MARITIME REPORTER
AND
ENGINEERING NEWS

Zapata Ugland On Sea Trials

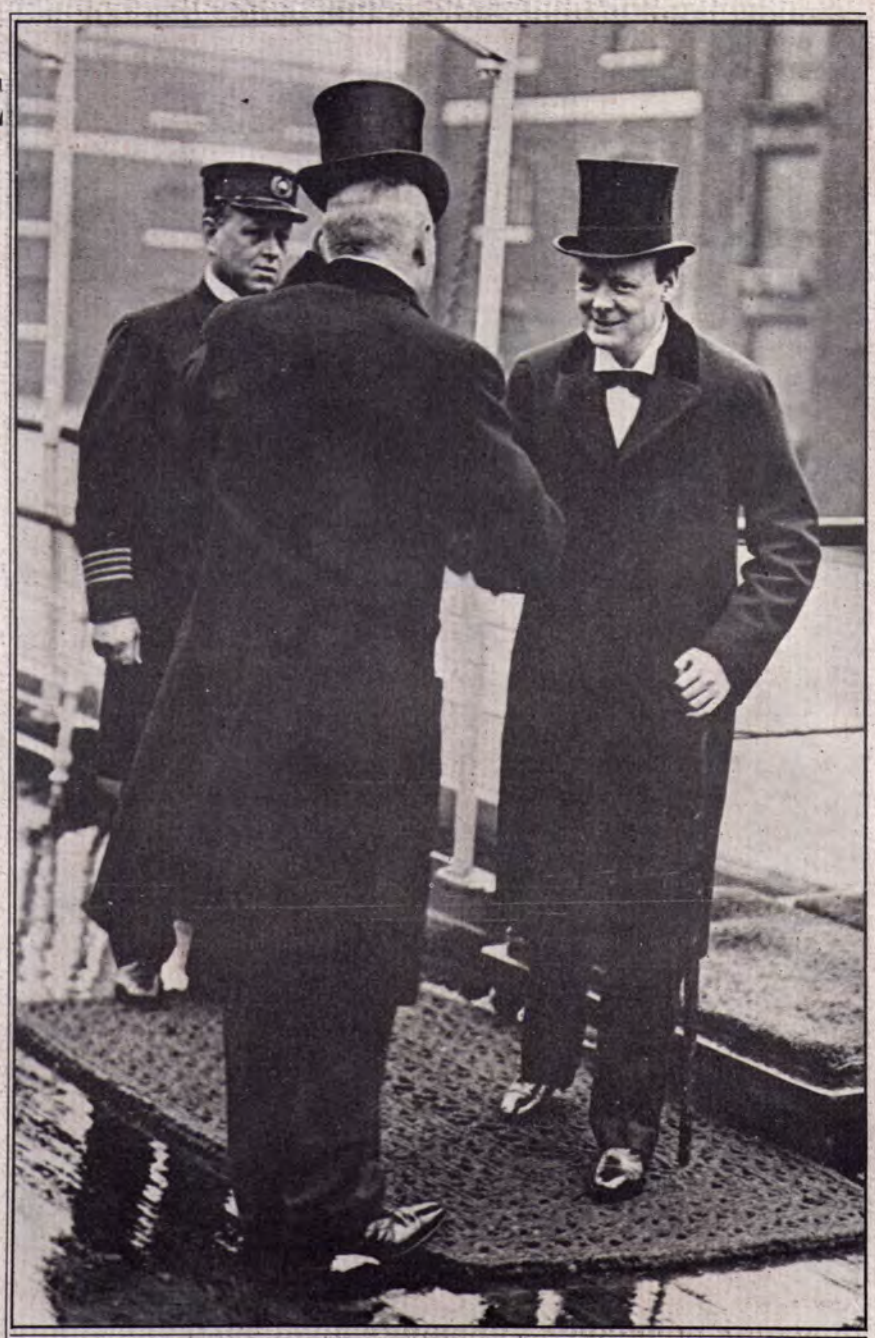
Bethlehem's Beaumont Texas Yard Delivers One Of The World's Largest Semisubmersible Offshore Drilling Rigs—The Zapata Ugland

(SEE PAGE 7)

JUNE 1, 1974

"THE MOST PERFECT MARITIME MASTERPIECE OF THE CENTURY."

—Winston Churchill
First Lord of the Admiralty



Winston Churchill was speaking of the SELANDIA, the world's first oceangoing diesel motorship. It had docked in London, the first port of call on its maiden voyage to Bangkok.

The SELANDIA was delivered to The East Asiatic Company by Burmeister & Wain in February, 1912. This revolutionary innovation that created excitement wherever it appeared, had a deadweight capacity of 7,400 tons, two diesel engines with a total of 2,020 hp., and logged a steady 11-12 knots.

Veritas oils were chosen to lubricate this vessel just as they are lubricating the latest SELANDIA, a 26-knot container ship with the largest diesel engine plant ever installed in a vessel. This SELANDIA was also built by Burmeister & Wain for The East Asiatic Co., Copenhagen.

Diesel engines are infinitely more complex today than they were back then in 1912, and to meet the critical need for precise, high-quality lubricants, Gulf offers a number of superior marine diesel lubricating oils.

Gulf Veritas V9 is a non-detergent lubricating oil used primarily in the crankcase systems of slow speed, crosshead diesel engines. It is manufactured from the highest quality solvent processed base oils and contains rust, oxidation and foam inhibitors for additional metal protection and long crankcase oil life.

Gulf Veritas Cyloils 500 and 700 are the latest developments in the outstanding Gulf Veritas line of high alkaline, acid neutralizing, detergent cylinder lubricating oils. They are specially formulated for use in the cylinders of slow speed, crosshead diesel engines using high sulfur residual fuels.

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Association Formed To Manage U.K. Offshore Natural Energy Projects

John Laing Construction, Ltd. of London, W S Atkins of Epsom and Société Entrepose GMT Pour les Travaux Pétroliers Maritime (ETPM) of Paris, announced formation of an association to carry out the management of offshore projects and their associated onshore facilities in U.K. waters and elsewhere, including planning, engineering, design, procurement, construction and installation.

The organization will be initially based at the Laing offices in London. The joint venture is represented in the United States by Laing Construction Services, Inc., Stamford, Conn.

SOCCO Conference Proceedings Available In 696-Page Book

The day of the Super Ocean Carrier is here. Some 400 tankers in excess of 200,000 tons are now being built. With the development of these super vessels come problems of ship design, deepwater port, financing, underwriting, and environmental protection.

Many of the why, how, and when questions were discussed and answered in the Super Ocean Carrier Conference—SOCCO—conducted in New York City, January 16-18, 1974. The proceedings of that conference are now available.

The 696-page book contains 31 technical papers and two luncheon speeches prepared by experts from around the world. Among them are: "Possibility of the One Million Ton Tanker," by Dr. **Tsuneo Kuniyasu** of Ishikawajima-Harima Heavy Industries Co., Ltd., Japan; "The Million Ton Tanker Crude Oil Terminal," by **Paul Bastard,** managing director of the Port of Le Havre, France; "Financing Methods for Supertankers," by **David O. Beim,** vice president of the First Boston Corp.; and luncheon addresses by **E.M. Hood,** president of the Shipbuilders Council of America, and the Honorable **Helen Delich Bentley,** Chairman of the Federal Maritime Commission.

The book may be ordered from Symcon Publishing Co., P.O. Box 1800, San Pedro, Calif. 90733. Cost of the book is $20, plus 75 cents postage and handling. A 6 percent sales tax is required from California residents.

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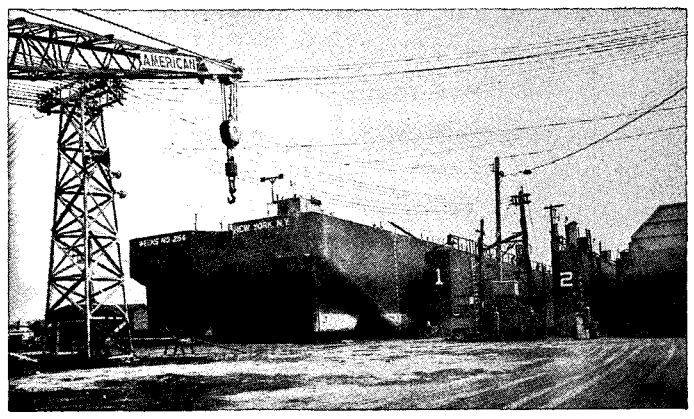

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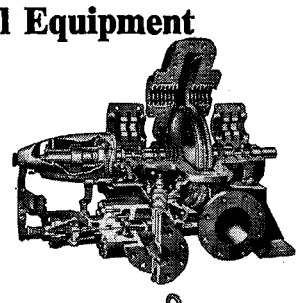

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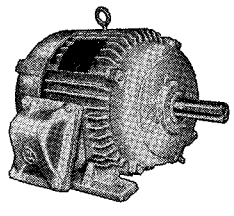

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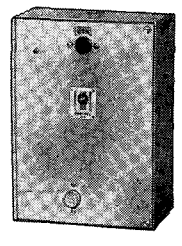

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Mooremack Requests Construction Subsidy To Rebuild 3 Vessels

The Maritime Administration has received a request for construction subsidy from Moore-McCormack Lines in connection with rebuilding three of its 10-year-old Constellation-Class combination cargo vessels, with an option to convert a fourth, for container service. The overall cost is estimated at $20.2 million. According to the application, most of the reconstruction work would involve revamping deck and cargo holds to enable the vessels to carry 20 and 40-foot containers. Insertion of a midbody will increase the container capacity from 200 to about 500 boxes. When rebuilt, the vessels would be used in the trade between U.S. and South American and African ports.

The request did not indicate what shipyards would do the work. It also asked for reconstruction loan and mortgage insurance assistance for the job.

Atlantic Container Line Opens St. Louis Office —Names Behrens Mgr.

Expanding its direct representation in the Midwest, Atlantic Container Line-USA has opened a district sales office in the St. Louis, Mo., area and named **William A. Behrens** district sales manager. He is responsible for the states of Missouri and Kansas, and portions of southern Illinois.

The new office, located at 34 North Brentwood Boulevard, Clayton, Mo., is ACL's third serving Midwestern markets. The company opened an office in Chicago in 1973, followed by a district sales office in Milwaukee.

Mr. **Behrens** had previously held sales and marketing positions with Intercontinental Container and Transport Agency, Inc., TRW, Inc., and Dun & Bradstreet.

Mr. **Behrens** is a member of The World Trade Club of St. Louis, and the Ocean Freight Agents Association.

Chesapeake Sailing Yacht Symposium Calls For Papers

A call for papers has been issued for the Second Chesapeake Sailing Yacht Symposium to be held on January 18, 1975, at the Naval Academy in Annapolis, Md.

The symposium is sponsored by the Chesapeake Section of The Society of Naval Architects and Marine Engineers, the Chesapeake Bay Yacht Racing Association, and the Naval Academy Sailing Squadron.

Areas of interest are "Sail Performance and Design," "The Cruising Yacht," and "Hull Design and Seakeeping."

Abstracts, not over 250 words, should be submitted by June 15, 1974, to: **R.W. Peach,** Papers Chairman, 888 Pine Trail, Arnold, Md. 21012.

New Gulf Coast-Based Firm Formed—Owners Representatives, Inc.

N.A. Jardine II, president, has announced the formation of a new Gulf Coast-based company to serve the marine industry.

Owners Representatives, Inc., headquartered in Pascagoula, Miss., is now in action in the marine and offshore drilling industry, as owners representatives for specification and plan approval, test and trial memo and schedule review/approval, procurement specification review/approval, and test and trial witnessing.

Also included in their list of services are representation with design agents, shipbuilders, vendors, and regulatory bodies.

All phases of marine work will be handled including hull, mechanical, electrical, HVAC, and vessel automation.

In announcing their formation, Owners Representatives stressed their experienced team of marine personnel, with solid background in vessel design, construction, and operation.

Requests for information should be sent to Owners Representatives, P.O. Box 1021, Pascagoula, Miss. 39567.

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The end results of a Decca autopilot's near perfect steering are faster runs and reduced propulsion losses with proven fuel savings of 4% or more. With bunker fuel figured at $70 per ton, the savings are considerable. For example, an 8,890 ton cargo liner with 5,600 shaft horsepower consumes about $280,000 worth of fuel annually. A 4% fuel savings comes to $11,200—or twice the cost of our DP 550 Autopilot.

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On larger ships the savings are even greater. In two years of actual operation, a supertanker equipped with a Decca autopilot saved an average of $10,000 per month on fuel. An additional three days of operating time per year, valued at $90,000, were also realized because of faster runs. Total yearly savings for the fleet owning this tanker were an amazing $210,000. Thirty-four supertankers of this fleet—many of which are already fitted with other autopilots—are now being fitted with Decca autopilots.

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To date, over 4000 vessels of all types and sizes, from 80-foot fishing vessels to 250,000 ton supertankers, have been equipped or retrofitted with Decca autopilots. Whatever your specific requirements—gyro, magnetic, or combined gyro/magnetic—there's a Decca 450, 550, or 750 autopilot for the job. In addition to the exclusive phantom rudder, all are noted for their operating ease without course restrictions. All offer full adjustments for varying handling characteristics because of wind, sea, and loading. Decca autopilots also have a unique circuit that compensates for ships with unstable steering characteristics.

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Rugged and durable, with modular solid-state electronics, Decca autopilots have earned their reputation for trouble-free operation. But if maintenance is ever required during or after the one-year on-board guarantee period, you can depend on the trained technicians of over 100 nationwide ITT Decca Marine dealers and the worldwide Decca organization to have you underway quickly.

For more information and the name of the nearest dealer, contact ITT Decca Marine, Inc., Dept. MR6, 386 Park Avenue South, New York, N.Y. 10016 (212) 685-5157.

Here's proof.

TYPICAL DECCA PILOT FUEL SAVINGS			
Vessel Type	Average Annual Fuel Consumption (at $70 a ton)	Annual Fuel Savings using Decca Pilot (at 4%)	Type of Decca Pilot & Price
80 ft. Pocket Trawler 635 Shaft H.P.	450 tons $32,000	$1,280	DP.450 (M) $4,075
Side Trawler Diesel 1,200 Shaft H.P.	1,650 tons $115,500	$4,620	DP.450 (G) $3,600
280 ft. Freezer 4,000 Shaft H.P.	3,300 tons $231,000	$9,240	DP.550 (G) $5,390
8,890 ton Cargo Liner 5,600 Shaft H.P.	4,000 tons $280,000	$11,200	DP.550 (G) $5,390
26,000 ton Bulk Carrier 11,600 Shaft H.P.	7,000 tons $490,000	$19,600	DP.550 (G) $5,390
90,000 tdw Tanker 25,300 Shaft H.P.	33,700 tons $2,350,960	$94,038	DP.550 (G) $5,390
250,000 ton V.L.C.C. 30,000 Shaft H.P.	50,000 tons $3,500,000	$140,000	DP.550 (G) $5,390

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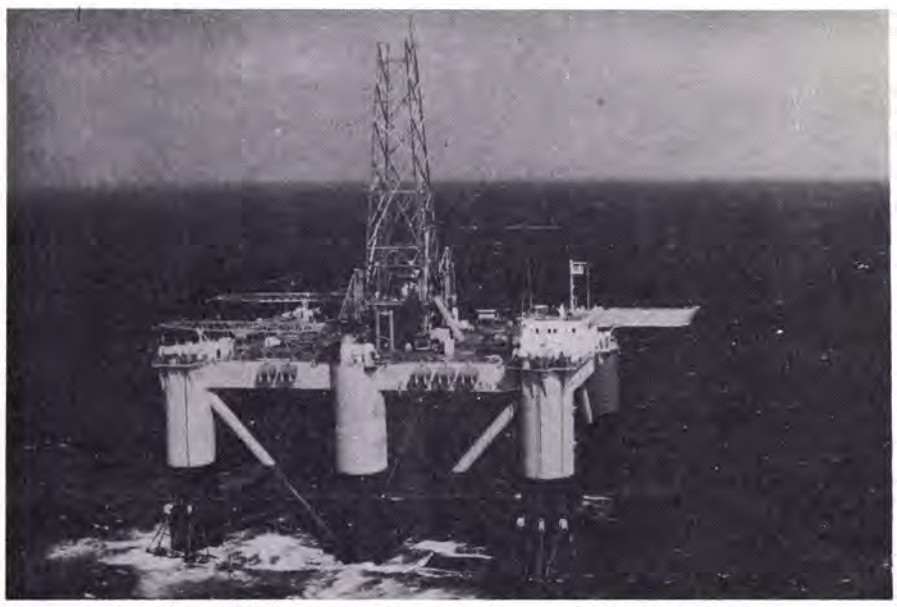

The giant rig registered speeds of up to 11 knots during its sea trials in the Gulf of Mexico. The vessel is shown in partially ballasted position, with her derrick incomplete.

Bethlehem Beaumont Delivers

The Zapata Ugland

Highly Sophisticated And One Of The World's Largest, The $27-Million Semisubmersible Was Designed Especially For The Severe Environment Of The North Sea

One of the world's largest semisubmersible offshore drilling rigs, the Zapata Ugland, was commissioned in special ceremonies on May 9 in Port Arthur, Texas. **Mrs. J.J. Ugland** smashed the traditional champagne bottle on a center stabilizing column to officially christen the highly sophisticated "semi."

Built by Bethlehem Steel's Beaumont, Texas, shipyard, the giant self-propelled vessel will be operated by Zapata Ugland Drilling, Inc., a joint venture company among subsidiaries of Houston-based Zapata Corporation and Norway's Ugland group of companies. Aberdeen, Scotland, will serve as the initial base of operations for the $27-million super-semisubmersible.

Zapata Ugland will work in the North Sea under a two-year contract with Total Oil Marine, Ltd., a subsidiary of Compagnie Francaise des Petroles, with an additional commitment to work for Forest Oil Corporation. Also under contract to Total is the 6,560-hp Baffin Service, one of Zapata's new tug/supply/anchor handling vessels which will accompany the Zapata Ugland to the North Sea and support the rig there.

