 525 PSI, 765 F., 37,000 lbs.

GENERAL ELECTRIC
300 KW DC TURBO SETS (3)

Generators: 300 KW DC, 120/240 Volts, 1200 RPM, 1250 Amps, Type MPC, Model 24G869, 3 Wire, Compound Wound, Serial Numbers 1772432, 1759090 and 1759105.

Turbines: Type DS 60-25 , 5636 RPM, 440 PSI, 740 F., Serial Numbers 44387, 44388, and 44389.

Reduction Gears: Ratio: 5636/1200 RPM, Serial Numbers 44765, 44766 and 44767.

CONDENSERS

Main Condenser: Worthington, 7800 Sq. Ft., Two Pass, 54000 lbs. Exhaust Steam Per Hour, 28.5" Vacuum. Will sell water box or return head separately.

Auxiliary Condensers (3): Worthington, 605 Sq. Ft., Two Pass, 3675" Exhaust Steam Per Hour, 28.5" Vacuum. Will sell water box or return head separately.

MACHINE TOOLS

Shaper, Western Machine, Steptoe, 24", 40" Col. 65" Ram. 7.5 HP, Electro Dynamic Motor 230 Volts DC, 1800 RPM.
Drill Press, Helpern Co., Back Geared, Type 20", 1 HP Dynamic Motor 230 Volts DC, 1750 RPM.

PUMPS MOTOR DRIVEN

Main Condensate 1 Pump: Worthington 2½ UZS-1 Pump, 12.7 H.P. Driver, 1750 RPM, 180 TDH, 140 GPM, Serial Number 997584.
Motor: Electro Dynamic Works D-326 Frame, 7.5-12.7 H.P., 1310-1750 RPM motor, 230 Volts, S.O. 20-D-7359, DP 40°C. Continuous, 29-48 Amps, Shunt Stab. Winding, Serial Number 52109 - 52110.

Main Condensate 2 Pump: Worthington 2½ UZS-1 Pump, 12.7 H.P. Driver, 1750 RPM, 180 TDH, 140 GPM, Serial Number 997582.
Motor: Electro Dynamic Works D-326 Frame, 7.5-12.7 H.P., 1310-1750 RPM, 230 Volts, S.O. 20-D-7359, DP 40°C. Continuous, 29-48 Amps, Shunt Stab. Winding, Serial Number 52112 - 52114.

Fire and Sanitary Pump: Worthington 3UB-1 Pump, 50 H.P. Driver, 1750 RPM, 280 TDH, 400 GPM, Serial Number 997601.
Motor: Electro Dynamic Works 10-S Frame, 28-50 H.P. 1310-1750 RPM, 230 Volts, S.O. 20-D-7365, DP 40°C., Continuous, 100A-180A Amps, Shunt Stab. Winding, Serial Number 51966 - 51965 - 73291.

Fresh Water Washing 1 Pump: Worthington 1½ DE Pump, 7.5 H.P. Driver, 3500 RPM, 173 TDH, 80 GPM, Serial Number 1009178.
Motor: Electro Dynamic Works D-254 Frame, 7.5 H.P., 3500 RPM, 230 Volts, S.O. 20-D-7803, DP 40°C. Continuous, 29 Amps, Shunt Stab. Winding, Serial Number 53780.

Fresh Water Washing 2 Pump: Worthington 7.5 H.P. Driver, 3500 RPM, 173 TDH, 80 GPM, Serial Number 1009180.
Motor: Electro Dynamic Works D-254 Frame, 7.5 H.P., 3500 RPM, 230 Volt, S.O. 20-D-7803, DP 40°C. Continuous, 29 Amps, Shunt Stab. Winding, Serial Number 73778.

Refrig. Condenser Circulating 2 Pump: Worthington 3LI Pump, 7½ H.P., 1800 RPM, 78.5 Ft. TDH, 200 GPM, Serial Number 1009225.
Motor: Electro Dynamic Works D-324 Frame, 4.5-7.5 H.P., 1250-1800 RPM, 230 Volts, S.O. 20-D-7804, DP 40°C. Continuous, 18-28 Amps, Shunt Stab. Winding, Serial Number 53741 - 53735.

Refrig. Condenser Circulating 3 Pump: Worthington 3LI Pump, 7½ H.P., 1800 RPM, 78.5 Ft. TDH, 200 GPM, Serial Number 1009220.
Motor: Electro Dynamic Works D-324 Frame, 4.5-7.5 H.P., 1250-1800 RPM, 230 Volts, S.O. 20-D-7804, DP 40°C. Continuous, 18-28 Amps, Shunt Stab. Winding, Serial Number 53742 - 53738.

Drinking and Culinary Water 1 Pump: Worthington, 1½ x 2 Size, Serial Number 1023528.
Motor: Electro Dynamic Works D-804 Frame, .75 H.P., 1310-1750 RPM, 230 Volts, S.O. D-7807, DP 40°C. Continuous, 3.3 Amps, Shunt Stab. Winding, Serial Number 53789.

Fire Pump: Worthington 3" UBS-1, 50 H.P. Driver, 1750 RPM, 280 Ft. TDH, 400 GPM, Serial Number 1009281.
Motor: Electro Dynamic Works 10.5 Frame, 28-50 H.P., 1310-1750 RPM, 230 Volts, S.O. 20-D-7805, DP 40°C. Continuous, 100-180 Amps, Shunt Stab. Winding, Serial Number 53718.

Main Circulating Pump: Worthington 20" LAS-1 Pump, 100 H.P. Driver, 645 RPM, 24.5 TDH, 12,200 GPM, Serial Number 997526.
Motor: Electro Dynamic Works 40-5 Frame, 60-100 H.P., 485-645 RPM, 230 Volts, S.O. 20-D-7358, DP 40°C. Continuous, 220-358 Amps, Shunt Stab. Winding, Serial Number 51942 - 51943.

Fuel Oil Service Pump: Worthington, Serial Number 090507, Size 2 GRVS.
Motor: Electro Dynamic Works D-365 Frame, 5/10 H.P., 875/1750 RPM, 230 Volts, 20/38 Amps, Shunt Stab. Winding, Type D.P., Serial Number 54001 - 54002.

Fuel Oil Service Standby Steam: Worthington, Serial Number 996919, Size 6" x 3½" x 12".

Fuel Oil Transfer Pump: Worthington, Serial Number 990508, Size 5 GRVS.
Motor: Electro Dynamic Works D-365 Frame, 12-15 H.P., 1310-1750 RPM, 230 Volts, S.O. 20-D-7368, DP 40°C. Continuous, 44-56 Amps, Shunt Stab. Winding, Serial Number 51983 - 51981.

General Service Pump: Worthington 20 HP Driver, 5L1 Pump, 1750 RPM, 56 TDH, 800 GPM, Serial Number 1009275.

Refrig. Condenser Circulating Pump: Worthington 3LI Pump, 7½ Driver H.P., 1800 RPM, 78.5 TDH, 200 GPM, Serial Number 1009218.
Motor: Electro Dynamic Works D-324 Frame, 4.5-7.5 H.P., 1250-1800 RPM, 230 Volts, S.O. 20-D-7804, DP 40°C. Continuous, 18-28 Amps, Shunt Stab. Winding, Serial Number 53737 - 53736.

Ballast Pump: Worthington 5LI Pump, 15 H.P Driver. 1750 RPM, 56 TDH, 600 GPM, Serial Number 997607.
Motor: Electro Dynamic Works D-363 Frame, 9-15 H.P., 1310-1750 RPM, 230 Volts, S.O. 20-D-7366, DP 40°C. Continuous, 34-56 Amps, Shunt Stab. Winding, Serial Number 51975 - 51978.

Submersible Bilge Pump Pump: Worthington 5" J.A.S. Pump, 20 H.P. Driver, 56 Ft. TDH, 600 GPM, 1150 RPM, Serial Number 1019103.
Motor: Electro Dynamic Works D-445 Frame, 20 H.P., 1150 RPM, 230 Volts, S.O. 20-D-7808, Open 45°C. Continuous, 75 Amps, Shunt Stab. Winding, Serial Number 53799 - 53801.

Auxiliary Condensate 1 Pump: Worthington 1-½-2 Stage, 3/5 Driver H.P., 3500 RPM, 180 TDH, 30 GPM, Serial Number 1018240.
Motor: Electro Dynamic Works D-254 Frame, 3/5 H.P., 2620-3500 RPM, 230 Volts, S.O. 20-D-7360, DP 40°C. Continuous, 11/20 Amps, Shunt Stab. Winding, Serial Number 51946 - 54320.

Auxiliary Condensate 2 Pump: Worthington 1-½-2 Stage, 5 Driver H.P., 3500 RPM, 180 TDH, 30 GPM, Serial Number 1028267.
Motor: Electro Dynamic Works D-254 Frame, 3/5 H.P., 2620-3500 RPM, 230 Volts, S.O. 20-D-7360, DP 40°C. Continuous, 11/20 Amps, Shunt Stab. Winding, Serial Number 71432.

Hot Water Circulating Pump: Worthington 1½DxS Pump, ¾ H.P. Driver, 1950 RPM, 15 Ft. TDH, 25 GPM, Serial Number 1027115.
Motor: Electro Dynamic Works D-204 Frame, ¾ H.P., 1460-1950 RPM, 230 Volts, S.O. 20-D-7808, DP 40°C. Continuous, 3.3 Amps, Shunt Stab. Winding, Serial Number 53784 - 71497.

PUMPS STEAM DRIVEN

Auxiliary Feed Steam: Worthington Pump & Machinery Corp. Simplex Vertical Steam Type, 14" x 9" x 24" Size, 550-575 Discharge Press, 60 Ft. Per Minute Piston Speed, Serial Number 996976.

Port Feed Worthington Pump & Machinery Co., Simplex Vertical Steam Type, 11" x 7" x 24" Size, 550-575 Lb./Sq. Inch Discharge Press, Serial Number 997011.

Priming Pump Pump: Nash Engineering Co. (Nash Hytor Vacuum Pump), 1750 RPM, Size M.D. 574, Test Number 2664.
Motor: Electro Dynamic Works D-225 Frame, 2 H.P. 1750 RPM, 230 Volts, S.O. 20-D-8235, DP 40°C. Continuous, 8 Amps, Shunt Stab. Winding, Serial Number 71494 - 71493.

FEED WATER HEATERS

1st Stage: Davis Engineering Company, 6N-97D, 18533 S.D., 50 lbs., Shell Test, 150 lbs. Tube Test.

Direct Contact: 2 Each, Worthington, 75, 580 lbs. per hour Size, 50 lbs. Shell Test, T.H.C. B.M.I.N., Feed Water Heater Vent Condenser, Serial Number 997557.

DIESEL GENERATOR SETS

2 — General Motors Model 8-268A, 450 HP at 1200 RPM, Direct Connected to 290 KW, 525 BHP, Serial Number 50393 and 7249. Directed Connected To:
1 — 290 KW General Electric Generator, 120/240 Volts DC, 1200 RPM, Type CDM, Model 1647Y, Serial Number 1862418.
1 — 290 KW Westinghouse Electric Generator, Frame DP 810.6, Serial Number 7-S-22-9-780, 120/240 Volts DC, 1200 RPM.

AIR CONDITIONING EQUIPMENT

Compressors: 8 Each, Carrier Corp., 7G8-250EF Model, S.O. Number 7G8 444. Approximately 25 Ton.

Motors: Electro Dynamic Works, Form 7½S, Compound Wound, 18/25 HP, 1225/1750 RPM, 67-97 Amps, 230 Volts DC, 50 C. Duty Cont., Serial Number 54402 - 54422.

AIR COMPRESSOR

Worthington, Model V3A2, 66CFM at 110 PSI, 500 RPM, 6x6x5 with 16 HP Electro Dynamic Motor, 230 Volts DC, 1750 RPM, Compound Wound.

DECK MACHINERY

Winches — 8 Each: Model U6A, American Hoist & Derrick Co., 3720 lbs. Pull at 287 ft. per minute.
Motors: Model U6, General Electric, 50 HP, Compound Wound, 230 Volts DC, 183 Amps, 525 RPM, 1900 RPM, Model Number-26B737 - 16N710.

Winches — 2 Each: Model "Uniwinch" U3H, American Hoist & Derrick Co., 3720 lbs. Pull at 289 ft. per minute.
Motors: Same as above.

Winches — 2 Each: Model Two Speed, 50 Ton, McKiernan-Terry Corp.
Motors: Same as above.

Winches — 2 Each: Ten Ton Type, Model 75M, American Hoist & Derrick Co., 3720 lbs. Pull at 287 ft. per minute.
Motors: Same as above.