The new Norwegian-flag rig is the latest of several semi's in the industry designed especially for severe environment areas such as the North Sea, and in many ways, it is one of the most advanced. The semisubmersible design permits the rig to drill while up to 80 feet of the 140-foot distance from the keels of its catamaran lower hulls to its deck is below water, adding stability while retaining the highly mobile characteristics of that rig type. The rig is capable of drilling in 1,000-foot water depths to a depth of 25,000 feet. It can perform some operations in seas up to 50 feet, remain moored in 125-knot winds and 100-foot seas, and has a mooring system for 1,000-foot water depths. Its self-propulsion system gives it a cruising speed of more than nine knots, and a 3,000-ton variable deckload capacity allows it to go for long periods without resupply. The rig achieved speeds as high as 11 knots during sea trials.

Principal Dimensions	
Length lower hulls	367 ft.
Overall width	210 ft.
Each lower hull width	40 ft.
Separation between lower hulls	130 ft.
Lower hulls depth	25 ft.
Number of stabilizing columns	6
Length of stabilizing columns	100 ft.
Diameter of stabilizing columns	30 ft.
Height of low steel	125 ft.
Height to upper deck	140 ft.
Depth of upper hull	15 ft.
Upper deck width	186 ft.
Upper deck length	240 ft.
Diameter of struts and braces	8 ft.
Drilling draft	80 ft.
Drilling displacement	30,000 S.T.
Severe storm draft	65 ft.
Severe storm displacement	27,500 S.T.

The Zapata Ugland is the first offshore drilling rig owned by Norway's diversified Ugland group of companies, which have a shipping heritage dating back more than 200 years, and have participated in several petroleum exploration groups. It is the 23rd rig to be operated by a subsidiary of Zapata Corporation, a diversified natural resources company which now operates 15 rigs, with another five rigs under construction.

Among the honored guests at the commissioning ceremonies were: **J.J. Ugland,** president of Ugland Shipping, and **Mrs. Ugland,** the rig's sponsor; **A.K.L. Ugland,** chairman of Ugland Shipping, and **Mrs. Ugland; William H. Flynn,** chairman of Zapata Corporation, and **Mrs. Flynn; Ralph A. Leaf,** general manager of Bethlehem Shipyard, Beaumont; **Oddvar Laegreid,** Norwegian consular representative, and **Mrs. Laegreid; Robert T. Young,** chairman and president of the American Bureau of Shipping; **Louis LeTherisien,** operations manager of Total Oil Marine, Ltd., and **Mrs. LeTherisien; David Dorn,** executive vice president of Forest Oil Corporation, and **Mrs. Dorn; J.B. Harrison,** president of Zapata Corporation, and **Mrs. Harrison; E.F. Shiels,** executive vice president of Zapata Corporation and chairman of Zapata Ugland Drilling, Inc., and **J.P. Johnson,** president of Zapata Off-Shore Company, and **Mrs. Johnson.**

Key Features—

- Capable of operating efficiently year around in deep water and severe environments, with a high degree of mobility.
- Catamaran design lower hulls with six stability columns supporting a watertight upper hull.
- Can drill in water depths from 150 to 1,000 feet.
- Can operate in seas of up to 50 feet.
- Can remain moored in seas of up to 100 feet.
- Has variable deckload capacity of 3,000 tons.
- Self-propelled, with target speed in excess of nine knots.
- Load capacity permits all movements to be made with anchors and anchor chains stowed aboard vessel.
- Mooring system for at least 1,000 feet of water.

Design Considerations—

Design wave: 100-foot height with 15-second period.

Design wind: 125 knots sustained wind.

Design analyses: SEALOAD program evaluated 100-foot wave loading passing through the moored platform for approach angles of 0, 22½, 45, 67½ and 90 degrees. SEALOAD results were input to STRAN program to determine principal truss, beam, strut, diagonal and joint reactions and stresses.

Structural steel: Cold weather steel for 0 degrees F. Normalized ABS Grade C and CS for highly stressed areas and principal members.

Fatigue evaluation: Evaluation of fatigue life capability of principal members.

Structural test: A one-quarter scale model of column-joint connection structure was tested at Southwest Research Institute.

Variable Deckload Capacity— Mud and cements, 20,000 cubic

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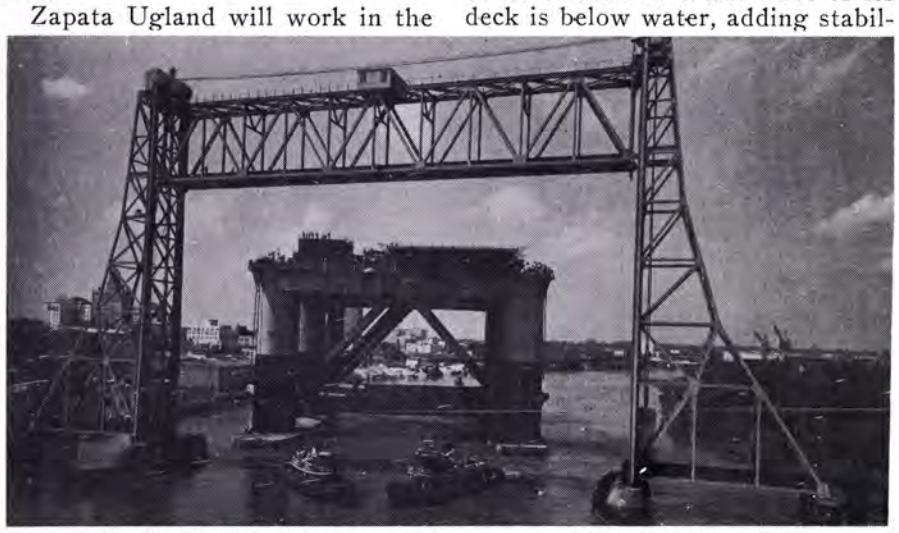

The Zapata Ugland is shown as she was moved from Bethlehem Shipyard, Beaumont, Texas, to her completion site. The giant semisubmersible rig cleared this railroad drawbridge with just a few feet to spare.

The 6,560-horsepower rugged tug/supply/anchor handling vessel Baffin Service will accompany the new semisubmersible Zapata Ugland to her initial assignment in the North Sea.

The Zapata Ugland

(Continued from page 7)

feet; Sack material, 4,500 sacks; Liquid mud, 1,700 barrels; Pipe rack, 7,600 square feet; Marine riser rack, 4,600 square feet, and Potable water, 700 barrels.

Major Drilling and Auxiliary Equipment—

Derrick: Lee C. Moore—40-foot by 40-foot base, 160 feet high, 18-foot by 18-foot water table, designed to accommodate motion compensator and automatic pipe racking. Rated at 1,000,000 pounds static hook load capacity.

Power Package: Four EMD Model 16E8 power units, each consisting of a Model 645, 16-cylinder engine driving Model A20-6, 600-volt 3-phase 60-Hz alternator. Each unit rated at 1,500 kw. DC power provided through SCR rectifier system. Total engine power, 8,000 hp.

Drawworks: Oilwell E2000 double drum, with Elmagco 7838 auxiliary brake, with 1⅜-inch drill line. Driven by two EMD 79MD DC electric motors, totaling 1,600 hp continuous, 2,000 hp intermittent.

Mud Pumps: Two Oilwell 1700 PT triplex single acting piston slush pumps, each with centrifugal charge pump and Hydril K20-5000 pulsation dampener. Each pump driven by two EMD 79MD DC electric motors totaling 1,600 hp continuous, 2,000 hp intermittent.

Subsea Equipment: 20¾-inch BOP 2,000 psi working pressure with one Cameron double type U ram preventer and one Rucker-Shaffer annular preventer with Cameron 24-inch riser and Regan flow diverter. 13⅝-inch BOP 10,000 psi working pressure with two Cameron double type U ram preventers and two Rucker-Shaffer annual preventers with Cameron 16-inch riser. Cameron Payne subsea hydraulic control system.

Cranes: Two National OS-435 Hydraulic cranes with 120-foot booms, rated at 85 tons at 30-foot radius. Each driven by a Caterpillar D-343 ATA engine.

Lubricants: Mobil Oil Corporation supplied the lubricants for the equipment in the rig.

"Storm Shield" Mooring System—

Zapata's "Storm Shield" mooring system can withstand storm forces when waves approach from any compass direction with 100-knot-sustained winds, and associated storm conditions act simultaneously and from the same direction.

Chain: Unit is fitted out initially with ten 3,500-foot lengths of high strength ABS approved 3-inch welded stud chain, with capability for a total of ten 5,000-foot lengths of chain.

Anchors: Ten 40,000-pound Baldt Moorfast anchors.

Windlasses: Four dual and two single wildcat units with maximum pull capacity of 550,000 pounds and stopper capacity of 1,000,000 pounds.

Controls: Control station at each corner of unit where windlasses are located. Tension indicators at windlasses and in barge control center. Chain stoppers equipped for both remote and manual quick release under maximum load.

Analyses: Mooring analyses have been performed to evaluate mooring forces and mooring system in water depth range from 150 feet to 1,000 feet using 3,500 feet to 5,000 feet of 3-inch chain and propulsion augmented as needed.

Propulsion Chacteristics—Draft, 22 feet; Lower hull depth, 25 feet; Lower hull freeboard, 3 feet; Displacement, 17,530 S.T.; Self-propulsion system: Two 10-foot-diameter screw propellers with nozzles (one each hull), each driven by four 750-horsepower electric motors. Each hull fitted with rudders for high maneuverability and steering control; Speed-power data, based on sea trial results: Calm sea with no wind, 11.0 knots; Calm sea with 20-knot headwind, 9.0 knots; 15-foot seas with 20-knot headwind, 6.0 knots.

Quarters—

Capacity: 82-man capacity on two decks with dual galley-mess arrangement.

Control Center: Third deck control center includes wheelhouse, radio room, chart room, and barge control center.

Helicopter deck: Meets Norwegian regulations for either Sikorsky S-61 and S-70 models, or any other equivalent 25,000-pound unit.

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Todd Names Horbelt General Manager Houston Division

Vincent H. Horbelt

Vincent H. Horbelt has assumed the duties of general manager of the Houston Division of Todd Shipyards Corporation as of June 1, 1974.

Mr. **Horbelt** succeeds **Arthur W. Stout Jr.,** who was elected a vice president of Todd.

Mr. **Horbelt's** career at Todd started some 30 years ago, and for the past 10 years he has operated in the capacity of assistant general manager of the Houston Division. Prior to 1964, he successively held positions in the finance and accounting field at the Brooklyn Division, the Galveston Division, and the Houston Division.

Mr. **Horbelt** is a member of The Society of Naval Architects and Marine Engineers, Ports and Waterways and Manufacturers Committees of the Houston Chamber of Commerce, the American Waterways Operators, Inc., The Propeller Club Port of Houston, the Port Safety and Advisory Council, a director of the First National Bank of Deer Park, Texas, and a Trustee of the Todd-Houston Pension Fund.

Book On Maintenance Of Marine Machinery Now In Fifth Edition

The fifth edition of "The Running and Maintenance of Marine Machinery," announced by Marine Media Management Limited and published for The Institute of Marine Engineers, brings the total printings to nine. This, coupled with a demand running at an average 1,500 copies per annum, makes the book one of the Institute's best selling publications.

Designed as a course of instruction for seagoing engineers, marine engineer apprentices and students, the book has 10 chapters—each by a different specialist author—covering care and maintenance of marine boilers, steam reciprocating machinery, marine steam turbines, marine electrical machinery, marine diesel engines, marine refrigerating plant, pumping arrangements, steering gears, and fire-fighting equipment.

Running to some 285 pages, the fifth edition, bound in a strong linen cover and containing revised material and many new and improved illustrations, cost £4.00 for nonmembers, or £2.50 for members.

Copies are available from Marine Media Management Ltd., 76 Mark Lane, London EC3R 7JN, England.

TANO Wins Contract To Automate Facilities For Unloading LNG Tankers

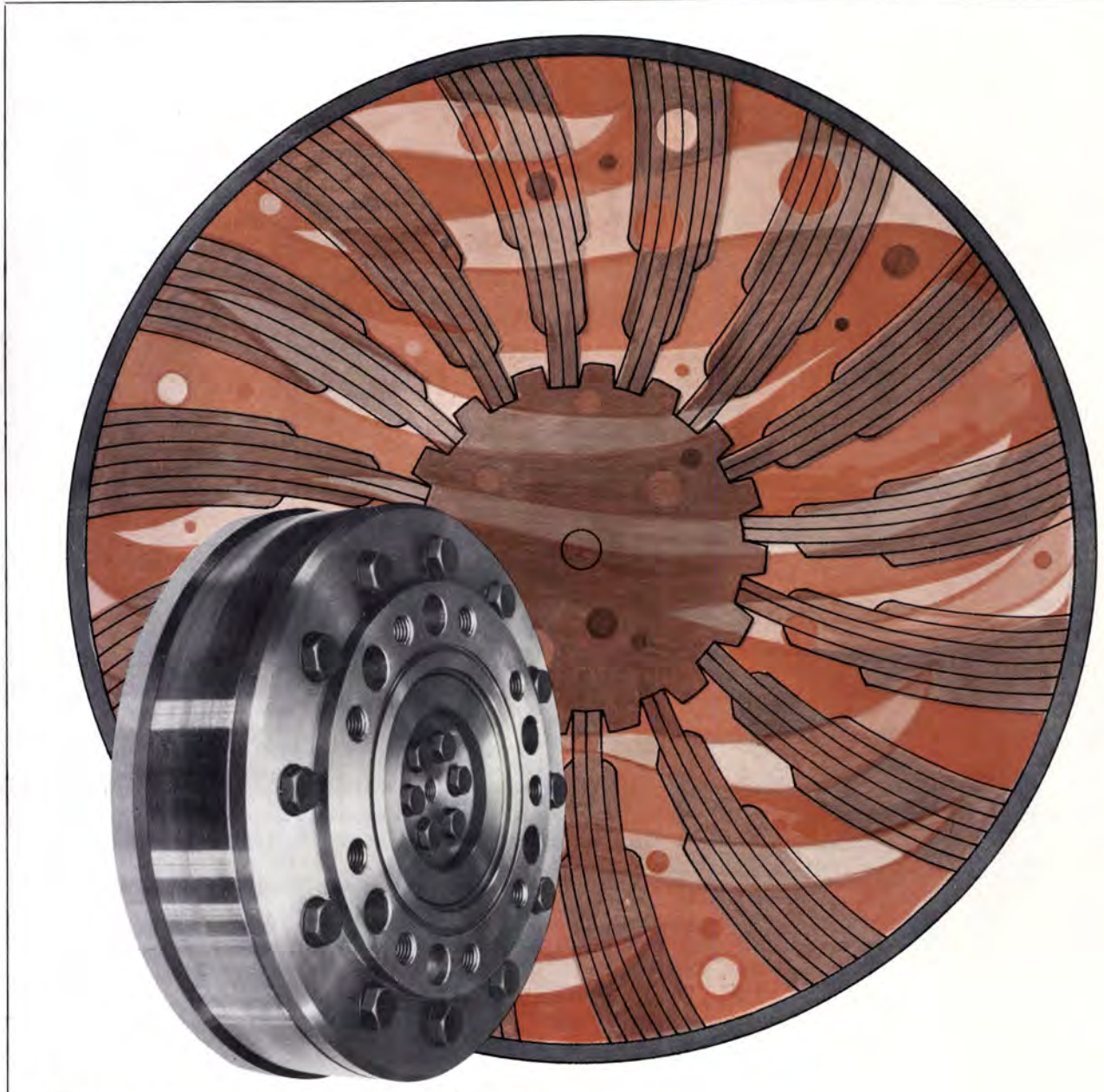
TANO Corporation, 4521 West Napoleon Avenue, Metairie, La. 70001, a suburb of New Orleans, has been awarded a contract in excess of $200,000 from Columbia LNG Corporation of Wilmington, Del., for the design and manufacture of an automation system to supervise the handling of liquid natural gas from LNG tankers to shore, and during the vaporization process.

TANO's DATAC 949 Supervisory Control System will be installed at Columbia LNG Corporation's Cove Point, Md., facility. The computer-based automated control system will provide remote control and supervision of unmanned stations. The system will be operational in 1976.

TANO's control system will consist of the following hardware: four DATAC 949 System III/IV master terminal units with Digital Equipment Corporation's PDP-11/35 central processor unit, 32K core memory, TA-11 dual cassette recorder, RK11/RK05 1.2 megaword disk, LA30, DECwriter, TANO Model 5300 CRT, graphic display panel for critical data, operator's console, and five standard remote terminal units.

TANO Corporation, founded in 1961, has grown to be a leader in automated control systems for both industrial and marine application.

TANO Corporation's DATAC 949 Supervisory Control Systems are currently in service for major oil, pipeline, and utility companies throughout the United States, as well as in other parts of the world.



Dampen Vibes

with Geislinger torsional coupling from Eaton.

The unique design of the Geislinger* Coupling offers a simple, economical solution to torsional vibration problems. Proven worldwide in more diesel driven ships than any other coupling.

Using highly elastic leaf springs for torsional flexibility combined with oil displacement damping, the Geislinger Coupling shifts major critical speeds outside of the engine operating speed range and effectively dampens torsional vibrations. Damping is 5 to 10 times higher than a comparable rubber coupling.

Since the unit has no axial stiffness, axial vibration cannot be transmitted. Thermal shaft growth and angular and parallel misalignment are easily accommodated with the standard Geislinger Coupling.

Mates perfectly with Airflex® drum-type air clutches for compact installation between the engine and driven machinery.

Available in a wide range of sizes from Eaton, exclusive agent in the U.S. and Canada.
Write Eaton Corporation, Industrial Drives Division, 9919 Clinton Road, Cleveland, Ohio 44111.

*Trademark of Dr. Ing. Geislinger & Co.