Winches — 2 Each: 50 H.P. Tow Speed, Cargo Handling Winch, Vulcan Iron Works (Hyde Windlass Co.), 7500 lbs. Pull at 185 ft. per minute.
Motors: Same as above.

Anchor Windlass: Mfr. McKirnan-Terry, two 16,000 lbs. Anchor depth at 30 FPM. Motor G.E. 70 HP 230 volt D.C. 600 RPM.

Warping Capstan: Mfr. McKirnan-Terry, 30 FPM line pull 20,000#. Motor G.E. 34 HP 230 volt D.C. 600 RPM.

EVERYTHING IN C-1MAV-1 EQUIPMENT

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in good condition

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22" x 3" between mounting holes

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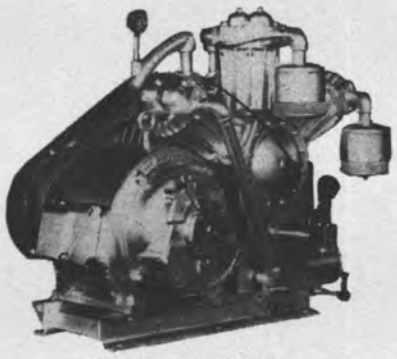
SHIPBOARD
AIR COMPRESSORS

DIESEL-DRIVEN INGERSOLL RAND

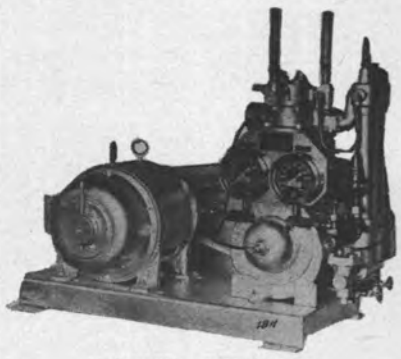
Ingersoll-Rand compressor—315 cu. ft. at 125 lbs. —driven by International Harvester UD-18 diesel. Tank mounted on skid—radiator cooled—from Corps of Engineers salvage vessel.



SHIPS SERVICE

Ingersoll-Rand—type 30—class R—5x5x4x4—50 CFM @ 150 lbs. 20 HP 440/3/60 motor & controls—1750 RPM—50°C—class A. Complete with centrifugal unloader. OAL 4' 1⅛"—OAH 3' 2½" —OAW 2' 6½"—total weight 1505 lbs.

$1250



DIESEL STARTING

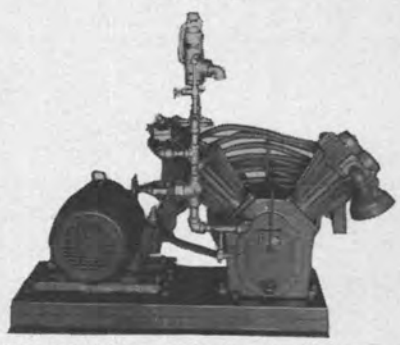
Ingersoll-Rand type 30—class T—4 x1½x3½—10 CFM at 600 lbs.—7.5 HP—motor is 440/3/60—1750 RPM—class A—50°C—weight 700 lbs. Complete with inter- and after cooler. OAL 3'6"—OAH 4'1½"—OAW 2'2¾".

$1750

T2 TANKER SHIPS SERVICE

Worthington—5½x3⅛x3½—VA2—20 CFM @ 100 lbs. Motor 5 HP—440/3/60—1750 RPM—marine type ball-bearing drip-proof—fan cooled—with magnetic starter & self-unloader. OAL 4' 8½" —OAH 28"—OAW 25 5".

$695



T2 TANKER SHIPS SERVICE

Ingersoll-Rand type 30—model 253x5—5x3x3½ —20 CFM @ 100 lbs—self unloader. Westinghouse 5 HP 440/3/60 motor.

$695

T2 TANKER COMBUSTION CONTROL

Ingersoll-Rand type 30—5x5 & 4x4—54.4 CFM @ 100 lbs. Motor 15 HP—440/3/60—1750 RPM—with magnetic control, self-unloader, etc. Weight complete 1122 lbs. OAL 4' 11¼"—OAH '2 10"—OAW 2' 7¾".

$995

T2 TANKER COMBUSTION CONTROL

Worthington 6½x3½x4—VA2—52 CFM @ 100 lbs. Motor is 15 HP—440/3/60—1750 RPM. Complete with magnetic starter, self-unloader, etc.

$995

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313 E. Baltimore St. Baltimore, Md. 21202
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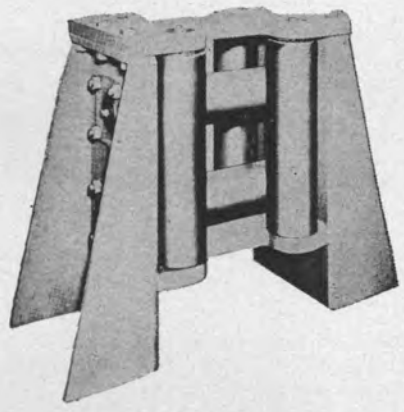
NEW 7" RADIUS PANAMA CHOCKS

(Meet Panama Regulations)

With Extended Legs For Welding To Deck

Clear opening 10" x 14" — 7" radius — with extended legs for welding to deck. Use as double or single bow chock. OAL 28" on base — OAW 14" — OAH 27¾" — Cast Steel.

IMMEDIATE DELIVERY FROM STOCK



NEW UNIVERSAL CHOCKS

6 Rollers—2 horizontal and 4 vertical. For fairleads in all directions — inboard and outboard. Strong construction—easy to maintain. Fulfills all requirements of St. Lawrence Seaway, etc. Excellent for container chips. 5½" Rollers for vessels up to 20,000 tons. For vessels from 20,000 to 150,000 tons, series L with 7⅝" rollers. OAH 30"—OAL 30"—OAW 17".

BULWARK-MOUNTED CHOCKS

for curved or flat plate

7" RADIUS—14" x 10" opening

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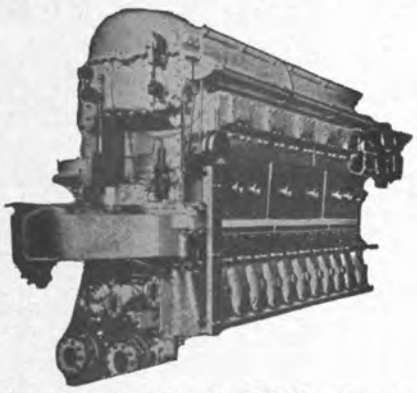
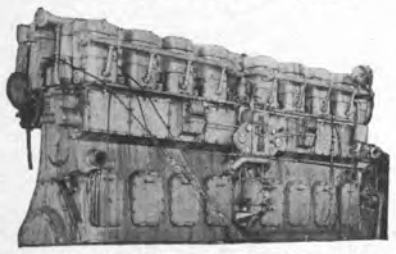
FAIRBANKS - MORSE 38D8 1/8 DIESEL



(4)—10 Cylinder—2-cycle—1800 HP @ 800 RPM. 8⅛x10—air starting—reversible. Complete with Harrison coolers, sylphon valves, strainers, filters, etc. For immediate delivery.

COOPER-BESSEMER DIRECT REVERSIBLE MAIN ENGINE



Type LS — 15½ x 22 — turbo-charged engine—BHP 1300 @ 270 RPM. Air starting @ 250 lbs. Complete with air tanks, heat exchanger and all accessories. Preserved in equal-to-new condition. Also spare pistons, cylinder liners, valves, etc. Still aboard Corps of Engineers vessel. Serial No. 2172—Buchi Turbo-charged.

NORDBERG DIESEL From C1-MAV-1

Practically new—complete—with very little use. 1700 HP @ 180 RPM—6-cylinder—21½"x29"—complete with all heat exchangers, strainers, etc.

G.M. 16-278A 1700 BHP MAIN PROPULSION DIESEL ENGINES

16-Cylinder Vee type—8¾ x 10½. Air starting—never run commercially. All taken from Navy D.E. vessels. You'll be surprised by the good condition of these engines. Buy now and save.

USE AS PROPULSION ENGINES OR BUY FOR PARTS

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Only 6 engines remaining for sale.

$9750.00

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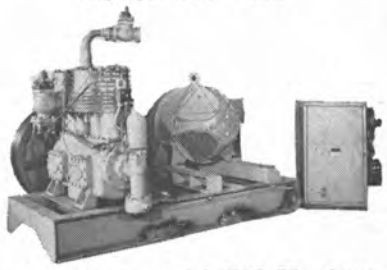
CARRIER REFRIGERATION UNITS

40-Ton Air Conditioning & Cargo Refrigeration Units



Carrier compressor—model 7G8-EF—freon compressor with manual cylinder cut-out—426 RPM—39.4 tons—suction temp. 45°F—cond. temp.—105°F—35 HP—230 volt DC motor. Complete with motor control—refrigeration condenser—receiver — fittings. 8 Complete units. Dimensions: Compressor 6'8½" long—4' 10½" OAW—approx. 6' high over suction connection. Condenser about 14' long—approx. 12" diameter. Just removed from Grace Line vessels. Excellent for fishing industry, banana boats, air-conditioning quarters, etc.

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New Watertight Doors

FOR IMMEDIATE DELIVERY

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

SIZES:
26" x 48"
26" x 57"
26" x 60"
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30" x 60"

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M.G. SETS

NEW JANETTE 1 KVA SETS

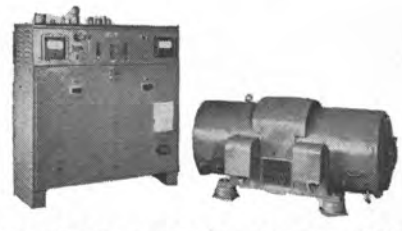
2-Bearing Sets—type D.E.—3L. MOTOR INPUT: 2 HP—115 volts DC—3.5 amps—1800 RPM. OUTPUT: type C.E.I.—120 volts 60 cycle single phase. 8.3 amps—40°C Temp rise—0.8 P.F.

$179.50

1.24 KW G.E. MG SETS

G.E. Motor—3 HP—115 volts DC—1800 RPM. OUTPUT: G.E. generator—1.24 KW—1.56 KVA—120/60/1—0.8 PF—14.2 amps—1800 RPM. With spare armature. Overspeed trip on motor side.

$339.50



25 KW IDEAL M.G. SETS

INPUT: 40 HP—115 volts DC—290 amps—1800 RPM—frame 445. OUTPUT: Generator 31.5 KVA—25KW—440/3/60—1800 RPM. Control cabinet includes motor starter & generator control.

UNUSED SURPLUS 1 KVA SETS

INPUT: 1.75 HP—115 Volts DC—17 amps—1800 RPM. OUTPUT: 1 KVA—115 volts—8.7 amps—60 cycle single phase—0.9 PF. Unit is self-excited and will carry load immediately on starting. Regulation ±5%. Complete with magnetic starter & spare parts. Units designed and built to rigid Navy specs. SIZE: 19.5" long—26.5" wide—16" high. Weight 285 lbs. SPARES: 85 lbs. CONTROL: 20"X15"X10"—75 lbs.

$189.50

NEW 0.5 KVA HERTNER SETS

Type CHT-211761. INPUT: Motor 115 volts DC—9.0 amps—1800 RPM—1 HP. OUTPUT: 0.5 KVA—115 volts single phase 60 cycle—4.3 amps—.85 PF.

$127.50

CONTINENTAL: 3.7 KW—Input: 7½ HP 230 volts DC/28 amps/1800 RPM. Type D-324X—continuous. Output: Generator type DS-324XB 3.7 KW/7.5 KVA/120/1/60—62.5 amps—0.5 PF compound wound.