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Power Transmission Systems

Moore McCormack Resources Appoints Donald Beck Treasurer

Paul R. Tregurtha, executive vice president and chief financial officer of Moore McCormack Resources, Inc., Stamford, Conn., (NYSE; Pacific) has announced the appointment of **Donald Beck** as treasurer of the company.

Mr. **Beck** has been treasurer of Pickands Mather & Co., Cleveland subsidiary of Moore McCormack since 1973, as well as treasurer of The Interlake Steamship Company, which is a subsidiary of Moore-McCormack Lines and which is managed by PM. He joined Pickands Mather in 1951 and held various executive positions in the traffic and sales departments before being named assistant treasurer in 1969.

"The transfer of Mr. **Beck** from Pickands Mather, one of our principal subsidiaries," said Mr. **Tregurtha,** "is an indication of the close interrelationship between Moore McCormack Resources and our subsidiaries, a working arrangement that has proven to be of value to the company."

Mr. **Beck** was graduated from Yale University in 1950 with a B.A. degree in economics. He attended Tuck Business School at Dartmouth College in the Graduate School of Credit and Financial Management.

Donald Beck

Moore McCormack Resources, Inc. is a transportation and natural resources organization. Its principal subsidiaries include Pickands Mather & Co., which operates iron ore and coal mines, Great Lakes ore carriers, and acts as sales agent for various materials; and Moore-McCormack Lines, Incorporated, which offers ocean shipping services from U.S. East Coast ports to the East Coast of South America and to South and East Africa.

On April 16 the U.S. Navy's Surface Effect Ship test craft, the SES-100B, achieved a speed of more than 80 knots (92+ mph) — a world record for craft that ride on a captured air bubble.

The SES-100B was developed and built by Textron's Bell Aerospace Division for the Naval Material Command Surface Effect Ships project. During previous tests in the Gulf of Mexico it operated in high sea states and repeatedly demonstrated performance, stability and habitability exceeding expectations.

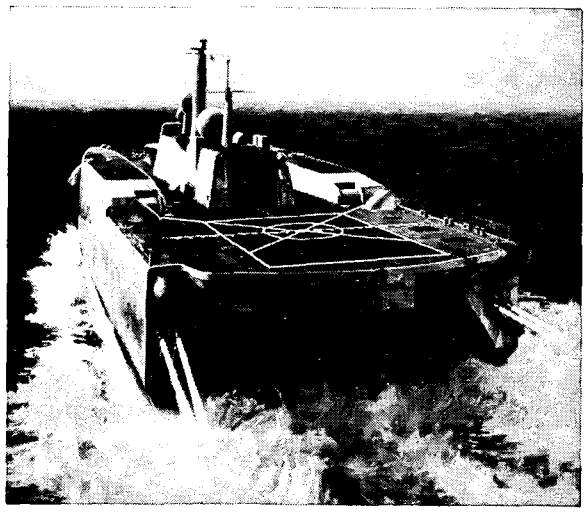
The craft met all test objectives needed to confirm and expand the technology for design of a 2,000-ton ocean-going SES.

textron Bell Aerospace DIVISION
BUFFALO, NEW YORK NEW ORLEANS, LOUISIANA

Go Navy... Go Fast... Go SES

The Navy's Surface Effect Ship program will revolutionize naval warfare. The record speed run of the SES-100B is an important step toward the 100-knot Navy of the future.

Next: Development of a 2,000-ton ocean-going SES.



Pacific NW Section Tours Facilities At Burrard Dry Dock Co.

A regular meeting of the Pacific Northwest Section of The Society of Naval Architects and Marine Engineers was held recently at Burrard Dry Dock Co. Ltd., in North Vancouver, British Columbia, Canada.

A variation in the usual meeting format was made possible by the offer of Burrard Dry Dock Co. Ltd. to conduct a tour of their facilities and ships under construction.

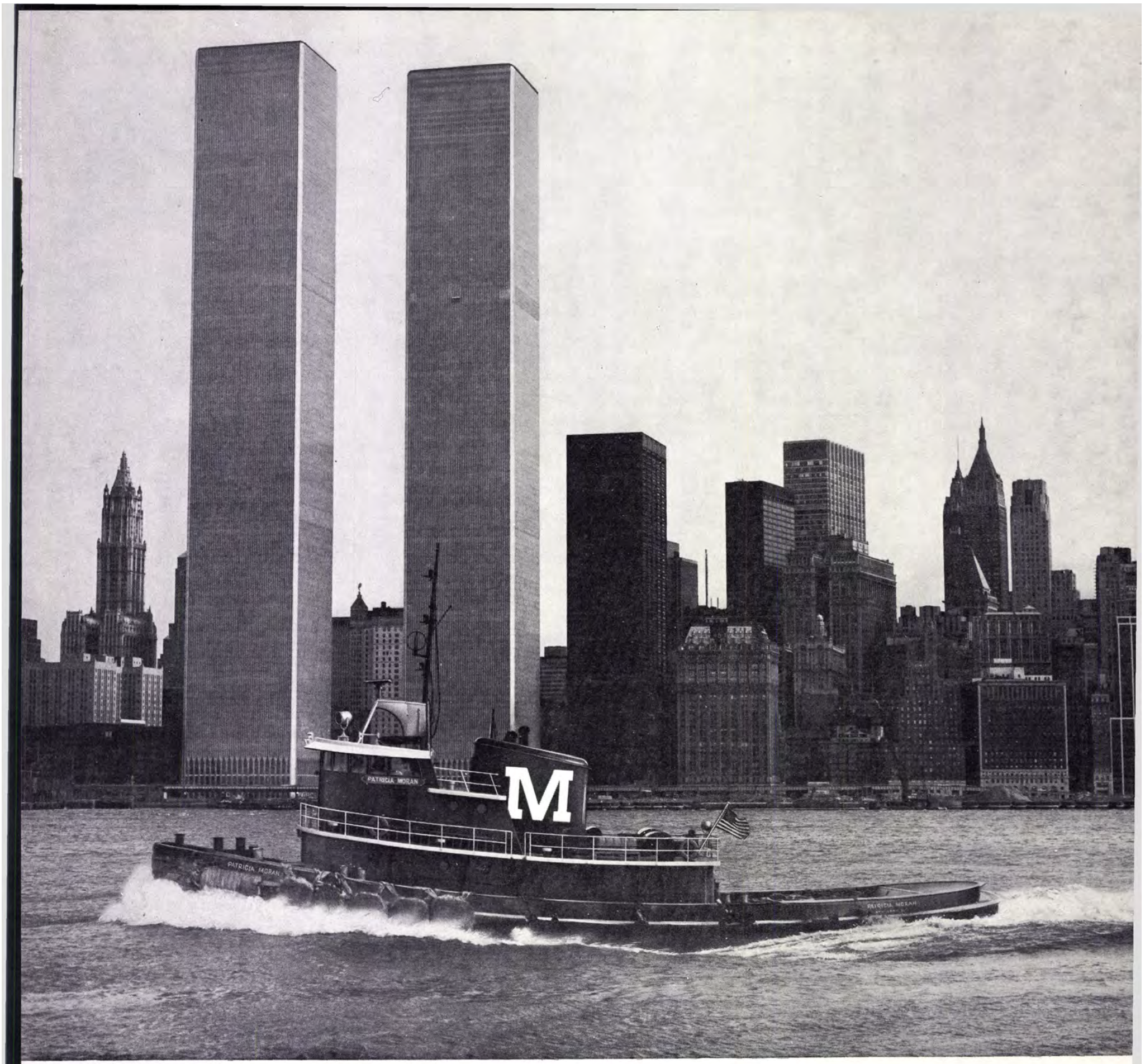
The facilities tour passed through Plate and Erection Shop No. 1 and ended with the Machine Shop. Items of interest included the Hancosine Automatic burning machine, the steel wheelabrator and automatic priming equipment, and Burrard's plywood press components.

The ship tours began with a trek through the almost completed 202-foot research vessel Hollis Hedberg, a journey aboard the rail-car ferry Incan Superior, and some passing views of the German ship Pluvius, the ferry Carrier Princess, and the tanker Imperial Skeena, all receiving repair work.

Burrard's president, **J.W. Hudson,** and his staff did an excellent job of organizing and conducting a very informative and interesting tour.

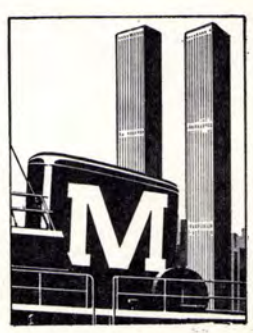
Wartsila Yard To Build LPG Containership For Gotaas-Larsen

The Wartsila Shipyard at Helsinki, Finland, has received an order for the construction of a 75,000-cubic-meter liquefied petroleum gas containership for the Gotaas-Larsen Shipping Corporation, a subsidiary of the IU International Corporation. The cost is about $50 million.



Two Famous Landmarks of New York Harbor

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



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Shell bulk customers: Can you to be using an oil as

think of a better time versatile as Shell's Melina® Oil?

One multi-purpose oil—Shell MELINA Oil has 8 major motorship applications; can help you tie up fewer inventory dollars, cope with shortages. Its performance can help extend engine service life, too.

Versatile Shell MELINA Oil has so many shipboard applications that Shell customers would do well to consider it as the single replacement for an assortment of other oils.

First, MELINA Oil provides excellent lubrication for the systems of slow-speed crosshead-type diesels and the crankcases of medium and most high-speed trunk piston engines.

Next, this versatile oil meets nearly all the lubrication needs of seven other important items of shipboard equipment: air compressors, turbochargers, auxiliary diesels, steering gear, gear transmissions, stern tube bearings and variable-pitch propellers. Eight major applications in all! Some very high output auxiliary engines and other highly-stressed equipment will of course continue to require specialized oils, but MELINA is designed to satisfy most requirements.

Golten Ship Repair tank boat, the Aubrey L. Hudgins, pumps Shell MELINA Oil into ship in mid-harbor at Portland, Maine. The Hudgins' pumps can deliver 4,800 gallons per hour from her 48,000-gallon-capacity tanks. Turnaround time for ships is speeded up by this fast, clean delivery system.

◀ Bulk lube oil delivery of Shell marine lubricants at major U.S. ports offers motorships fast, clean, safe delivery. Lifting lube oil in bulk directly into ships' tanks is much faster than drums, safer and more economical than drums, and there is far less chance for product contamination.

What this means to you

A multi-purpose top quality oil—that's good reason for buying in bulk. And bulk purchasing saves you money. There's also less chance of misapplication when your crew is working with fewer oils. Versatile MELINA Oil makes a lot of sense, particularly in times of shortage.

Properties that pay

MELINA Oil has good oxidation stability, and this means good resistance to thickening. Its dispersant properties hold down carbon deposits in piston cooling spaces and help keep crankcases and sump tanks clean.

Good anti-wear and anti-corrosion characteristics are another feature. And MELINA Oil protects against corrosion of lead-bronze bearings. It can mean longer life for engine components and lower maintenance costs for you.

Two more cost-saving Shell lubricants

1. ALEXIA® Oil offers excellent anti-wear properties for cylinder lubrication of slow-speed crosshead-type marine diesel engines burning high-sulfur residual fuel oil. It covers the liners with a high alkalinity barrier to corrosive combustion products, protects rings and liners against destructive wear.
2. ARGINA® Oil is a top-quality crankcase oil designed for medium-speed trunk type diesels burning heavy fuels. It, too, can help trim maintenance costs.

For more information about these three versatile Shell oils, write: Shell Oil Company, Manager, Commercial Advertising, One Shell Plaza, Houston, Texas 77022.

Shell's Melina® Oil

SHELL

Zapata To Acquire Four Product Tankers—Plan Big Ship Fleet

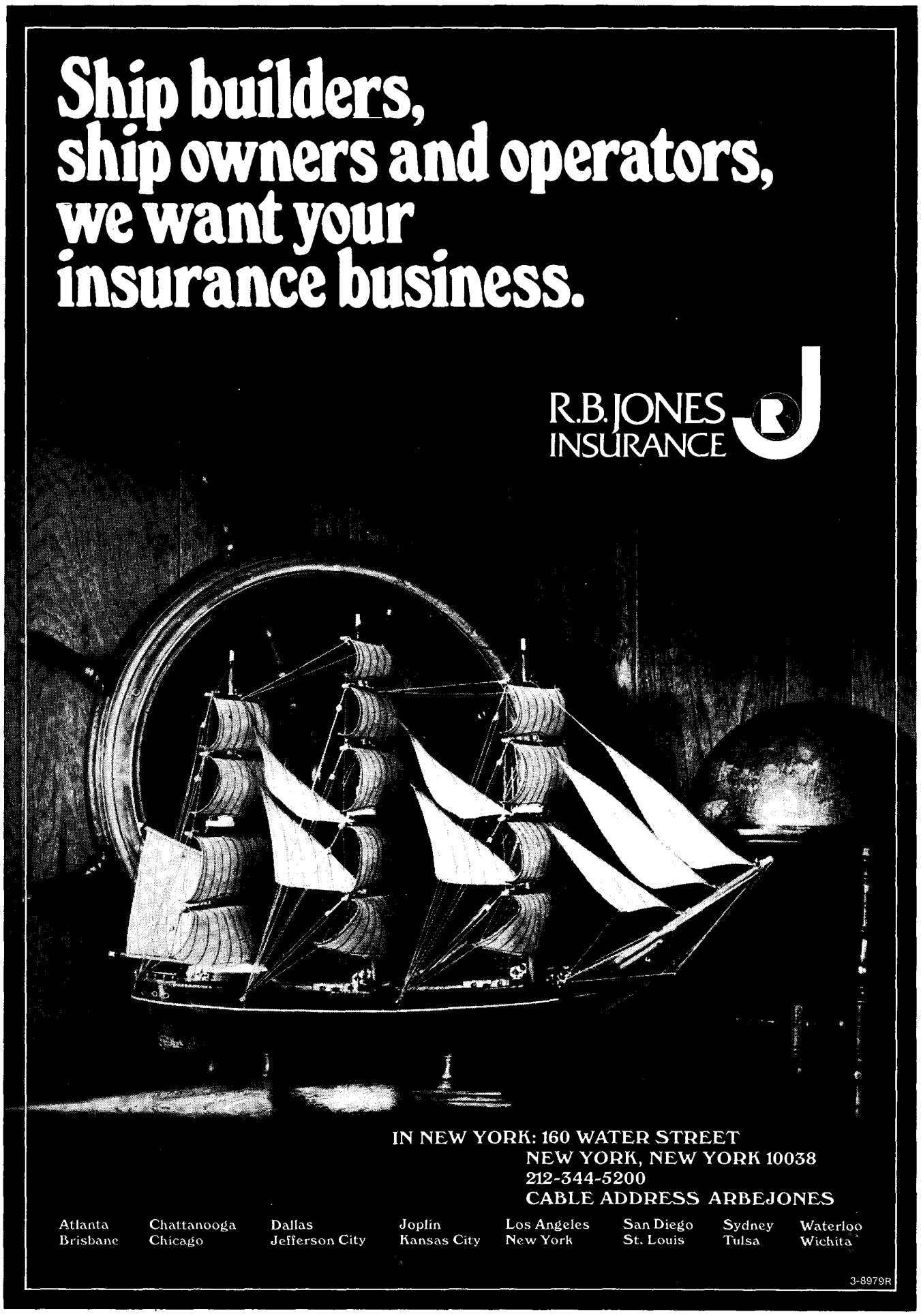
Zapata Corporation, 2000 Southwest Tower, Houston, Texas 77002, has announced that it has signed a preliminary agreement for the acquisition of four products tankers now being built by the Los Angeles Division of Todd Shipyards Corporation for Sea Service Tankers, Inc. The vessels, each of 35,000 deadweight tons capacity, were ordered from the shipyard in 1972 and are scheduled for delivery in late 1975 and early 1976. Total consideration in the transaction will be approximately $59 million, including the assumption by Zapata of Government-guaranteed debt.

Zapata said that the agreement is subject to definitive documentation, and that consent of the U.S. Maritime Administration (MarAd) must be obtained for transfer of the construction contract and related Government subsidy agreements to Zapata. Total delivered cost of the four vessels under the construction contract, after subsidies, is estimated at approximately $50.6 million. In addition, Zapata has agreed to pay, in cash and notes of varying maturities, a premium of about $8.4 million which largely reflects the increase in current replacement costs for such vessels. The premium is payable to parties presently holding interests in the Sea Service tankers, which include Colt Industries, Inc. (supplier of engines for the vessels); Massachusetts Tankers, Inc., a subsidiary of First National Boston Corporation; and two private individuals.

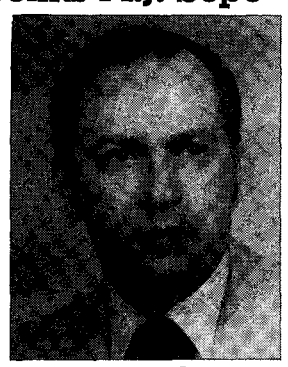
Zapata said that the agreement represents the first formal commitment to date under its previously announced plans to reënter the bulk shipping business under the U.S. flag. In July 1973, Zapata sold its foreign-flag shipping operation to British and Norwegian interests for $208 million.

The company said that it was also conducting negotiations with various U.S. shipyards for construction contracts involving tankers of 400,000 and 120,000 dwt, ore/bulk/oil carriers of 80,000 dwt, and liquefied petroleum gas carriers of 75,000 cubic meters.

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



Shaw Company Div. Of Luckenbach Appoints M.J. Sepe



Michael J. Sepe

Donald T. Quinn, general manager of Shaw Company, a division of Luckenbach Steamship Co., Inc., has announced the appointment of **Michael J. Sepe** as manager of Shaw's Port Everglades, Fla., office.

Before joining Shaw last year, Mr. **Sepe** managed marketing and customer services for Maher Terminals, Inc., New York.

Mr. **Sepe** was graduated from Pace College, where he studied management, transportation and physical distribution management, and accounting.

In 1956, he joined Kerr Steamship Co. as line manager for Scandinavian & Mediterranean Lines and served in that job until 1963, when he joined Maher.