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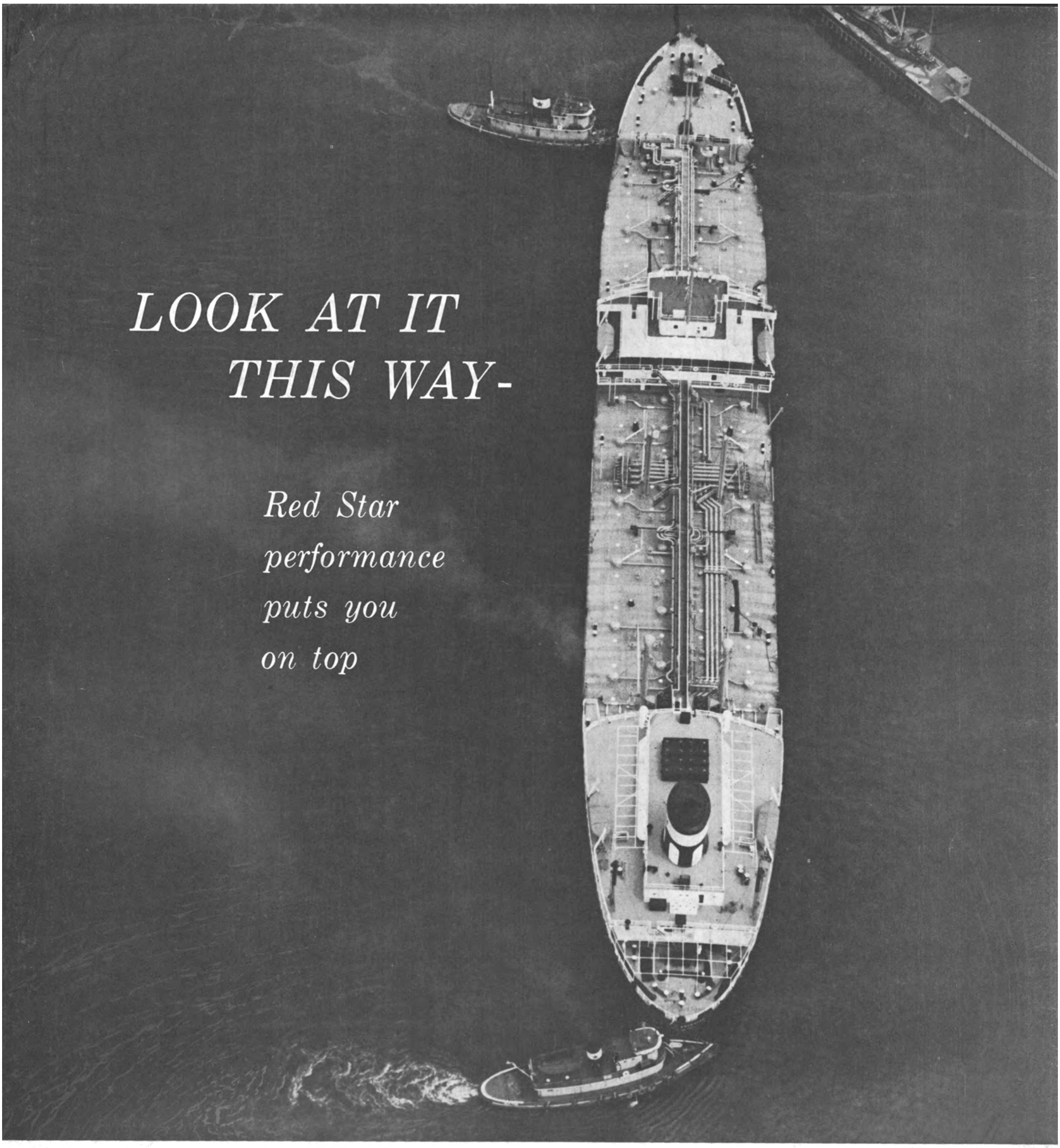
DIESEL ACCESSORIES
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Kiene Diesel Accessories, Inc., P.O. Box 216, Franklin Park, Ill. 60131
DIESEL ENGINES
Alco-Worthington Corp., 401 Worthington Ave., Harrison, N.J. 07029
Burmeister & Wain, 2 Torvegade, Copenhagen K, Denmark
Electro-Motive Division General Motors, La Grange, Illinois 60525
Fiat, Turin, Italy, U.S.A. 375 Park Ave., New York, N.Y. 10022
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
H. O. Penn Machinery Co., Inc., Caterpillar dir., 140th St. & East River, New York, N.Y. 10454
Stewart & Stevenson Services, Inc., 4516 Harrisburg Blvd., Houston, Texas 77011
DIESEL ENGINE MUFFLERS
Marine Products & Engineering Co., 20 Vesey St., New York, N.Y. 10007
DOORS—Watertight—Bulkhead
Blue Water Marine Supply, Inc., 2102 69 St., P.O. Box 9156, Houston, Texas 77006
Overbeke-Kain Co., 209 Aurora Rd., Bedford, Ohio 44014
Walz & Krenzer, Inc., 20 Vesey St., New York, N.Y. 10007
ELECTRICAL EQUIPMENT
Arnessen Marine Systems, Inc., 335 Bond St., Brooklyn, N.Y.
L. F. Gaubert & Co., 700 So. Broad St., New Orleans, La. 70150
Oceanic Electrical Mfg. Co., Inc., 148 Perry Street, N.Y., N.Y. 10004
Owesen & Co., Inc., 315 Notre Dame, New Orleans, La. 70130
Pauluhn Electric Mfg. Co., Inc., 422 Broome St., New York 10013
Worthington Corp., 401 Worthington Ave., Harrison, N.J. 07029
EVAPORATORS
Aqua-Chem, Inc., 225 N. Grand Ave., Waukesha, Wis. 53186
Bethlehem Steel Corp., Shipbuilding, 25 B'way, N.Y., N.Y. 10004
Mechanical Equipment Co., Inc., 861 Carondelet St., New Orleans, La. 70130
FITTINGS & HARDWARE
Kerotest Mfg., Corp., 2516 Liberty Ave., Pittsburgh, Pa. 15222
Nashville Bridge Co., P.O. Box 239, Nashville, Tenn. 37202
FLOATING EQUIPMENT—Steel—Aluminum Pontoons
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
FUEL RECOVERY
Tretolite Div., Petrolite Corp., 369 Marshall Ave., St. Louis, Mo. 63119
GALLEY RANGES
Elisha Webb & Son Co., 136 So. Front St., Philadelphia, Pa. 19106
HEAT EXCHANGES
Aqua-Chem. Inc., 225 N. Grand Ave., Waukesha, Wis. 53186
HEATERS—Ship
Todd Products, Div. of Todd Shipyards Corp., Brooklyn, N.Y. 11231
HYDRAULICS
Bond Hydraulics Equipment Service Inc., 9264 Kennedy Blvd., North Bergen, N.J. 07047
Vickers, Marine & Ordnance Division, P.O. Box 302, Troy, Mich. 48084
INSULATION—Marine
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Bklyn, N.Y. 11231
LIFEBOATS AND LIFE RAFTS—SURVIVAL EQUIPMENT
Protection Equipment Co., 100 Fernwood Ave., Rochester, N.Y. 14621
Welin Davit and Boat Division, 500 Market Street, Perth Amboy, N.J. 08862
LORAN
Radio Corporation of America
Radiomarine Products Dept., Bldg. 15-5, Camden, N.J. 08102
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
MACHINE SHOP—TROUBLE SERVICE
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
MARINE DRIVES—GEARS
Philadelphia Gear Corp., Schuylkill Expressway, King of Prussia, Pa. 19406
Western Gear Corp., Industrial Products Div., P.O. Box 126, Belmont, Calif. 94003
MARINE EQUIPMENT
Brazos Engineering, a div. of Metallic Bldg. Co., 4625 Holmes Road, Box 14240, Houston, Texas 77021
Gulf Coast Marine, Inc., P.O. Box 52987, Houston, Texas 77052
H & H Engineering Co., 430 So. Navajo, Denver, Colo. 80223
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Kearfott Marine (Div. of The Singer Co.) 21 West St., New York, N.Y. 10006
Pacific Coast Eng. Co., P.O. Drawer E, Alameda, Calif. 94506
Vokes Filter Div. (Cardwell Machine Co.), Cardwell and Castlewood Rd., Richmond, Va. 23221
Worthington Corp., 401 Worthington Ave., Harrison, N.J. 07029
MARINE FURNITURE
Bailey Joiner Co., 115 King Street, Brooklyn, N.Y. 11231
MARINE INSURANCE
Adams & Porter, Cotton Exchange Bldg., Houston, Texas
MARINE PROPULSION
The Buehler Corp., 9000 Precision Drive, Indianapolis, Ind. 46236
Combustion Engineering, Inc., Windsor, Connecticut 06095
De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602
Foster Wheeler Corp., 666 Fifth Ave., New York, N.Y. 10019
General Electric Co., Schenectady, N.Y. 12305
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
Port Electric Turbine Div., 155-157 Perry St., New York 10014
Stal-Laval, Inc., 147 E. 50th St., New York, N. Y. 10022
Western Gear Corp., Precision Products Div., P.O. Box 190, Lynwood, Calif. 90262
NAVAL ARCHITECTS AND MARINE ENGINEERS
BG Marine Services, Div. of Genge Industries, Inc., 4419 Van Nuys Blvd., Sherman Oaks, Calif. 91403
Coast Engineering Co., 711 West 21 St., Norfolk, Va. 23517
Commercial Radio Sound Corp., 652 First Avenue, N.Y., N.Y. 10016
Consultec, 1725 K St., N.W., Washington, D.C. 20036
Crandall Dry Dock Engineers, Inc., 238 Main St., Cambridge 42, Mass.
Design Associates, Inc., 3308 Tulane Ave., New Orleans, La. 70119
Designers & Planners, Inc., 114 Fifth Ave., New York, N.Y. 10011
M. Mack Earle, 103 Mellor Ave., Baltimore, Md. 21228
Christopher J. Foster, 17 Battery Place, New York, N.Y. 10004
14 Vanderventer Ave., Port Washington, N.Y. 11050
Friede and Goldman, Inc., 225 Baronne St., New Orleans, La. 70112
Gibbs & Cox, Inc., 21 West St., New York, N.Y. 10006
Morris Guralnick, Associates, Inc., 74 New Montgomery St., San Francisco, Calif. 94105
J. J. Henry Co., Inc., 90 West St., New York, N.Y. 10006
L. K. Homyer, Box 408, Corona Del Mar, California 92625
James S. Krogen, 1460 Brickell Ave., Miami, Fla. 33131
Littleton Research and Engineering Corp., 95 Russell Street, Littleton, Mass. 01460
Robert H. Macy, P.O. Box 758, Pascagoula, Miss. 39567
Marine Applications Co., Inc., P.O. Box 167, Mineola, N.Y. 11502
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 1180 Ave. of the Americas, N.Y., N.Y. 10036
Rudolph F. Matzer & Associates, Route 1 - Box 314 D, Jacksonville, Fla. 32211
John J. McMullen Associates, Inc., 17 Battery Pl., New York, N.Y.
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Robert Moore Corp., 350 Main St., Port Washington, N.Y. 11050
Gunnar Nelson, 2185 Lemoine Ave., Ft. Lee, N.J. 07024
Pearlson Engineering Co., Inc., 2825 Oak Ave., Miami, Fla. 33133
Research & Design Corp., 17 Battery Place, Suite 1227 New York, N.Y. 10004
Philip L. Rhodes, 369 Lexington Ave. ,New York, N.Y. 10017
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 45 Second St., San Francisco, Calif.
Sanders & Thomas, Inc., 1st-Federal Bldg., Pottstown, Pa. 19464
George G. Sharp, Inc., 100 Church St., New York, N. Y. 10007
George Slifer, 1422 Lakewood Rd., Jacksonville, Fla. 32207
Philip F. Spaulding & Associates, 65 Marion St., Seattle, Wash. 98104
R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
Richard R. Taubler, 44 Court St., Brooklyn, N.Y. 11201
H. M. Tiedemann & Co., Inc., 74 Trinity Pl., New York, N.Y. 10006
Transcaribbean Shipping & Trading Corp., Panam Docks, Isla Grande, P.O. Box 564, San Juan, P.R. 00902
H. Newton Whittelsey, Inc., 17 Battery Pl., New York, N.Y. 10004
NAVIGATION INSTRUMENTS
Electronic Concepts Inc., (Div. of Automatic Sprinkler Corp. of America) P.O. Box 813, Charlottesville, Virginia 22902
Fisher Research Laboratory, 1890 Embaracadero Road, Palto Alto, California 94303
Griffith Marine Electronics, Inc., 79 Fourth Street, New Rochelle, N.Y. 10801
Kaar Electronics Corp., 2250 Charleston Road, Mountain View, Calif. 94041
Marquardt Corp., 16555 Saticoy St., Van Nuys, Calif. 91406
National Marine Service, 1750 So. Brentwood Blvd., St. Louis, Mo.
RF Communications, Inc., 1680 University Ave., Rochester, N.Y. 14610
Radio Corporation of America
Radiomarine Products Dept., Bldg. 15-5, Camden, N.J. 08102
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
OIL & POLLUTANT DISPOSAL
Spentonbush Fuel Transport Service, 500 Fifth Ave., N.Y. 10036
OIL PURIFIERS—Repair
Norse Electric Mfg. Co., Inc., 57-59 Commerce St., Bklyn, N.Y. 11230
OILS—Marine—Additives
Esso International Inc., Esso Bldg., 15 West 51 St., New York, N.Y.
Gulf Oil Trading Co., 1290 Ave. of the Americas, New York, N.Y.
Mobil Oil Co., Inc., 26 Broadway, New York, N.Y. 10004
Refineria Panama, S. A., 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
PAINT—Marine—Protective Coatings
Amercoat Corp., 201 N. Berry St., Brea, Calif. 92621
Devoe & Raynolds Co., Inc., Marine Division, Newark, N.J. 07105
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
International Paint Co., 21 West St., New York, N.Y. 10006
Mobil Chemical Company, Metuchen, N.J. 08840
PETROLEUM SUPPLIES
Independent Petroleum Supply Co., 277 Park Ave., New York 10017
Refineria Panama, S. A. 277 Park Ave., New York, N.Y. 10017
Shell Oil Co., 50 W. 50 St., New York 10020
Texaco, Inc., 135 E. 42nd St., New York, N.Y. 10017
The West Indies Oil Co., Ltd. St. John's, Antigua, W. I.
PLASTICS—Marine Applications
Atlas Minerals & Chemical Div., ESB, Inc., Mertztown, Pa. 19539
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadephia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