Matson Navigation Promotes Tsuneyoshi

Matson Navigation Company has promoted **Ray T. Tsuneyoshi** to assistant regional sales manager for southern California, it was announced by **C.B. Mulholland,** regional sales manager.

Mr. **Tsuneyoshi** was formerly a sales representative for Matson in Honolulu.

Acadian Marine Names Vorenkamp Vice Pres.-Operations

Steffan B. Vorenkamp

Steffan (Steve) B. Vorenkamp has been named vice president-operations of Acadian Marine Service, Inc., New Orleans, La.

Active in various aspects of the marine industry since 1941, Mr. **Vorenkamp** has served as operations manager for Santa Fe International Corp., vice president and general manager for Halter Marine Services, Inc., and marine superintendent and principal drill rig mover for Ocean Drilling and Exploration Co. (ODECO). He has also served as an independent consultant on offshore supply boat construction methods.

Mr. **Vorenkamp** studied mechanical engineering at the University of California-Berkeley, and has completed several specialized marine and oil industry schools. He is the author of "The Finer Points of Submersible Barge Moving."

His brother, Capt. **Rudy Vorenkamp,** is executive vice president of Acadian Marine Service, an international marine transportation company serving the oil field and construction industries.

Signal Oil Selects Taywood-Santa Fe For North Sea Drilling

Signal Oil and Gas Co., Ltd. has selected Taywood-Santa Fe as project manager for the initial drilling and production facilities in Thistle Field in the North Sea.

Taywood-Santa Fe is a joint venture formed by Taylor Woodrow Construction Ltd. of Southall, Middlesex, England, together with a subsidiary of Santa Fe International Corporation, Orange, Calif.

Taywood-Santa Fe will provide procurement services and will coordinate the engineering, fabrication and installation of a drilling and production platform in Block 211/18 in the U.K. Sector.

The platform, designed to handle production of 200,000 barrels a day, is planned for installation in approximately 530 feet of water during the 1976 construction season.

Thistle Field, 100 miles northeast of the Shetland Islands, is the northernmost field yet discovered in the North Sea. It is scheduled to begin commercial production in 1977.

Santa Fe Engineering Services, a division of Santa Fe International, will provide the project manager and additional supervisory personnel. Headquarters of the management team will be the offices of Taylor-Woodrow Construction in Southall.

Signal Oil and Gas is operator for the Halibut Group, which includes Champlin Petroleum Co., (U.K.), Santa Fe Minerals (U.K.) Inc., United Canso Oil and Gas (U.K.) Ltd., Tricentrol North Sea Ltd., and Charterhouse Securities Ltd.

U.S. Lines Names Veltre Coordinator Eastern Division

Joseph M. Veltre has been appointed Eastern Division Coordinator of United States Lines, according to an announcement by **William J. Keely,** vice president-Eastern Division.

In his new post, Mr. **Veltre** will organize and operate a Divisional Information and Coordination Center that will assist Mr. **Keely** in effectively coordinating sales, container, terminal and vessel activities in the division.

Mr. **Veltre,** who joined the company in 1970, has been manager of corporate marketing. Previously, he held management positions with American Export Isbrandtsen Lines.

When ships call for climbing

Climb the dependable way with Patent Scaffolding Co.'s Motorized Swinging Scaffolds

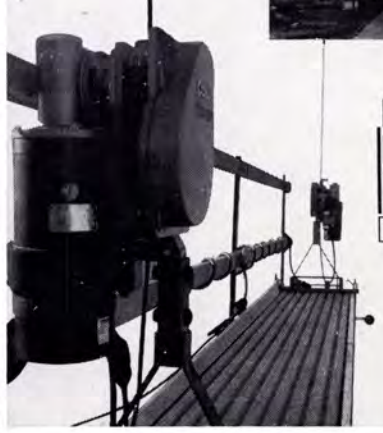
When you have to climb up the hull or down the hold for construction or maintenance work, depend on air or electric powered "Cable Climber®" Motorized Swinging Scaffolds to put you exactly where you want to be, quickly.

You can also depend on the many years of experience of the Patent Scaffolding men who will recommend and supply the right equipment and accessories to do your job most efficiently. And to give you instructions on how to use it productively.

More than 30 branch offices and warehouses located throughout the country are staffed with experts who are available to you for technical assistance, maintenance services and consultation. Stocks of spare parts are normally available at every office.

Whether your job calls for a platform, a work basket or a bosun's chair, you can depend on "Cable Climber" Motorized Swinging Scaffolds.

For more details write for Bulletin CC 11R, Patent Scaffolding Co., 2125 Center Avenue, Fort Lee, N.J. 07024.



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SNAME Announces Committee Chairman

Phillip Eisenberg, president of The Society of Naval Architects and Marine Engineers, has announced the following committee chairmen for 1974:

Committee on Applications — chairman, Dr. **Walter M. Maclean,** Head, Department of Engineering, U.S. Merchant Marine Academy, Kings Point, N.Y.

Committee on Awards — chairman, **Ludwig C. Hoffmann,** consultant, McLean, Va.

Annual Banquet Committee — chairman, **Charles A. Narwicz,** C. R. Cushing & Co., Inc., New York, N.Y.

Committee on Budget and Endowments — chairman, Rear Adm. **Albert G. Mumma,** USN (ret.), past president of the Society, Short Hills, N.J.

Annual Dinner-Dance Committee—chairman,**Preston H. Hadley Jr.,** vice president, Gibbs & Cox, Inc., Hyattsville, Md.

Committee on Fellows — chairman, Prof. **Richard B. Couch,** Department of Naval Architecture and Marine Engineering, the University of Michigan, Ann Arbor, Mich.

Committee on Finance and Audit — chairman, **John A. Livingston,** chairman of the board of trustees, Webb Institute of Naval Architecture, Glen Cove, N.Y.

Committee on Journal of Ship Research — chairman, **Ralph D. Cooper,** Program Director, Fluid Dynamics, Office of Naval Research, Department of the Navy, Arlington, Va.

Committee on Marine Technology — chairman, **E. Scott Dillon,** honorary vice president of the Society, Silver Spring, Md.

Committee on Membership — chairman, **Lester Rosenblatt,** president, M. Rosenblatt & Son, Inc., New York, N.Y.

Committee on Nominations — chairman, **Daniel D. Strohmeier,** past president of the Society, Scarsdale, N.Y.

Committee on Papers—chairman, Capt. **Jack A. Obermeyer,** USN (ret.), manager, Construction and Technical Development Division, Marine Department, Texaco Inc., New York, N.Y.

Committee on Pension Plan — chairman, **Douglas C. MacMillan,** special staff assistant to general manager, General Dynamics/Quincy Shipbuilding Division, Quincy, Mass., and honorary vice president of the Society.

Committee on Publications — chairman, **Donald P. Courtsal,** chief marine engineer, Dravo Corporation, Engineering Works Division, Neville Island, Pittsburgh, Pa.

Committee on Public Relations—chairman, **John R. Blackeby,** secretary, American Bureau of Shipping, New York, N.Y.

Committee on Scholarships — chairman, Capt. **Robert E. Stark,** USN (ret.), Gibbs & Cox, Inc., New York, N.Y.

Committee on Sections — chairman, **Monroe D. Macpherson,** Exxon Corporation, Exxon International Co., Tanker Department, New York, N.Y.

Technical and Research — vice president, **A. Dudley Haff** (to whom the Committee on Technical and Research Advance Planning, the Committee on Technical and Research Finance and Administration, and the Steering Committee on Technical and Research report), technical manager, Bethlehem Steel Corporation, Central Technical Division-Shipbuilding, Sparrows Point, Md.

Committee on Technical and Research Advance Planning — chairman, **Marvin Pitkin,** Assistant Administrator for Commercial Development, Maritime Administration, Washington, D.C.

Committee on Technical and Research Finance and Administration—chairman, **John T. Gilbride,** president, Todd Shipyards Corporation, New York, N.Y.

Steering Committee on Technical and Research—chaired by **John E. Flipse,** president, Deepsea Ventures, Inc., Gloucester Point, Va., includes the chairmen of the following committees:

Hull Structure Committee — chairman, **Alexander B. Stavovy,** Head, Advanced Ship Division, Naval Ship Research and Development Center, Bethesda, Md.

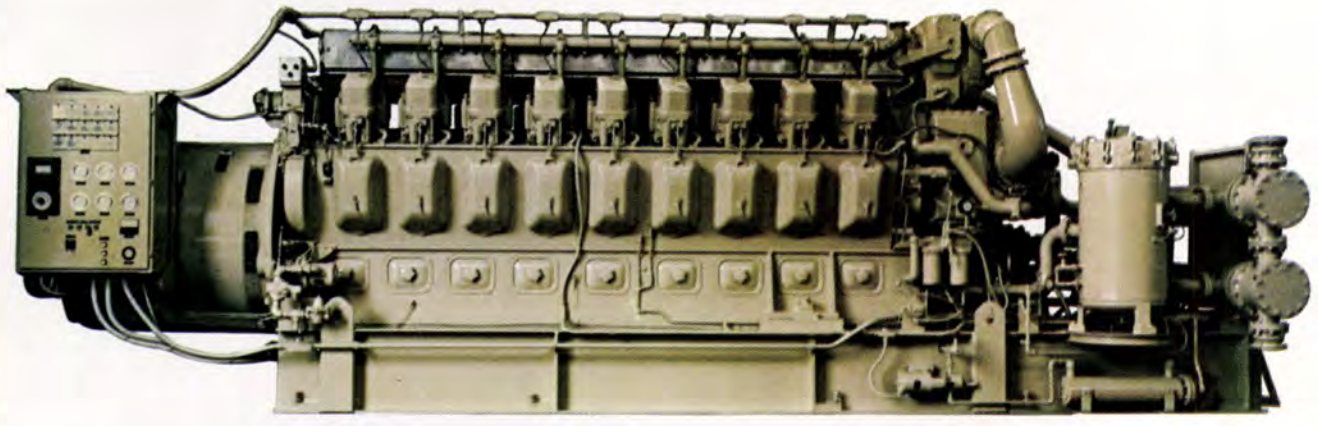
POWER BOSS™

...the ALCO diesel for today's needs

$ saves as much as 170 gallons of fuel per day

$ burns more grades of diesel fuel

$ uses less lube oil



The engine that saves diesel fuel today will also save it next year and years thereafter. It makes these fuel savings because fuel metering is better; each individual nozzle and pump is easily adjusted; timing and fuel metering can be matched to the installation. Additionally, the fuel oil system is isolated from the lube oil system.

There are other benefits: quieter operation, better operation at higher altitudes with turbosupercharged designs, lower operating and maintenance costs on electric drive drilling operations, lower cost per hour of operation.

These rugged POWER BOSS Alcos consistently go as much as 25,000 hours between major overhaul and, in some cases, 50,000 hours. Contact your local ALCO representative. Alco Engines Division, Subsidiary of White Motor Corporation, Auburn, New York 13021.

Write for this bulletin. It gives the facts.

Hydrodynamics Committee — chairman, **Robert C. Strasser,** director of research, Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Marine Systems Committee — chairman, Capt. **Richards T. Miller,** USN, (ret.), manager, ocean engineering, Oceanic Division, Westinghouse Electric Corp., Annapolis, Md.

Ship Production Committee — chairman, Rear Adm. **L.V. Honsinger,** USN (ret.), Todd Shipyards Corporation, New York, N.Y.

Ship Technical Operations Committee—chairman, **Thomas J. Sartor Jr.,** assistant marine superintendent, Farrell Lines, Incorporated, New York, N.Y.

Ships' Machinery Committee — chairman, **William O. Nichols,** chief engineer, Central Technical Division-Shipbuilding, Bethlehem Steel Corporation, Sparrows Point, Md.

Salvage Industry Entering New Era

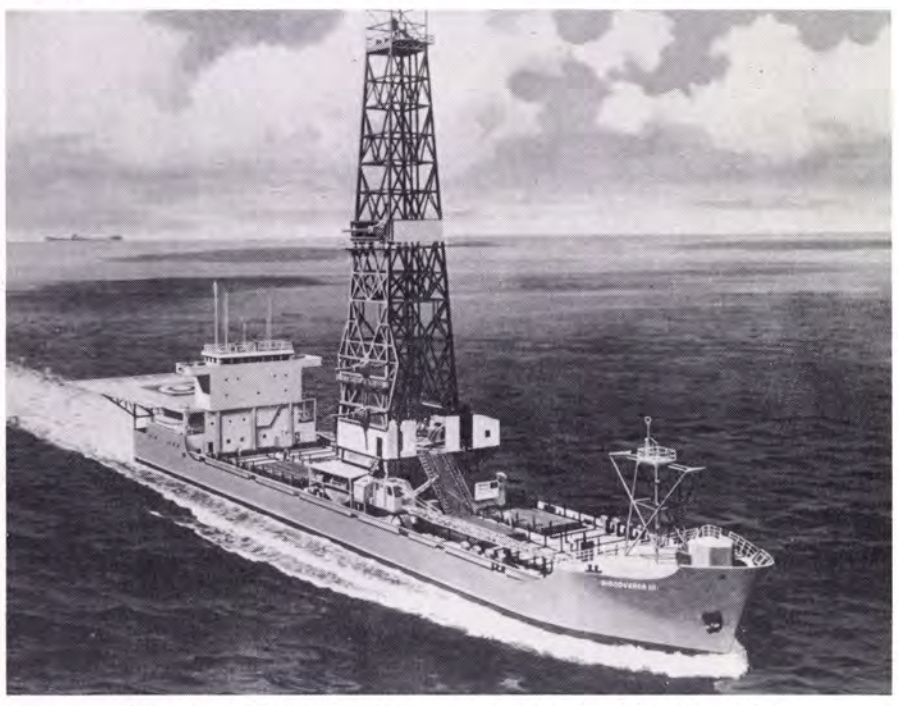
The marine salvage industry has crossed a threshold into its own industrial revolution and must revise its thinking and methods of operations during these times of changing conditions and escalating costs, said **P.E.E. Kleyn van Willigen,** joint managing director of Smit Internationale, one of the world's largest towing and salvage operators, during an address recently in New York City at the Symposium on Marine Salvage, cosponsored by The Maritime Association of the Port of New York, and The Marine Technology Society.

P.E.E. Kleyn van Willigen

Mr. **van Willigen** supported his charge before an audience representing all segments of the marine salvage industry by pointing out that today a fully equipped tug can cost upwards of $10 million and that salvable cargoes often range up to 150,000 tons, 10 times more than was common in ocean traffic only a few years ago. He warned that salvors face a potential of suits rising from negligence and pollution cases, and urged that shipowners and underwriters establish a "command center" to come more quickly to terms with a salvage firm when a casualty occurs.

ALL-OCEAN TUG, MISTER RICHARD, equipped with two ALCO, V-12, 251s rated at 2650 BHP each has 13 knots free-running speed.

NEW GREAT LAKES ORE CARRIER, M/V WILLIAM R. ROESCH is Power Bossed by two ALCO, V-16, 251 diesels rated at 2800 BHP each.



DRILL SHIP DISCOVERER III obtains main propulsion from three, 12-cylinder, ALCO 251s.

LASH VESSEL, THOMAS E. CUFFE's ship service is provided by ALCO 16-cylinder diesel rated at 2,000 KW at 900 RPM.

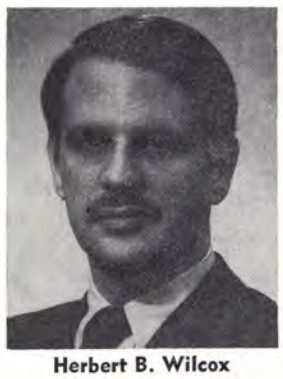
WHITE MOTOR CORPORATION

Genuine ALCO parts are continually improved to provide top engine efficiency.

We offer a complete staff of expert service specialists.

ALCO®

United States Lines Elects Herbert Wilcox VP-Financial Planning



Herbert B. Wilcox

Herbert B. Wilcox has been elected vice president-financial planning and analysis of United States Lines, it was announced by **Edward J. Heine Jr.,** president of the company.

Mr. **Wilcox** joined United States Lines in 1965, and has held positions both in Europe and in this country relating to the company's financial operations.

Recently, he was director of financial planning and analysis and before that, comptroller for the European Division. In his new post, he will report to **Richard E. Madigan,** vice president and chief financial officer.

Mr. **Wilcox** is a graduate of Union College, and has an M.B.A. degree from Harvard University.

Gulf Section Annual Spring Meeting Held In New Orleans

The Gulf Section of The Society of Naval Architects and Marine Engineers recently held its Annual Spring Meeting at the Fairmont Hotel in New Orleans, La., and drew a large attendance from the entire Gulf Coast and many other areas.

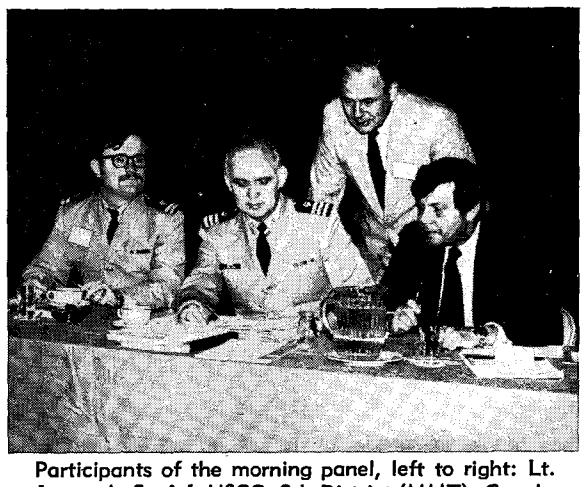
The evening before this 26th Annual Meeting of the Gulf Section a warm-up cocktail party was held for members and guests at the Plimsoll Club, International Trade Mart Building, New Orleans.

The morning technical session was directed to a panel discussion on pollution. The participants in the discussion were Comdr. **Richard L. Brown** and Lt. **James A. Sanial,** both of the merchant marine technical staff of the Eighth U.S. Coast Guard District, and **George W. Healy III,** counsellor at law of the firm of Phelps, Dunbar, Marks, Claverie, and Sims.