POLLUTION CONTROL
Enjay Chemical Co., 60 West 49th St., New York, N.Y. 10020
Tretolite Div., Petrolite Corp., 369 Marshall Ave., St. Louis, Mo. 63119
PROPELLERS: NEW AND RECONDITIONED
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Baldwin-Lima-Hamilton Corp., Phila., Pa. 19142
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Bird-Johnson Co., 883 Main Street, Walpole, Mass. 02081
Escher Wyss, G.M.B.H., 798 Ravensburg, Germany
Federal Propellers, 150 Buchanan Ave., S.W., Grand Rapids, Mich. 49502
PUMPS
De Laval Turbine, Inc., 853 Nottingham Way, Trenton, N.J. 08602
RADAR AND RADIO EQUIPMENT
Collins Radio Co., M/S 416 - 118, Dallas, Texas 75207
Decca Radar, Inc., 386 Park Ave. So., New York, N.Y. 10016
Kaar Electronics Corp., 2250 Charleston Road, Mountain View, Calif. 94041
Marquardt Corp., 16555 Saticoy St., Van Nuys, Calif. 91406
RF Communications, Inc., 1680 University Ave., Rochester,N.Y. 14610
Radio Corporation of America
Radiomarine Products Dept., Bldg. 15-5, Camden, N.J. 08102
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
RATCHETS
American Forge & Mfg. Co., McKees Rocks, Pa. 15136
W. W. Patterson Co., 830 Broket St., Pittsburgh, Pa. 15233
REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Frigitemp Corp., 329 Herzl St., Brooklyn, N.Y. 11212
Thermo King Corp., 314 W. 90 Street, Minneapolis, Minn. 55420
York Corp., Grantley Road, York, Pa. 17405
ROPE—Manila—Nylon—Hawsers—Wire
American Mfg. Co., Inc., Nobie & West Sts., Brooklyn, N.Y. 11222
Cating Rope Co., 309 Genesee St., Auburn, N.Y. 13022
Columbian Rope Co., Auburn, N.Y. 13022
Jackson Rope Corp., 9th & Oley, Reading, Pa. 19604
Plymouth Cordage Company, Plymouth, Mass. 02364
Tubbs Cordage Company, 200 Bush St., San Francisco, Calif.
RUBBER PRODUCTS—Dock Fenders, Hose, Life Preservers
Hughes Bros., Inc., 17 Battery Pl., New York, N.Y. 10004
RUDDER ANGLE INDICATORS
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
SEALS
Golten Marine Co., Inc., 160 Van Brunt St., Brooklyn, N.Y. 11231
Syntron, a division of FMC Corp., 398 Lexington Ave., Homer, Pa. 15748
SEARCHLIGHTS
Portable Light Co., Inc., 67 Passaic Ave., Kearny, N.J. 07032
Snelsen Oilfield Lighting Co., 1201 E. Daggett St., Fort Worth, Texas 76104
SEWAGE DISPOSAL
Youngstown Welding & Engineering Co., 3708 Oakwood Ave., Youngstown, Ohio 44509
SHIPBREAKING—Salvage
The Boston Metals Co., 313 E. Baltimore, Md. 21202
National Metal & Steel Corp., 1251 New Dock St., Terminal Island, Cal. 90731
Northern Metal Co., Minor & Bleigh Sts., Philadelphia, Pa. 19136
Peck Equipment Co., 3500 Elm Ave., Portsmouth, Va. 23704
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201
SHIP BROKERS
Gulf Coast Marine, Inc., P.O. Box 52987, Houston, Texas 77052
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
SHIPBUILDING—Repairs, Maintenance, Drydocking
Albina Engine & Machine Works, 2100 N. Albina Ave., Portland, Ore. 97227
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Astilleros de Codiz, S.A., Zurhono 72, 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. 28560
Bender Ship Repair, Inc., 265 So. Water St., Mobile, Ala. 36602
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Blount Marine Corp., P.O. Box 360, Warren, Rhode Island 02885
Brewer Dry Dock Co., Mariners Harbor, Staten Island, N.Y.
Ira S. Bushey & Sons, Inc., 764 Court St., Brooklyn, N.Y. 11231
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Dravo Corporation, Neville Island, Pittsburgh 25, Pa.
Equitable Equipment Co., Inc., 410 Camp St., New Orleans, La. 70130
Gotaverken American Corp., 39 Broadway, New York 6, N.Y.
Halifax Shipyards, Ltd., P.O. Box 640, Halifax, Nova Scotia, Canada
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hitachi Shipbuilding Co., 25Nakanoshima2-chomeKitaku,Osaka-Japan
Ishikawajima-Harima Heavy Industries Co., Ltd., 50 Broad Street New York, N.Y. 10004
Jacksonville Shipyards, 644 E. Bay St., Jacksonville, Fla.
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Koigan-dori, Ikuta-ku, Kobe, Japan
LISNAVE, P.O. Box 2138, Lisbon, Portugual
Litton Industries, 9920 W. Jefferson Blvd., Culver City, Calif. 90230
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Lone Star Marine Salvage Co., 7200 S. Harbor Drive, Houston, Texas 77001
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mitsui Shipbuilding & Eng. Co., Ltd., Nihonbashi-Muromachi, Chuo-ku, Tokyo, Japan
Nashville Bridge Co., P.O. Box 239, Nashville 1, Tenn.
National Steel & Shipbuilding Corp., San Diego 12, Cal.
Newport News Shipbuilding and Dry Dock Co., Newport News, Va.
Nippon Kokan Kabushiki Kaisha, 2, 1-chome, Otemachi, Chivoda-ku, Tokyo, Japan
O.A.R.N. (officine Allestimento e Riparazioni Navi) Genoa, Italy
Pacific Coast Engineering Co., P.O. Drawer 6, Alameda, Calif. 94506
Pearlson Engineering Co., Inc., 2825 Oak Ave., Miami, Fla. 33133
Perth Amboy Dry Dock Co., Perth Amboy, N.J.
Puerto Rico Drydock and Marine Terminals, Inc., P.O. Box 2209, San Juan, Puerto Rico 00903
Redermond Industries, Foot of Henderson St., Jersey City, N.J. 07302
St. Louis Shipbuilding—Federal Barge, Inc.
611 East Marceau, St. Louis 11, Mo.
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Sociedad Espanola De Construccion Naval Sagasto, 27, Madrid 4, Spain
Tampa Ship Repair & Dry Dock Co., Inc., P.O. Box 1277, Tampa, Florida 33601
Terrin Agency, Inc., 17 Battery Place, New York, N.Y. 10004
Todd Shipyards Corp., 1 Broadway, New York City
Vare Corp., Equipment Systems Div., 516 Sylvan Ave., Englewood Cliffs, N.J. 07632
Vickers Ltd., 222 London Rd., St. Albans, Herts England
Wiley Mfg. Co., Port Deposit, Md.
Wyatt Industries Inc., Port Houston Shipyard Div., P.O. Box 3052, Houston, Texas 77001
SHIP MODELS
Boucher-Lewis Precision Models, Inc., 36 E. 12 St., N.Y., N.Y. 10003
SHIP STABILIZERS
Lidgerwood Mfg. Co., (Superior Lidgerwood Mundy Corp.), 7 Dey Street, New York, N.Y. 10007
John J. McMullen Associates, Inc., 17 Battery Pl., N.Y., N.Y. 10004
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
STEAM GENERATING EQUIPMENT
Combustion Engineering, Inc., Windsor, Connecticut 06095
STEVEDORING
M. P. Newlett, Inc., 415 32nd St, Union City, N J
Luckenbach Steamship Co., 120 Wall St., New York 5, N.Y.

SWITCHBOARDS
Hose McCann Telephone Co., Inc., 524 23rd St., N.Y. 10011
SYNTHETICS
E. I. Dupont De Nemours & Co., Inc., Textile Fibers Dept., Wilmington, Delaware
TANK CONTAINERS
Fruehauf Trailer Div., Fruehauf Corp., 10940 Harper Ave., Detroit, Mich. 48232
TELEPHONES—Marine—Sound Powered—Radiotelephone
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Kaar Electronics Corp., 2250 Charleston Road, Mountain View, Calif. 94041
Motorola Communications & Electronics, Inc., 4935 W. LeMoyne Ave., Chicago, Ill. 60651
RF Communications, Inc., 1680 University Ave., Rochester, N.Y. 14610
Radio Corporation of America
Radiomarine Products Dept., Bldg. 15-5, Camden 2, N.J.
TOWING—Lighterage, Transportations, Barge Chartering
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Curtis Bay Towing Co., Mercantile Bldg., Baltimore 2, Md.
G & H Towing Company, 509 Texas Building, Galveston, Texas 77550
Henry Gillen's Sons Lighterage, 99 Wall St., N.Y., N.Y. 10005
James Hughes, Inc., 17 Battery Pl., New York, N.Y.
Jackson Marine Corp., P.O. Box 1087, Aransas Pass, Texas 78336
McAllister Bros., Inc., 17 Battery Pl., New York, N.Y.
McDonough Marine Service, P.O. Box 26206, New Orleans, La.
P. F. Martin, Inc., Mall Bldg., 325 Chestnut St., Philadelphia, Pa.
Moran Towing & Transportation Co., Inc., 17 Battery Place, N.Y.
Nickerson Marine Towing Co., 1670 Southeast 17th Street, Ft. Lauderdale, Fla. 33316
Pace Marine Service, Route 6, Box 1321, New Orleans, La. 70129
Red Star Towing & Transportation Co., 500 Fifth Ave., N.Y. 10036
L. Smit & Co., 11 Broadway, New York 4, N.Y.
Suderman & Young Towing Co., 329 World Trade Center, Houston, Texas 77002
M. & J. Tracy, Inc., 1 Broadway, New York, N.Y.
Turecamo Coastal and Harbor Towing Corp., 1752 Shore Parkway, Brooklyn, N.Y.
Vancouver Tug Boat Co., Ltd., 10 Pemberton Ave., No. Vancouver, B.C., Canada
VALVES AND FITTINGS—Hydraulic—Safety Flanges
Hooper Valve & Engineering Corp., 24th St. & Virginia Ave., Newport News, Va.
Hubeva Marine Plastics-Lining, 435 Hamilton Ave., Brooklyn 31, N.Y.
Hydrasearch Co., Inc., Riva Rd., Annapolis, Md. 21401
Kerotest Mfg., Corp., 2516 Liberty Ave., Pittsburgh, Pa. 15222
Marine Moisture Control Co., 39 Redfern Ave., Inwood 96, L.I., N.Y.
Mechanical Marine Company, 45-15 37th St., Long Island City, N.Y.
Todd Products, Div. of Todd Shipyards Corp., Halleck St., Brooklyn, N.Y. 11231
VAN CONTAINERS—Insulated, Refrigerated, General Commodity
Fruehauf Trailer Div., Fruehauf Corp., 10940 Harper Ave., Dertoit 32, Mich.
WEATHER ROUTING
Weather Routing, Inc., 90 Broad St., New York 4, N.Y.
WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., Bethlehem, Pa. 18018
DiMattina Supply Co., 59-61 Seabring St., Brooklyn, N.Y. 11231
ZINC
Smith & McCrorken, 153 Franklin St., New York, N.Y. 10013



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