The main topics of discussion presented related to the latest developments in pollution regulations which affect the marine industry. Some items covered included: "The 1973 International Convention on Pollution"; "The 1959 Convention and the 1969 and 1971 Amendments Therein"; "The Trans-Alaskan Pipeline Authorization Act"; "Pollution Prevention Regulations to be Effective July 1, 1974"; "Standards of Marine Sanitation Devices Recently Reissued"; "Financial Responsibility and Penalties Facing the Industry Under the Above and Previous Regulations," and "Vapor Collecting Regulations for Barges Discharging Volative Carbon Compounds."

William Hamilton of Friede & Goldman, Inc., papers chairman, presided at both morning and afternoon technical sessions.

After the morning technical session, a luncheon was held in the Explorer Room of the Fairmont Hotel, with an attendance of approximately 135 members and guests. **Phillip Eisenberg,** president of the Society, addressed the luncheon meeting, and some announcements were made by the national secretary, **Robert G. Mende.** Mr. **Eisenberg** presented certificates of appreciation to **Julian O. Crooke,** chairman, Gulf Section; **Julian C. McLean Jr.,** vice chairman, Gulf Section-Central Area; **Monroe Levy,** vice chairman, Gulf Section, Western Area, and **John Miner,** vice chairman, Gulf Section, Eastern Area.



Participants of the morning panel, left to right: Lt. **James A. Sanial,** USCG, 8th District (MMT); Comdr. **Richard L. Brown,** USCG, 8th District (MMT); **William Hamilton,** papers chairman, Gulf Section, and **George W. Healy III,** attorney with the firm of Phelps, Dunbar, Marks, Claverie, and Sims.

Members of the Society at the head table after the dinner dance at the Annual Spring Meeting of the Gulf Section, left to right: **Robert G. Mende,** national secretary; **Monroe Levy,** vice chairman, Gulf Section, Western Area; **John Miner,** vice chairman, Gulf Section, Eastern Area; **Wilfrid G. Constable,** chairman, Arrangements Committee; **Julian C. McLean Jr.,** vice chairman, Gulf Section, Central Area; **William Hamilton,** papers chairman; Rear Adm. **Ellis L. Perry; John T. Gilbride,** principal speaker; **Phillip Eisenberg,** SNAME president, and **Julian O. Crooke,** chairman Gulf Section.

Three excellent papers were presented during the afternoon session. **James O. Gundlach,** vice president of Canal Barge Company, Inc., presented his paper "Heating Cargoes in River Barges," which made available Canal Barge Company's long experience with transporting heated liquid cargoes by barge.

"A Loading Manual for Offshore Supply Vessels" was the technical paper presented by Lt. Comdr. **David H. Whitten** and Lt. **Gary B. Johnson,** both with the U.S. Coast Guard (MMT). The loading manual was shown to be a model of a supply vessel loading manual presented for designers and builders to consider as a means to provide adequate stability information to the master. The manual would assist the master in quickly assessing the safe cargo capacity and distribution of his vessel under a variety of loading conditions and offers many advantages to the owner.

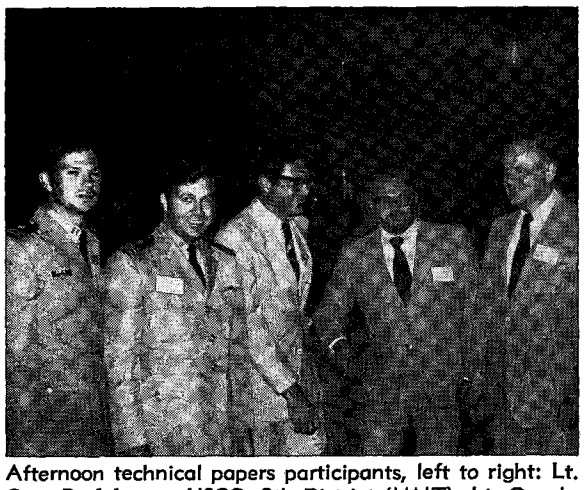
Rounding out the afternoon, **Jack Seastrom,** service manager for Jacuzzi Brothers, Inc., presented his paper "Practical Application of Water Jet Propulsion in Pleasure and Commercial Boats." The material indicated that a working knowledge of such factors as power-to-weight ratios, the effect of longitudinal center of gravity, differences in basic boat design and the limitations of water jet propulsion is mandatory for successful applications of water jet propulsion in the pleasure and commercial boat market. Field-tested formulae, rules and tables were presented to reinforce these performance factors and to help both naval architects and less formally trained designers and boatbuilders to make wise installation decisions.

The meeting was concluded by a cocktail party in the Grand Ballroom and a dinner-dance in the International Room of the Fairmont Hotel, with approximately 600 in attendance. **Julian C. McLean Jr.,** vice chairman, Gulf Section, Central Area, M.C.'ed the program for the dinner-dance. **John T. Gilbride,** president of Todd Shipyards Corporation, was the principal speaker. The president of the Society, **Phillip Eisenberg,** and the national secretary, **Robert G. Mende,** were also at the head table. During the program, Lieutenant Governor for the State of Louisiana **James E. Fitzmorris** presented commissions to Mr. **Gilbride** and Mr. **Eisenberg,** on the Staff of the Governor, State of Louisiana. Remarks were also offered by Mr. **Eisenberg** and **J.O. Crooke,** chairman of the Gulf Section, who announced the incoming Gulf Section officers, as follows:

Julian C. McLean Jr., principal surveyor-Gulf Coast, American Bureau of Shipping, New Orleans, as incoming chairman, Gulf Section; **Jack Campbell,** vice president, Southern Marine Service, Mobile, Ala., as incoming vice chairman, Gulf Section, Eastern Area; **Paul Mathews,** chief engineer, Todd Shipyards Corporation, Houston, Texas, as incoming vice chairman, Gulf Section, Western Area; **William Hamilton,** Friede & Goldman, Inc., New Orleans, as incoming vice chairman, Gulf Section, Central Area; **Wilfrid G. Constable,** marine surveyor and consultant, New Orleans, as member of the executive committee, and **Henry Fray,** vice president, Bailey Corp., New Orleans, as secretary-treasurer.

Members heading the committees for the meeting were: **Julian C. McLean Jr.,** vice chairman, Gulf Section, Central Area; **Wilfrid G. Constable,** chairman, Arrangements Committee; **William Koren,** assistant chairman, Arrangements Committee; **William Hamilton,** papers chairman, and **Henry Fray,** secretary-treasurer.

Dancing at the dinner-dance was to the music of **Val Valentino** and his orchestra.



Afternoon technical papers participants, left to right: Lt. **Gary B. Johnson,** USCG, 8th District (MMT); Lt. Comdr. **David H. Whitten,** USCG, 8th District (MMT); **James O. Gundlach,** vice president, Canal Barge Company, Inc; **Jack Seastrom,** service manager, Jacuzzi Brothers, Inc., and **William Hamilton,** papers chairman, Gulf Section.

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Richard J. Boyle To Head Honeywell's Marine Systems Div.

Honeywell president **Stephen F. Keating** has announced the promotion of **Richard J. Boyle** to vice president and general manager of the company's Marine Systems Division, which has facilities in Seattle, Wash., and West Covina, Calif.

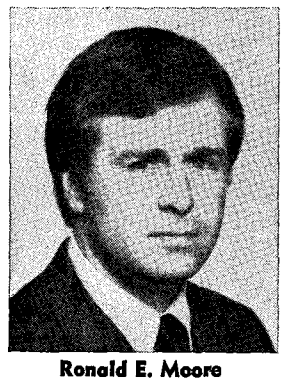
Mr. **Boyle,** who will be based in Seattle, succeeds **Theodor F. Heuter,** whose new assignment will be made later.

Mr. **Boyle** was Seattle operations manager for the Marine Systems Division from 1968 to 1971, when he went to Minneapolis as corporate director of environmental programs. He was named director of environmental and urban control systems in September 1972, responsible for the initiation, coordination and expansion of the company's efforts in the control of air and water pollution and other environmental problems.

Mr. **Boyle** joined Honeywell in 1957, after graduation from Marquette University with a degree in electrical engineering. He progressed through a series of service engineering, project management, marketing management, and general management positions prior to being named Seattle operations manager.

The division Mr. **Boyle** heads works with a broad spectrum of technology to serve a variety of markets related to the sea. The organization designs and manufactures systems for ships and submarines, advanced data handling and signal processing equipment, radar-navigation trainers and commercial marine systems.

Rose Barge Line Promotes Moore To Newly Created Post



Ronald E. Moore

Earl C. Rose Jr., president of Rose Barge Line, Clayton, Mo., has announced the promotion of **Ronald E. Moore** to the newly created position of manager for terminal and fleet services.

Mr. **Moore** will coordinate all activities between operations, dispatch and sales with customer terminals and associated public and private fleeting services.

He joined Rose Barge Line in 1970 as a dispatcher, and has been serving as sales and traffic representative.

A native of St. Louis, he attended the Central Missouri State College and served in the Marine Corps Reserve.

In his new position, Mr. **Moore** will gather and maintain information on all operations and negotiate any agreements with related service facilities.

ITT Rayonier Names Richard M. Mueller Marine Operations Mgr.

Richard M. Mueller has been named to the new position of manager of marine operations at ITT Rayonier Inc., New York, N.Y., it has been announced by **R.E. Heine,** director of transportation and distribution.

Mr. **Mueller** will supervise ocean shipping of Rayonier products and have responsibility for equipment design, scheduling, towing, ship performance and cost control, stevedoring and chartering.

A graduate of Harvard College, he worked for seven years with Farrell Lines, Inc. of New York as assistant pier superintendent, and for five years with International Paper Company as manager of shipping systems.

He also studied ocean shipping and chartering at the School of World Trade and taught ocean shipping there for four years.

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United States Lines Elects Kolibachuk VP-Comptroller

John F. Kolibachuk

John F. Kolibachuk has been elected vice president-comptroller of United States Lines, Inc., it was announced by **Edward J. Heine Jr.,** president of the company.

Mr. **Kolibachuk** has been with the United States Lines since 1957. He was elevated from subsidy analyst to assistant comptroller in 1966 and to comptroller in 1971. Previously, he was a senior staff accountant with Price Waterhouse.

In his new position, Mr. **Kolibachuk** will report to **Richard E. Madigan,** vice president and chief financial officer.

Mr. **Kolibachuk** is a certified public accountant and a member of the American Institute of Certified Public Accountants. He is a graduate of the Rutgers University School of Business and has an M.B.A. degree from New York University's School of Business.

United States Lines operates an all modern fleet of 30 vessels serving areas of the world. Sixteen high-speed high-capacity containerships maintain a 15,000-mile Tri-Continent Service between Europe, the East and West Coasts of the United States, Hawaii, Guam and the Far East. The company also has 14 fast Challenger-Class general cargo vessels engaged in commercial and chartered services in the trans-Atlantic and trans-Pacific areas.

CTI Publishes Brochure Detailing Its Services

CTI-Container Transport International, Inc. announces the publication of a guide to its services featuring actual case studies. This full-color brochure details services and locations of all CTI worldwide offices.

The brochure is available free on request by writing to **Fran Weinstein,** CTI-Container Transport International, Inc., One North Broadway, White Plains, N.Y. 10601.

Sprague SS Agency Names A.J. Smith Jr. To Head Boston Office

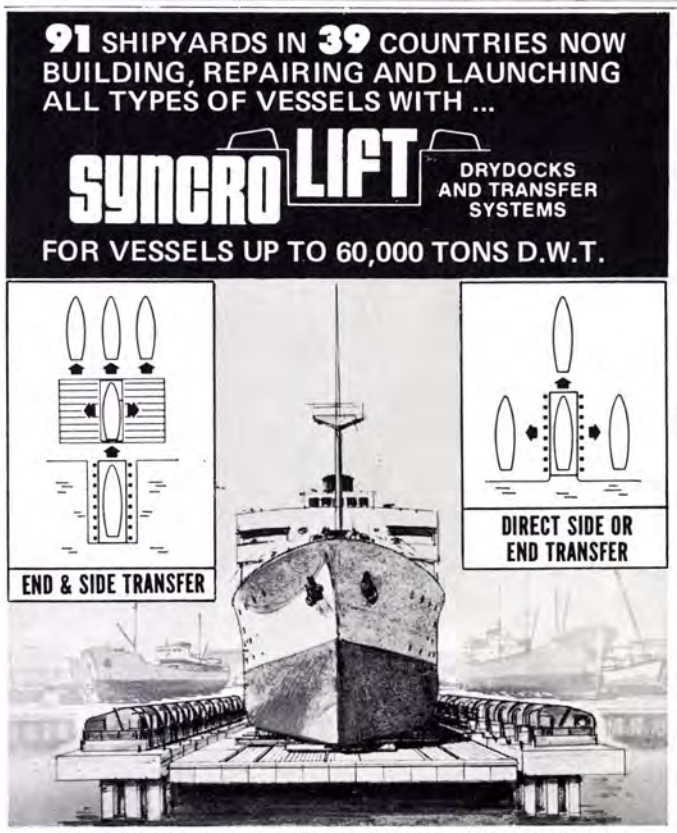
Sprague Steamship Agency, a division of C.H. Sprague & Son Co. of Boston, distributors of fuels and bulk materials, has appointed **Albert J. Smith Jr.** as manager of the Boston, Mass., office. Mr. **Smith** is an 18-year veteran of the Sprague organization.

New Book Available On ABS-Approved Welding Filler Metals

The American Bureau of Shipping has recently published its 1974 edition of "Approved Electrodes, Wire-Flux, and Wire-Gas Combinations." This book lists by brand name all the filler metals approved by ABS for welding materials for the construction and repair of ships classed or intended to be classed with the American Bureau of Shipping. Listed therein are filler metals manufactured in 44 countries which have complied with tests conducted according to standards established by ABS or other recognized agencies.

Pertinent information regarding grade or code designation size, current, polarity, and approved operating positions are included. Additional associated information concerning mechanical property requirements for the filler meals, the application of the various filler metal grades to ABS steels, and comparison of ABS and AWS classifications are contained in a five-part appendix to this book.

"Approved Welding Electrodes, Wire-Flux, and Wire-Gas Combinations—1974" sells for $6, plus applicable sales tax and overseas mail charge. The book may be ordered through any office of the American Bureau of Shipping or from the Book Order Department at 45 Broad Street, New York, N.Y. 10004.



Six Appointments To Management Posts At Beth-Beaumont Yard

The appointments of **Paul W. Pritchard Jr., Milton H. Leubecker, Reynold R. Kraft, William T. Faucett, Herman H. Haferkamp,** and **James M. Heller Jr.** to management positions in Bethlehem Steel Corporation's Beaumont, Texas, shipyard were announced by **Ralph A. Leaf,** general manager.

Mr. **Pritchard** is appointed assistant general manager-engineering and controls, Mr. **Leubecker** is named assistant general manager-production, Mr. **Kraft** becomes superintendent of engineering, Mr. **Faucett** becomes administrative assistant to the general manager, Mr. **Haferkamp** is assistant general superintendent, and Mr. **Heller** is assistant foreman of the hull department.

Mr. **Pritchard** is advancing from assistant to general manager at the shipyard. He will have responsibility for planning, engineering, estimating and cost analysis.

Born in Chester, Pa., he was graduated from Duke University in 1955 with a degree in mechanical engineering and joined Bethlehem Steel as a member of that year's management training program.

From 1955 to 1963, Mr. **Pritchard** worked as an engineer at the corporation's plant in Bethlehem, Pa. He was then assigned to the home office steel operations department's planning and coordination work for the new plant at Burns Harbor, Ind. In 1967, he was transferred to the engineering department at the home office.

Mr. **Pritchard** joined the Beaumont shipyard in April 1971 as the plant engineer. Later that year, he became project manager working in contract management, and became assistant to the general manager in September 1973.

Mr. **Leubecker** is coming to the Beaumont facility from Bethlehem Steel's Baltimore (Md.) yards, where he has been serving as assistant general superintendent.

In his new position at Beaumont, he will be responsible for production, material, transportation and plant facilities.

A native of Baltimore, Mr. **Leubecker** first joined the Baltimore yards in 1948. In 1960, he was transferred to the corporation's former yard at Quincy, Mass., and returned to the Baltimore yards in 1964 as a ship superintendent. He became assistant general superintendent in November 1967.

Mr. **Leubecker** was graduated from Johns Hopkins University in 1973 with a Bachelor of Science degree in industrial management.

Born in Oak Park, Ill., Mr. **Kraft** was graduated from the University of Michigan in 1947 with a bachelor's degree in naval architecture and marine engineering, and he earned a master's degree in marine engineering from the Massachusetts Institute of Technology in 1948.

He began work in the shipbuilding and ship repair field in 1949 and joined the Bethlehem-Beaumont facility in July 1973 as chief production engineer.

As superintendent of engineering, Mr. **Kraft** will be responsible for naval architecture, design engineering and production engineering.

Mr. **Kraft** is a registered professional engineer in Texas and is a member of The Society of Naval Architects and Marine Engineers.

As administrative assistant to the general manager, Mr. **Faucett** will have responsibility for management development, data processing, public relations, community affairs, and special assignments.

A native of Beaumont, he began work in the shipbuilding business in 1940. He attended Lamar University and joined the Beaumont shipyard as a senior draftsman in June 1947. About a year later, he was transferred to the estimating department, and he became chief estimator in 1960.

Mr. **Faucett** was promoted to assistant to the general manager in January 1971 and became assistant general manager in September 1973.

He is a member of The Society of Naval Architects and Marine Engineers and the American Management Association.

Born in Germany, Mr. **Haferkamp** began employment with Bethlehem Steel at its San Francisco yard in 1960. After working for a period of almost two years with ODECO, a company with offshore oil drilling interests, he rejoined the Bethlehem organization at Beaumont in April of this year.

Mr. **Haferkamp's** responsibilities are in the general area of hull construction.

A native of Bethlehem, Pa., Mr. **Heller** was graduated from Moravian College in 1965 with a Bachelor of Science degree. He joined Bethlehem Steel in 1969 as a member of that year's management training program and was assigned to the corporation's Baltimore yards. He held various positions there until his transfer to the Beaumont yard.

MarAd Eastern Region Names M.J. Chapman

The Maritime Administration Eastern Region has appointed **M.J. Chapman** a Trade Specialist in the Office of Market Development, New York City.

Mr. **Chapman** will work very closely with all segments of the maritime industry to aid in the expansion of their marketing programs, and to create a responsive awareness to this constantly changing industry.

Formerly employed by Seatrain in various marketing positions, the last of which was administrative assistant to the marketing vice president, he received his master's degree in marketing from Fairleigh Dickinson University. Mr. **Chapman** is presently teaching "Economics of Transportation" in the Rutgers University evening program.

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Combi Line Names Nathan H. Snider

Nathan H. Snider

Biehl & Co., steamship agents, has announced the appointment of **Nathan H. Snider** as line manager for Combi Line activities in New Orleans, La.

According to **Ralph Rugan Jr.**, vice president of Biehl, Mr. **Snider** will be responsible for New Orleans operations and traffic in connection with Combi's LASH (lighter aboard ship) container services and conventional services.

Biehl is U.S. general agent for Combi Line, which is a combined service of two old-line European companies — Hapag-Lloyd AG, West Germany, and Holland America Line, the Netherlands.

A native of Vonore, Tenn., Mr. **Snider** was formerly vice president Isbrandtsen Steamship Co. in New Orleans, and also served as a vice president of Amerind Shipping Corp.

He is a graduate of Lincoln Memorial University, Harrogate, Tenn., where he earned a Bachelor of Arts degree.

During World War II, he served with the U.S. Navy in the Atlantic and the Pacific, and was honorably discharged with the rank of lieutenant commander.

Mr. **Snider** is a member of the National Cargo Bureau, New Orleans Board of Trade, Foreign Commerce Committee, Chamber of Commerce and Sub-Committee of the Foreign Trade Zone. He is a founding member of the Covington Country Club.

Avondale Shipyards Awarded $15-Million Drillship Conversion

Ogden Corporation announced that its Avondale Shipyards subsidiary has contracted to convert a C-4 vessel —presently owned by its subsidiary, Ogden Marine, Inc.—to a drillship for Martin Industries, Inc. of New Orleans, La. The shipyard conversion cost will be approximately $15 million, with delivery scheduled for 1975.

The conversion of this ship will provide a valuable deepwater drilling capability on a much earlier delivery basis than would be possible with the construction of a new vessel, and make an effective and much earlier contribution to the search for new energy sources.

Smit Nymegen Moves To Larger Quarters

Smit Nymegen Corporation, the recently formed U.S. subsidiary of Smit Ovens Nijmegen of Holland, has announced that it has moved its U.S. operations into larger quarters. Located at 275 Kisco Avenue, Mount Kisco, N.Y., and covering 60,000 square feet, the new manufacturing plant will also house the company's headquarters, sales and service, and engineering staff.

Smit's move was necessitated by a growing demand for its independent inert and N_2 gas generators for marine and industrial applications, as well as a demand for the company's line of dual fuel and electric glass annealing lehrs for glass manufacturers. Smit Nymegen also produces TV Frit sealing and exhausting equipment, a line of furnaces for TV screen annealing and blackening, and heat treating equipment for ceramic, metal and processing industries.

According to **Paul W. Roos,** president of Smit Nymegen Corporation: "This move meets our needs for additional manufacturing and engineering space to fill present and future equipment orders through 1975. The Mount Kisco area offers additional space should we require it."

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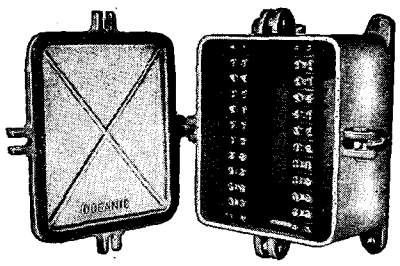

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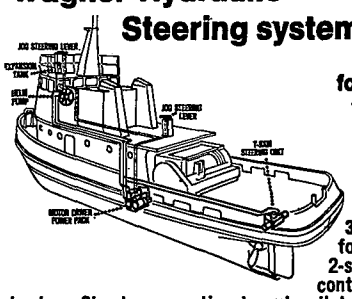

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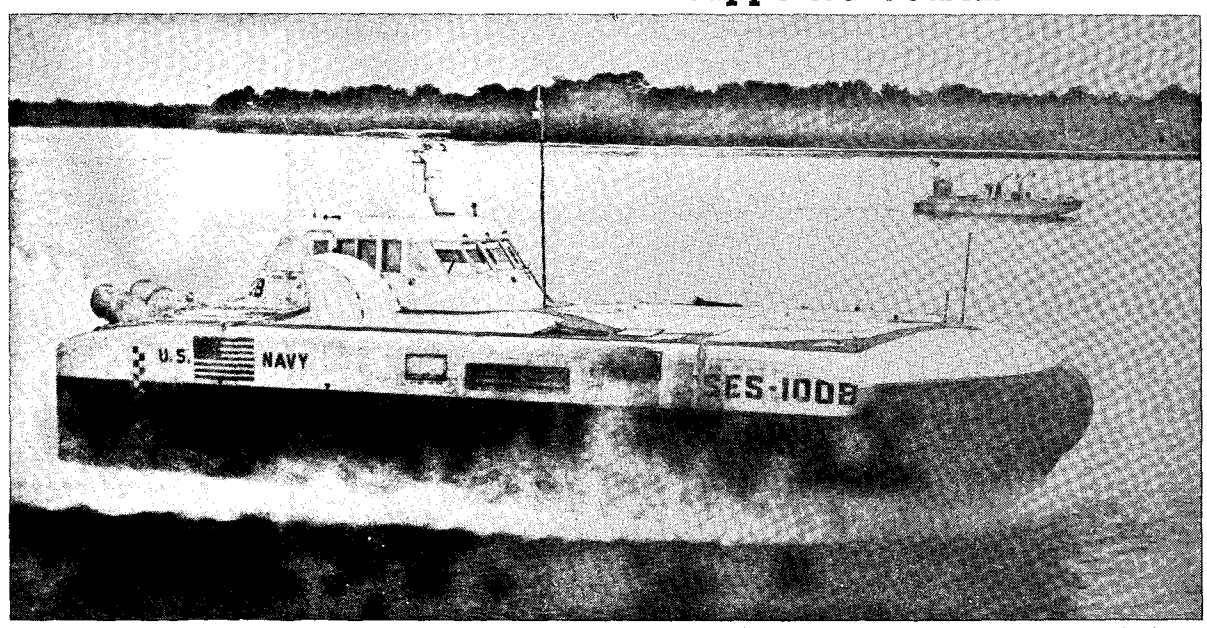
Bell Aerospace Surface Effect Ship Sets World Record For Air-Supported Vessels



The U.S. Navy's SES-100B 100-ton Surface Effect Ship streaks past a Navy observation craft at more than 80 knots (92 miles per hour) as it establishes a world speed record for this type of air-supported vessel.

The U.S. Navy's SES-100B Surface Effect Ship test craft has achieved a speed in excess of 80 knots (92 miles per hour)—a world record for this type of vessel.

Textron's Bell Aerospace Division of New Orleans, La., which developed and now is testing the 100-ton propeller-driven air-supported craft for the Naval Material Command's Surface Effect Ships Project Office (PM-17), set the world speed record for this type craft during a test mission at Panama City, Fla., on April 16, 1974.

Prior to the high-speed run, Dr. **David S. Potter,** Assistant Secretary of the Navy for Research and Development, had participated in a test mission in the Gulf of Mexico and had operated the SES-100B for 30 minutes at speeds of more than 60 knots.

The record speed was accomplished during tests on an instrumented range, and the speed was recorded by highly-precise tracking radar operated by U.S. Naval personnel.

A six-man Bell Aerospace/Navy crew was on board the SES-100B for the high-speed test mission. Capt. **Gordon H. MacLane,** USCG (ret.), Bell's craft commander, was at the controls. Other crew members were Lt. **Robert Hartman,** USN, Navy craft commander; **Charles E. Lester,** first officer; **Alvin T. Thawley,** test director, **John S. Wakefield,** data acquisition engineer, and **Frank L. Richter III,** chief of the boat.

The crew described the craft's stability as "excellent" and said they had a smooth ride throughout the high-speed operation. Bell Aerospace engineers reported that the craft performed flawlessly. They said the speed achieved was extremely close to predictions based upon analysis and model test data.

The record speed run followed the successful completion of testing necessary to confirm the technology for the design of a 2,000-ton oceangoing Surface Effect Ship. During missions in the Gulf of Mexico, the SES-100B has operated for considerable periods of time in high-sea states, and has repeatedly demonstrated performance, stability and habitability exceeding expectations.

In addition, the Bell-developed SES-100B was the first Surface Effect Ship to expand its operating envelope to more than 70 knots (82 miles per hour). This milestone took place in testing on Louisiana's Lake Pontchartrain more than a year ago.

The extensive technical data being generated by the heavily instrumented SES-100B is being used by the Navy and Bell Aerospace to validate the predictions and design features to be incorporated into larger Surface Effect Ships in the 2,000-ton class.

The SES-100B, almost 78 feet long with a beam of 35 feet and weighing a little more than 100 tons, rides on a drag-reducing cushion of air contained by catamaran-style side hulls and flexible bow and stern seals.

The air cushion is generated by eight lift fans driven by three marine gas turbine engines. When cruising, the center portion of the hull is clear of the water and the craft supported almost entirely by the air cushion with only the lower surface of the catamaran side hulls skimming the surface for stability and propulsion.

Propulsion for the craft is provided by three marine gas turbines which drive two semisubmerged, controllable pitch, supercavitating propellers.

Financial Aid Sought To Build $65-Million Worth Of Offshore Drilling Rigs, Tugs And Barges

Applications have been filed with the Maritime Administration for Government backing of more than $65-million worth of offshore drilling units, barges, and tugs.

Meanwhile, MarAd approved construction loan and mortgage insurance under Title XI of the 1936 Merchant Marine Act for the $14-million reconstruction of a World War II-built CL-M-AV1 into a self-propelled drilling rig for Storm Drilling Co. of Houston, Texas, for use in the Gulf of Mexico and foreign waters. Bethlehem Steel Corporation of Beaumont, Texas, will do the work.

The applicants for such financial aid are:

—Atwood Oceanics Inc., Houston—two self-elevating platform (jackup) drilling units estimated to cost $39.4 million, with construction to be done by Marathon LeTourneau, Brownsville, Texas and Vicksburg, Tenn. The units are to be used in offshore exploration.

—L&L Marine Service Inc., Clayton, Mo.—two oceangoing tugs at a total of $4.6 million and four barges of $4.5 million to be chartered to Union Carbide Corp. for Gulf-Puerto Rican movements of petroleum coke and electrode binder pitch. Lamont Shipbuilding & Repair Co., Lamont, Ill., will do the building.

—Hannah Barge 5101 Partnership, Lamont, Ill.—one double-skinned petroleum barge of 51,000-barrel capacity, estimated to cost $2.6 million. The builder of the Great Lakes barge will be DeFoe Shipbuilding Co., Bay City, Mich.

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You're in port . . . it could be San Francisco, New York or Oslo . . . and you need help **now.** A pump is down. A turbine needs repair. Ease your mind. Call the best-equipped, marine supply company in the world, Argo. For replacement parts or a complete, new unit. And, you'll be fit and underway fast, perhaps even in hours, not days.

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Service — expert and personalized. Our engineers and maintenance specialists are actually the best parts we stock. These professionals are dedicated to just one goal — serving you, quickly and dependably.

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Branches: Carson • Cleveland • Houston • New Orleans • Portland • San Francisco • Salt Lake City • Seattle • Antwerp • Genoa • London • Oslo • Piraeus

Subsidiary: Delta Marine — New York • Houston

WABCO Fluid Power Offers New Bulletin On 'Logicmaster' Unit

A new bulletin describing Logicmaster™ Marine Propulsion Control Systems for pilothouse control for marine engines with hydraulic clutch reverse gears has been issued by WABCO Fluid Power Division, Lexington, Ky.

Bulletin M-151.00 describes the Logicmaster pneumatic propulsion control system featuring interlocks and protective circuits for safe, error-free operation under all maneuvering conditions. With Logicmaster control systems, propulsion machinery responds to maneuvering demands without wear or damage from high-speed clutch engagement, or engine stalling on fast reversals.

The bulletin gives operating sequences, selection information and full details of three types of Logicmaster control systems. The Logicmaster Control Unit features include: power boost during clutch engagement to prevent engine stalling; clutch pressure throttle interlocks to reduce clutch wear by preventing engagement of high throttle settings; timed or proportional reversing interlocks to reduce stalling possibilities by allowing engine and propeller speeds to stabilize at acceptable levels before reversal is permitted; and shaft brake interlocks to synchronize the clutch and shaft brake operation for smooth maneuvering. All Logicmaster control systems are subjected to 100 percent operational testing before shipment.

Free copies of the eight-page bulletin M-151.00 are available on request from WABCO Fluid Power Division, 1953 Mercer Road, Lexington, Ky. 40505. The division is a member of the American-Standard Power and Controls Group.

Texaco Inc. Appoints William J. Carlin

William J. Carlin

Texaco Inc. has announced the appointment of **William J. Carlin** as manager of the company's international marine sales activities in Latin America and West Africa. In his new position, located in New York, Mr. **Carlin** will assume the responsibilities of **Charles L. Hauck,** who is retiring after 28 years of service with Texaco.

Mr. **Carlin** joined Texaco in 1967 in the international marine sales department, after serving with a Texaco affiliate company for 13 years. He graduated from Fordham University in New York City, with a Bachelor of Science degree in 1968. In 1969, Mr. **Carlin** was named manager, marine sales in Panama. In 1971, he was appointed marketing assistant in Texaco's international marine sales department in New York. In 1972, he was named assistant manager for international marine sales in Latin America and West Africa.

Mr. **Hauck** was graduated from Lebanon Valley College in Annville, Pa., in 1935 with a Bachelor of Science degree in economics. He joined Texaco in 1946 and served in various sales positions until 1967, when he was appointed assistant general manager for international marine sales in the Western Hemisphere and West Africa. In 1971, Mr. **Hauck** was appointed assistant general manager for international marine sales in Latin America and West Africa.

Smokey the Bear he ain't. But he has been known to stomp some butts.

Billy Foran is a good old boy. But he's in the habit of getting the job done and done on time.

He's been doing it for the last quarter of a century as our General Superintendent. He's helped make us the place in this part of the world for every kind of work from voyage repairs to major conversions.

We're not the biggest on this seaboard, but we manage to make a lot of Yankees come down here for their work.

The fact that we can work 365 days a year without having to thaw out doesn't hurt either.

Good work. Good town. Good climate. And Billy.

Good reasons to let us show you what we can do.

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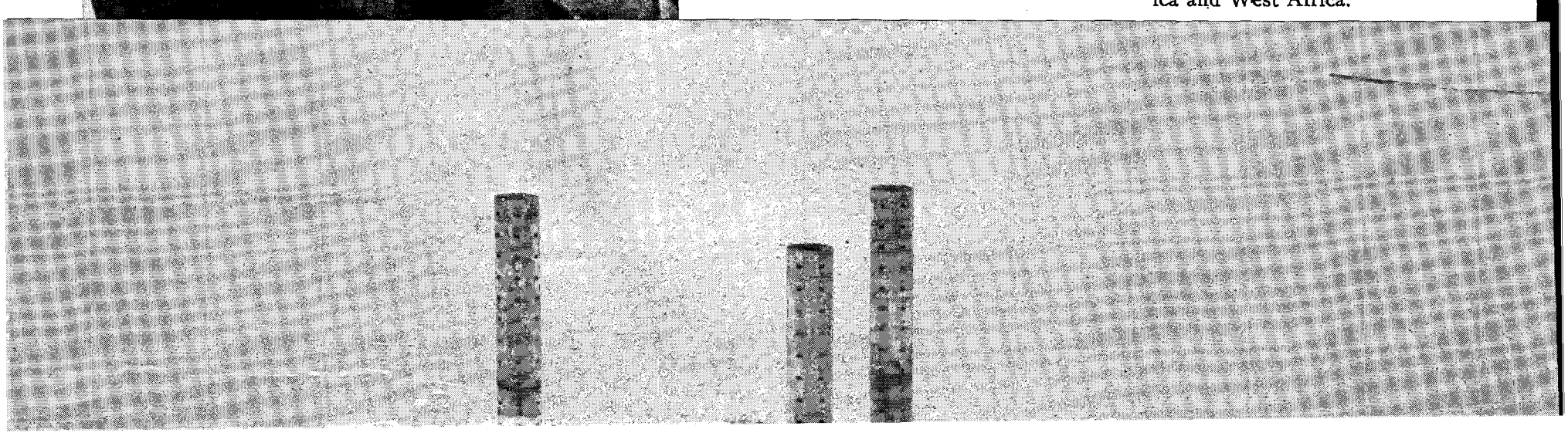

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Delivery — where you need it. Strategically based, computer-linked, office-warehouses throughout the U.S. and abroad.

Inventory — spectacular . . . Our stock includes literally millions of parts — everything that keeps a ship alive from motors and compressors to nuts and bolts. (Even martini glasses. They break, too.)

Service — expert and personalized. Our engineers and maintenance specialists are actually the best parts we stock. These professionals are dedicated to just one goal — serving you, quickly and dependably.

Call us, day or night. We **really** deliver.

Depend on us.

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The bulletin gives operating sequences, selection information and full details of three types of Logicmaster control systems. The Logicmaster Control Unit features include: power boost during clutch engagement to prevent engine stalling; clutch pressure throttle interlocks to reduce clutch wear by preventing engagement of high throttle settings; timed or proportional reversing interlocks to reduce stalling possibilities by allowing engine and propeller speeds to stabilize at acceptable levels before reversal is permitted; and shaft brake interlocks to synchronize the clutch and shaft brake operation for smooth maneuvering. All Logicmaster control systems are subjected to 100 percent operational testing before shipment.

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$20-Million Contract To Morrison-Knudsen

The Alyeska Pipeline Service Company has awarded a $20-million contract to Morrison-Knudsen Co., Inc., for the initial rock excavation at the site of the Southern Marine Terminal of the Trans-Alaska Oil Pipeline at Valdez, Alaska. Alyeska also authorized Fluor Alaska, Inc., as general and management contractor with construction of the terminal.

SNAME Chesapeake Section Hears Paper On 'Omega Navigation System'

Pictured at the Chesapeake Section April meeting, left to right: **Seth Hawkins,** Section chairman; **Frank Sellars III,** moderator, MPR Associates; Comdr. **John D. Richardson,** USN, author; **E. Scott Dillon,** MarAd (ret.), and **L.C. Hoffmann,** John J. McMullen Assoc.

The Chesapeake Section of The Society of Naval Architects and Marine Engineers held the seventh meeting of its technical program at the Washington Navy Yard's Officers Club on April 10, 1974.

Approximately 50 members and guests enjoyed the social hour and dinner preceding the technical meeting. Chairman **Seth Hawkins** opened the meeting by welcoming those in attendance and announcing a report from Capt. **Richards Miller,** USN (ret.), indicating the financial success of the Sailing Yacht Symposium at the Naval Academy on January 19, 1974, and added that complete sets of the symposium papers were available at the Section headquarters for a nominal sum. A donation of $1,000 from the profits of the symposium has been donated to the Sailing Yacht Panel for use in research work.

Alexander C. Landsburg, chairman of the Section nominating committee, was then called upon to read the list of nominees for the Section offices for the following year.

The moderator for the technical program was **Frank Sellars III,** who introduced the author, Comdr. **John D. Richardson,** USN, Omega Navigation System Project Manager, Naval Electronic Systems Command, Department of the Navy.

The author presented an overview of the Omega Navigation System characteristics, including a brief background history of its development. A brief nontechnical description of the basic principles of operation and slides, showing types of present generation receivers and of land-based transmitting stations, including the various types of antennae and associated electronic transmitting gear, were shown. Full system operational status with worldwide coverage from eight transmitting stations is planned for the mid-1970s, with Northern Hemisphere coverage to be completed by the end of the current year. Omega is available to users in all nations, both on ships and in aircraft. Position coverage is attainable to one to two nautical mile root-mean-square accuracy. Omega is now being installed on all U.S. Naval surface vessels as a general-purpose all-weather electronic aid to navigation, and plans are made to install Omega in all long-range patrol and transport aircraft of the U.S. Navy and Air Force.

Omega is rapidly spreading to the commercial sector, where many fishing fleets and merchant vessels are now so equipped. The author further noted that recording type Omega receivers can indicate vessel speeds and are useful in sailing vessels to determine maximum speed relative to land.

Numerous interesting discussions were initiated from the floor, covering a wide latitude of subjects relating to applications of this equipment, position accuracy criteria and political connotations involved in the selection of location for transmitting stations.

The author impressed the membership as to the advantageous aid to navigation provided by the use of Omega. It is destined to become an international, worldwide general-purpose navigational aid available to unlimited users.

Global Marine And J.F. Pritchard In Joint LNG Effort

Global Marine Development of Los Angeles, Calif., and J.F. Pritchard & Co., Kansas City, Mo., have reached an agreement calling for the joint development of floating liquefied natural gas baseload production plants in offshore areas.

The aim of the accord is to combine Global Marine's maritime technology and Pritchard's LNG process technology to help implement the floating LNG system, which is said by Pritchard to provide "a practical means of utilizing hydrocarbon resources that cannot be economically exploited using only shore-based facilities."

Walworth Describes Iron Body Valves In 38-Page Bulletin

Walworth iron body valves are described in detail in a 38-page catalog. Photographs, cutaways and dimensional tables show features which impart high strength and reliability to a wide variety of iron body wedge gate valves, globe, angle, lift-check and swing-check valves.

Covering iron body valves for power, process, CPI, pulp and paper, marine, refining, HVAC, airport and general industrial uses, the catalog cites special features of the valves which make them useful to the requirements of a given industry.

A section is devoted to valve accessories and another to flange dimensions.

For a copy of Iron Valves Bulletin, write: Advertising Department, Walworth Company, 1400 West Elizabeth Avenue, Linden, N. J. 07036.

MMC LUBE OIL

CLARIFIER-COALESCERS

remove 99% of all solid contaminants and free water ON A SINGLE PASS!

5 YEAR PRO-RATED GUARANTEE

The MMC Clarifier-Coalescer gives trouble-free continuous operation with virtually no maintenance. The only moving parts in the system are the motor driven pump that drives contaminated lube oil through the unit.

Avoid maintenance problems and system downtime inherent in centrifugal separator operation, while conserving valuable engine room space and input power.

Suitable for filtration of lube oil, fuel and hydraulic fluids of all viscosities, the MMC Clarifier-Coalescer is available in sizes for every shipboard and industrial use.

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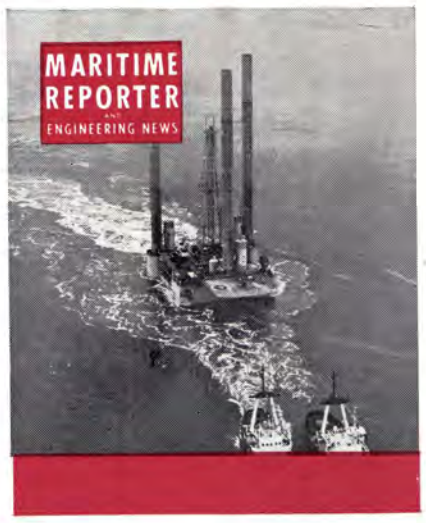

advertise to thousands more marine buyers in the offshore market... and to the entire commercial marine field in MARITIME REPORTER/Engineering News

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

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MARITIME REPORTER/Engineering News has always covered the shoreside buyers of marine equipment in the offshore drilling market completely.

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DIESEL GENERATOR SETS

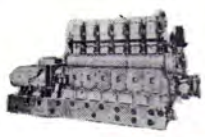
1

350 KW DIESEL GENERATOR SET

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

2

250 KW DIESEL GENERATOR SET



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

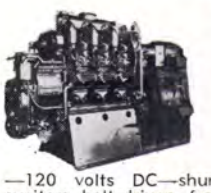
3

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

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

4

415 KW 250 VOLT DC GM 6-278 DIESEL GENERATOR SETS



ENGINE: GM Model 6-278—6-cylinder—8½ x 10½—2-cycle—800 RPM—complete with heat exchanger. GENERATOR: Allis-Chalmers—415 KW—250 volts DC—800 RPM—1660 amps—shunt wound. Top mounted exciter—800/1600 RPM—208 amps—type EB5-123. Pilot exciter 2½KW—120 volts DC—shunt wound—20.8 amps. Both exciters belt-driven from main generator shaft.

5

ELECTRIC PROPULSION MOTOR

1 Available. 515 HP—230 volts DC—shunt wound—1040/1400 RPM—1660 amps—120 volts DC exciter.

6

ALSO SUITABLE FOR COMPANIES OPERATING AN NET TENDERS

TURBO GENERATOR SETS

7

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

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

8

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

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

9

WESTINGHOUSE 440/3/60 200 KW UNIT

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

10

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

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

11

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

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

12

AP2 VICTORY WORTHINGTON-MOORE CROCKER-WHEELER 300 KW UNIT

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

13

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

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

TURBINES & ROTORS

MAIN PROPULSION

14

BETH. CLASS—13,600 H.P.

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

15

H.P. & L.P. COUPLINGS

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

16

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

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

T-2 TURBINES & ROTORS

17

2 COMPLETE T-2 G.E. TURBINES

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

ROTOR WILL INTERCHANGE WITH ELLIOTT MAIN TURBINE

Will Sell Rotors Separately

18

T2-SE-A1 MAIN PROPULSION ROTOR—G.E.

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

19

T-2 TANKER UNUSED—4 UNITS AVAILABLE

AUX. G.E. TURBO GEN. ROTORS

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

KNOWN 'ROUND THE WORLD

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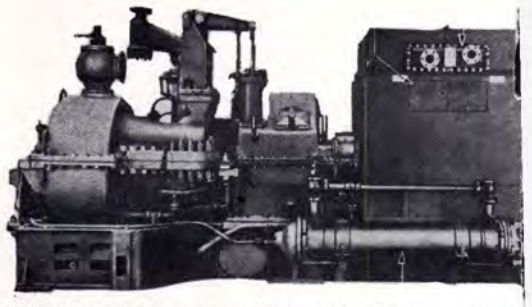
Main Office: (30

20

TURBO GEN



TURBINE: 11 Stage type FN4— 8145 RPM—3½" absolute back pressure—complete steam with seal regu

GEAR: Type S-195A—reduction 8145 RPM to 1200

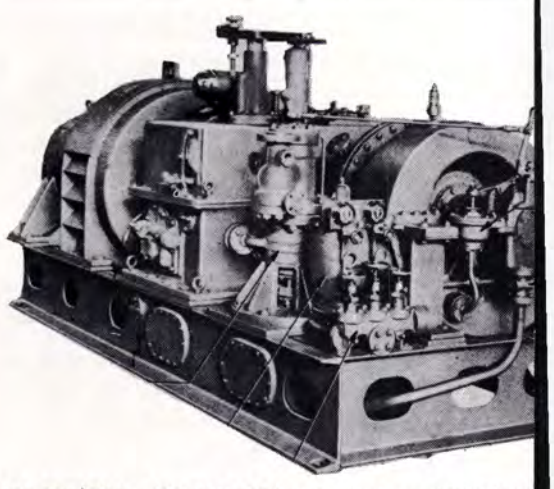
GENERATOR: 1500 KW —450 volts—2405 amps—enclosed. Insulation: Class B stator and rotor. Temper thermometer. Mfg type AT1—form HL. Oil lubricate sump in turbo generator set base. Generator coolin —120 volts —110 amps—40°C rise—frame 654—

GENERAL INFORMATION: Overload rating 2 hours—weight 36,000 lbs. Guaranteed steam flows & condi flange. The set will carry 1500 KW with steam cond flange. The set will withstand 644 PSI and 850°F. at exhaust flange:

50% Load	—	750 KW —
75% Load	—	1125 KW —
100% Load	—	1500 KW —

Exhaust flange size: 18" x 38" rectangular.

21



GENERATOR: 400 KW 450 volts 3-phase 1200 RPM sulation—natural self-ventilated cooling. Exciter: 50

GEAR: Single helix—single reduction—10059/1200

TURBINE: Six stage—10059 RPM—525 PSI—825° tors. **OVERLOAD CONDITIONS AT NORMAL STEAM** overload for 2 hours at normal conditions; overload turbine generator will deliver full load output 400 K capable of withstanding 634 lbs PSIG 850°TT.

STEAM FLOWS

100% Load	—	400 KW AC
75% Load	—	300 KW AC
50% Load	—	200 KW AC

When operating at 575 PSIG & 0° Superheat and 1

125% Load	—	500 KW AC
100% Load	—	400 KW AC
75% Load	—	300 KW AC

UNIT DESIGNED FOR NAVY FOR DD692 CLASS HOUSE 8316.

Since Westinghouse and G.E. built them for the sam able.

DIMENSIONS: OAL 10' 10⅛"—OAW 4'10½"—OA

TOTAL WEIGHT: 14,855 lbs.
2" steam inlet—17" Round exhaust—20½" bolt c

UNIT DIMENSIONS OAL 16' 3⅜"—OAW 6'6"—

ON METALS CO.

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RATOR SETS

4 G.E. 1500 KW AC SHIPS SERVICE SETS

G.E.I. BOOK 19320

inlet. Normal steam conditions 525 PSI 825°TT—1 lb

RPM—P.F. 0.8—60 cycles—3-phase—6-pole—totally rise normal—stator 60°C by thermometer—rotor 70°C by positive displacement pump for gears and bearings from stream and circulating water. Amplidyne Exciter: 13.2 KW ype 5AM654A1.

% load; Overload rating 5 minutes—150% load. Total normal 525 PSIG—825°TT and 1 PSI absolute at exhaust 420 PSIG and 825°TT and 1 PSI absolute at exhaust anteed steam flows—525°F & 825°TT at 1 PSI absolute

Exciter 5.9	—	Steam Flow 8190 lbs/hr
Exciter 8.0	—	Steam Flow 11385 lbs/hr
Exciter 10	—	Steam Flow 14790 lbs/hr

400 KW WESTINGHOUSE/GE DESIGN

MFG. BY WESTINGHOUSE

PF 641 amps alternating current generator—class B in-—120 VDC—1200 RPM.

nal. Type G.E 618N—equipped with synchronizing mo-**LBS/825°TT:** Sets 500 KW AC and 62.5 KW DC—city 50%—600 KW & 75 KW DC for five minutes. The C & 50 KW DC at 420 lbs and 825°TT. The turbine is

		STEAM RATE
50	KW DC	5100 lbs/hour
37½	KW DC	3999 lbs/hour
25	KW DC	2885 lbs/hour

quare inch absolute back pressure at flange:

62½	KW DC	—	8720 lbs/hour
50	KW DC	—	6980 lbs/hour
37½	KW DC	—	5450 lbs/hour

ROYER—G.E. INSTRUCTION BOOK 17716—WESTING-

ss destroyer, G.E. and Westinghouse parts are interchange-

5¼".

7'5¼" over steam strainer.

PUMPS

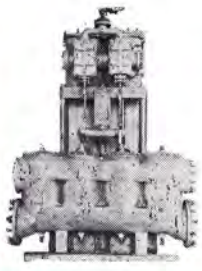
22

CARGO STRIPPING PUMPS

BRONZE T2 TANKER STRIPPING PUMPS

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

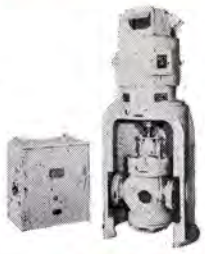
23



WORTHINGTON 16"x14"x18" VERTICAL DUPLEX STRIPPING PUMP

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

24

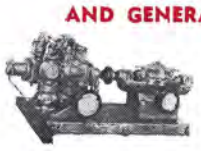


UNUSED DELAVAL IMO ROTARY PUMP

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

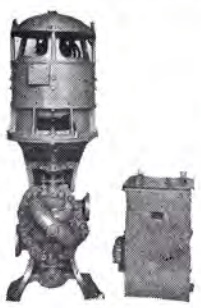
25

NEW TURBINE DRIVEN FIRE AND GENERAL SERVICE PUMP



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

26



DAYTON-DAWD 2-STAGE FIRE AND BILGE PUMP

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

27

C-25 CARGO PUMP TURBINE SPARE GEARS

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

MISCELLANEOUS

DOUBLE REDUCTION GEARS for Diesel Drive

28

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

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

29

2:67:1 RATIO DOUBLE IN-LINE GEARS

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

30

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

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

31

SINGLE ENGINE REDUCTION GEAR

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

32

DOUBLE INPUT SINGLE OUTPUT GEAR—7.9:1 RATIO

Final output 175 RPM. Mfg by Farrell-Birmingham —for use with two 515 HP—230 volts DC shunt wound motors—1040/1400 RPM.

33

ANCHOR WINDLASS

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

34

SHARPLES LUBE & DIESEL OIL PURIFIERS

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

35

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

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

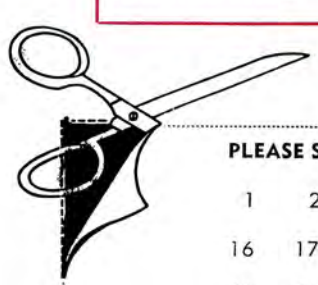
36

UNUSED 70 HP McKIERNAN-TERRY WINDLASSES

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

INQUIRE FOR ALL OTHER ITEMS

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



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16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

31 32 33 34 35 36

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

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

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

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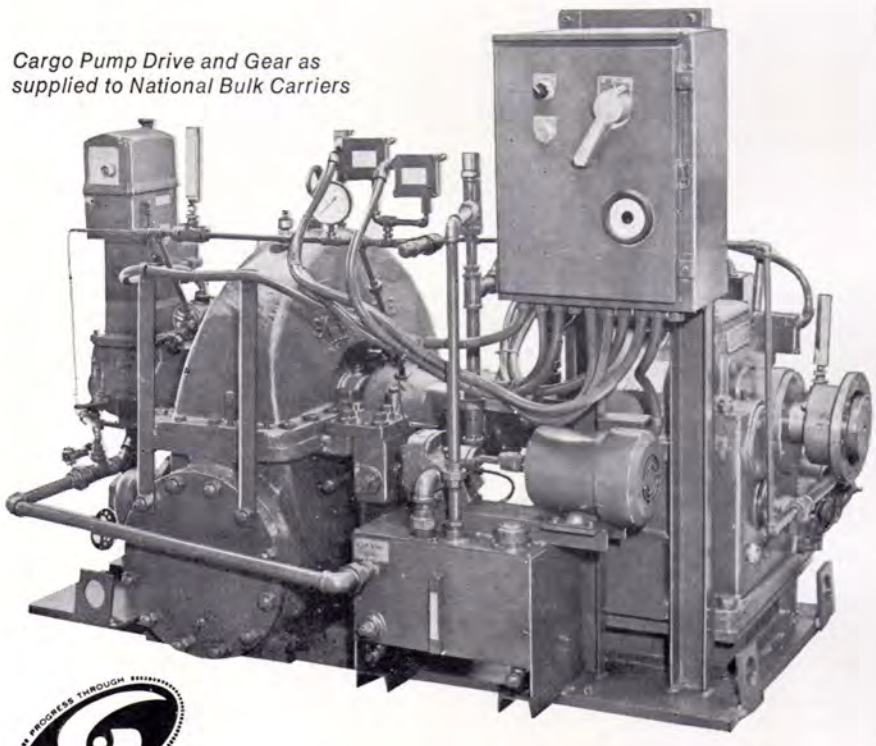
Cargo Pump Drive and Gear as supplied to National Bulk Carriers



These American-made, single-stage, axial flow, re-entry type steam engines are available in four sizes from 1 to 1,500 hp. For continuous, intermittent or standby operation, they may be used horizontally or vertically for condensing or non-condensing service. Rotation may be in either direction. A fail-safe system precludes the turbine from running without oil while a Woodward Governor prevents overspeeding.

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have been supplied in the required time at approximately 2/3rds the cost of competitive overhaul. Size-wise, these units will fit in about 95% of existing U.S. and foreign cargo pump, fan and mechanical drives without radical change to the foundation.

SKINNER ENGINE COMPANY, a leader in the design and manufacture of marine engines for over a century, produces these precision-engineered turbines with rugged simplicity for long, trouble-free service.

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SNAME New England Section Hears Paper On Flexible Membranes For Tankers

Pictured at the SNAME New England Section meeting, left to right: **Don Ridley,** vice chairman; **Dick Roberts,** chairman; Prof. **A. Douglas Carmichael,** author; **Mitch Steller,** General Dynamics Electric Boat Division; **Steven Smith,** also of Electric Boat, and Dr. **Rolf Glasfeldt** of General Dynamics Quincy Division. Mr. **Steller** and Mr. **Smith** participated in the research reported in the paper, as graduate students at M.I.T.

During a recent meeting of the New England Section of The Society of Naval Architects and Marine Engineers, members and guests heard a paper entitled "Prevention of Pollution through Isolation of Oil from Seawater Ballast in Tankers." The author, Prof. **A. Douglas Carmichael,** was introduced by **Keatinge Keays,** after a social hour and dinner.

The work described was supported by the U.S. Navy and the U.S. Coast Guard to study the feasibility and economics of using a flexible, impermeable membrane to isolate cargo oil from seawater ballast in the cargo tanks of tankers. The paper describes design, economic, and environmental aspects of a flexible membrane system. Also included is a discussion of tests done on a small scale cargo tank model with a flexible membrane installed. In his presentation, Professor **Carmichael** used slides and a movie to illustrate the operation of the model tank.

Professor **Carmichael** is professor of power engineering in the ocean engineering department at the Massachusetts Institute of Technology, where the research for the paper was done.

Copies of the paper may be obtained at a cost of $2 per copy by writing to: **Robert Baseler,** Editor, New England Section, SNAME, General Dynamics, Quincy, Mass. 02169.

Ashland Petroleum To Double-Side Barges For Environmental Safety

Ashland Petroleum Company, Ashland, Ky., has begun the initial phase of a program to "double-side" most of its river barges to make them environmentally safer.

Since most barges are constructed with single sides, the job requires extensive rebuilding. The first phase involves 16 of Ashland's barges, some nearly the length of a football field. Work on four is complete, with the balance of work scheduled for completion at Delta Iron Works, Houma, La., next year.

The job—being conducted as part of regular barge maintenance—involves removing the original sides, and a portion of the deck and bottom plate. A prefabricated side section, consisting of the cargo tank wall and the outside shell, is then slid into position and welded into place. Three feet of air space separate the two sides, providing an extra margin of insulation and protection.

The barges now being rebuilt were recently recalled from crude oil service on the river when Ashland completed its new pipeline from Owensboro, Ky., to Ashland. The barges will also be fitted with heating coils to allow them to transport heavy fuel oil.

Ashland said the program will be extended to include a large number of other barges in its fleet.

Last year, the company purchased 41 new "double-skin" or double-hull barges which have been put in service transporting refined products to various river terminals.

Ashland said the double-siding program was not mandatory, but would simply provide a further margin of environmental safety on the river. Ashland Petroleum is the largest operating division of Ashland Oil, Inc.

A.G. 'Weser' Receives Orders For Four 40,000-Ton Tankers

The A.G. "Weser" Bremerhaven Yard has received orders for four 40,000-ton tankers (known as its "KEY 40" series), which will all be delivered by autumn 1976. Colocotronis Ltd., London, ordered two vessels, and Cosmos Shipping & Trading Corporation, Monrovia, ordered two vessels.

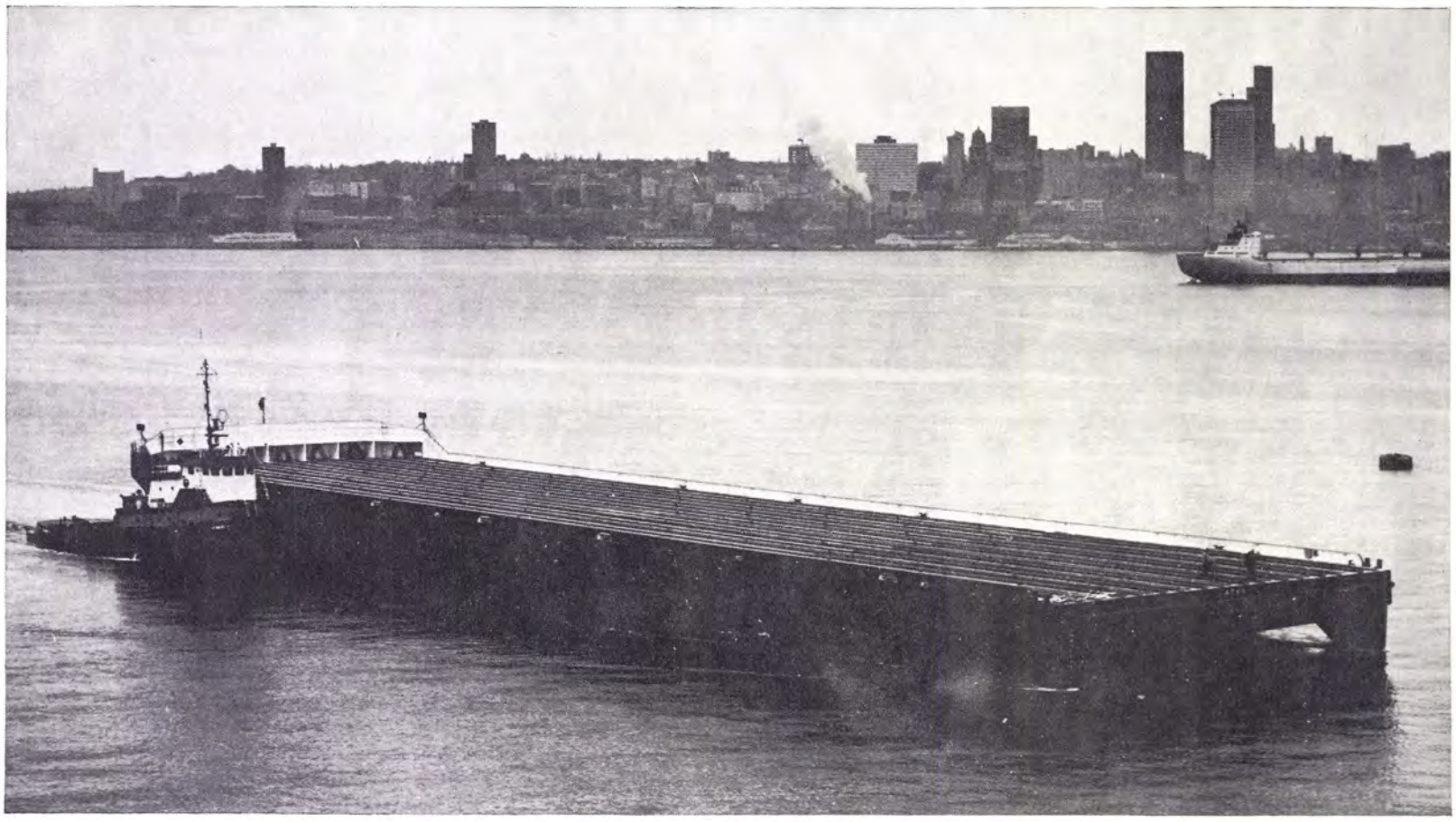
The vessels have an approximate overall length of 633 feet, and a summer draft of about 38 feet.

The main engine, manufactured by Kreuzkopfmotor, with 13,800 bhp at 122 rpm, provides a speed of 15.8 knots.

Orders for 39 tankers have been received so far from both German and other foreign shipowners.

The "KEY 40" tankers can trade worldwide for the carriage of clean or dirty products.

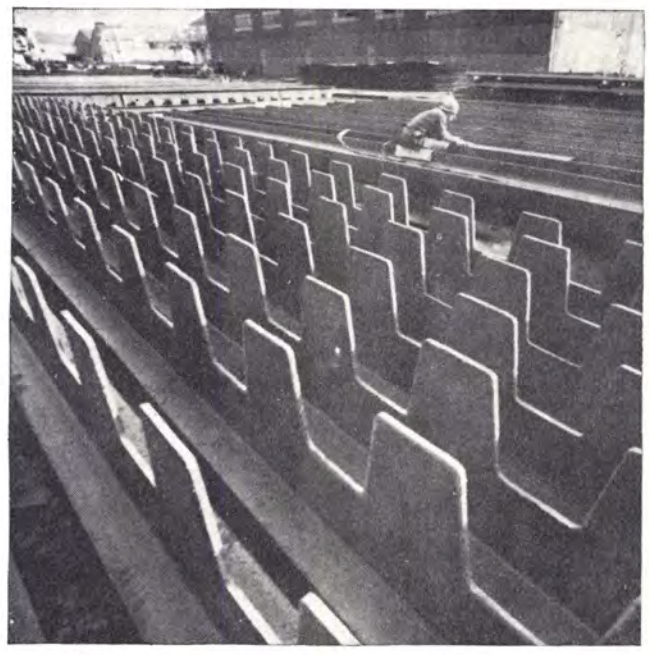
A brochure describing the "KEY 40" can be obtained from the New York office: "Weser" Shipyards, Inc., One World Trade Center, Suite 2841, New York, N.Y. 10048.



Bethlehem-Built barges to help supply Alaska's North Slope

Our San Francisco Yard builds barges right along with its ship repair work. By this fall, it will have delivered the eighth of a series of 16 ordered by Crowley Maritime Corporation for its major operating subsidiary, Puget Sound Tug and Barge Company, Seattle, Washington. Some of these barges will be outfitted by the yard to carry rail cars; the others will carry miscellaneous deck cargo. All will bolster Crowley Maritime's capability to transport material between the American mainland and the Alaskan oil fields.

Each barge measures 400 ft by 99 ft, 6 in., by 20-ft deep, and requires the fabrication of more than 2,800 tons of steel. It is built to three-quarter width on the yard's building ways, then launched and floated to the yard's large drydock where side shell assemblies are installed and the completed barge is outfitted and painted. The yard has put on additional workers to expedite the project, which is scheduled for completion in mid-1975.



The Crowley Maritime barge project requires stiffeners by the hundreds.

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Bethlehem Shipyards:
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Building Ways at Sparrows Point Md.; Beaumont, Texas; San Francisco, Calif.; and Singapore.

TPM Turbines To Be Used In Operation Of World's Largest Trenching Barge

The world's largest and most powerful trenching barge will go into operation in the North Sea later this year, drawing its power for pipe-burying operations from two industrial gas turbines supplied by United Aircraft's Turbo Power and Marine Systems, Inc., Farmington, Conn.

The barge, which is 394 feet by 92 feet, was built at the Levingston Shipbuilding Company yard, Orange, Texas, for Brown & Root, Inc. of Houston. It was recently towed to Rotterdam, where equipment is being installed. The barge's 150-ton revolving cranes, mooring winches and 10 anchors—each weighing 30,000 pounds—had been installed in the U.S. before the Atlantic crossing.

The barge will work in the oil and gas fields beneath the sea, using the 20,000-horsepower turbines to cut trenches in the floor for burying pipelines. Each TPM turbine will drive one of two high-capacity waterjet pumps, capable of blasting trenches as deep as 10 feet with a single pass. Deeper trenches can be cut with additional passes, and at depths up to 500 feet. The trenches will be from 4 to 12 feet wide. The pumps will be able to deliver a total of 20,000 gallons of water per minute at 2,500 pounds per square inch of pressure.

TPM industrial turbines burn a variety of fuels, including natural gas, jet fuel, naptha, heating oil, diesel oil, heavy distillate fuel, and crude oil. Aboard the Brown & Root barge, the turbines will use diesel fuel.

These FT4 turbines are also used in other applications to generate electricity, pump natural gas through pipelines, and to propel commercial and military vessels. To date, Turbo Power and Marine Systems has sold more than 1,000 industrial turbines.

Turbo Power and Marine Systems is a subsidiary of United Aircraft Corporation, East Hartford, Conn.

Santa Fe Int'l Licenses Aquatic To Install Flow Lines Using Spooled-Pipe Technique

Santa Fe International Corp., Orange, Calif., has announced that it has licensed Aquatic International Corp. of Harvey, La., to install deepwater flow lines using the spooled-pipe technique.

The agreement provides for use of portable reels mounted on drilling rigs or production platforms to install flow lines to subsea wellheads. The agreement covers worldwide use of the technique.

E.L. Shannon Jr., Santa Fe president, said the patented technique is an outgrowth of Santa Fe's experience with the reel-type pipelaying barge Chickasaw, in the Gulf of Mexico.

Mr. **Shannon** said pipe can be welded into strings and spooled on a portable reel while a well is being drilled, and the flow line can be installed within hours after the well is completed. This new application of spooled pipe, he said, is expected to lower substantially the cost of flow lines from sea-floor completions.

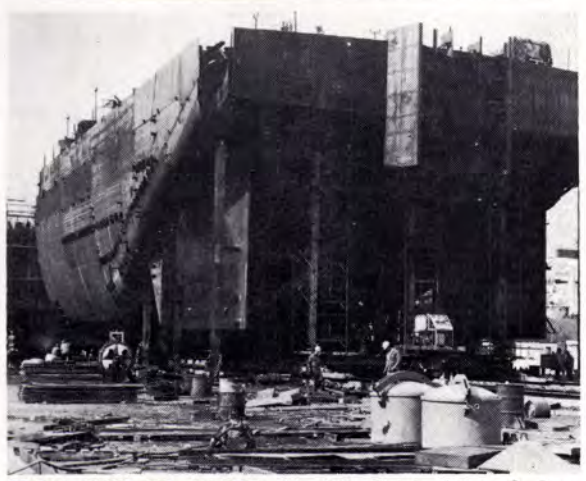
Mr. **Shannon** said Aquatic's first use of portable pipelaying reels is expected to be in the North Sea, but the technique should prove advantageous in deepwater fields all over the world.

Hydro Products Offers Revised Product Catolog Describing Complete Line

Hydro Products, a Tetra Tech Company, has just revised and updated their illustrated 24-page Product Catalog to include information on the Model WS-125 Wellhead Inspection Television System for the Offshore Industry, and the Radiation Tolerant Underwater Television System for the Nuclear Industry.

The catalog provides a concise description of Hydro's complete line of underwater television, photographic, lighting and communications equipment; oceanographic instruments and sampling equipment; precision depth recorder; winches and support equipment.

Free copies are available by contacting **Jim Hitchin,** Assistant General Manager, at Hydro Products, P.O. Box 2528, San Diego, Calif. 92112.



FROM SHIP TO BARGE: Norfolk Shipbuilding & Drydock Corporation, Norfolk, Va., has announced that the "joining" operation on the Chem-Tran 1 (Ex-S/S Marine Dow Chem) shown above, has been completed. After a brief fitting-out period, the vessel was delivered to her new owners, Chemical Transportation Company. Norfolk Ship built a new stern section for the tanker, which converted her to a large chemical barge.

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Executive Promotions At Skaarup Group Of Companies

James O. Williams

Andrew C. Rockefeller

At the annual board meetings of Skaarup Shipping Corporation and its affiliated companies, the following executive promotions were announced.

James O. Williams has been appointed vice president of planning and economics for the Skaarup Shipping Corporation. He retains his position as a vice president of another unit of the Skaarup Group, Total Transportation, Inc., where for the past two years he has been involved in economics and special projects. Before joining Total Transportation, Mr. **Williams** had been with Exxon Corporation in an executive capacity in the areas of refining, transportation, and crude and product supply.

Andrew C. Rockefeller has been appointed a vice president and director of Total Transportation, Inc., with responsibility for the financial coordination and administration of special projects. Total Transportation operates as a consultant to provide U.S. corporations with detailed programs for transportation systems from point of origin to final destination including, in addition to ocean shipping, haulage by rail, barge and truck, as well as terminal facilities. A graduate of Yale University and a former lieutenant in the U.S. Navy, Mr. **Rockefeller** has formerly been a vice president and director of States Marine-Isthmian Agency before joining Skaarup.

Other officers and directors elected to the board of Skaarup Shipping Corporation and its affiliated companies include: **Ole Skaarup,** chairman; **Stig Host,** vice chairman; **James F. McHale,** president; **Bent O. Larsen,** executive vice president, and **Stig Farup,** vice president.

1,199TH SHIP FROM KAWASAKI: Kawasaki Heavy Industries, Ltd., recently delivered the 233,000-dwt Manhattan King, shown above (its 1,199th vessel), to the owner, Crown Tanker Corporation of Liberia, at its Sakaide Works. Powered by a Kawasaki UA turbine with a maximum continuous output of 36,000 horsepower at 90 rpm, she has a full loaded service speed of approximately 17.0 knots. Built to N.K. classification, the Manhattan King has an overall length of about 1,049 feet, molded breadth of about 174 feet, molded depth of about 83 feet, and a draft of approximately 64 feet. She has a complement of 40.

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Inventories include co-axial, alpha, Belden and electric wire (MIL-W-16878).

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  STURROCK GRAVING DOCK
  Length: 1,156 feet, Width: 136 feet, Depth: 45 feet at sill
  ROBINSON GRAVING DOCK
  Length: 500 feet, Width: 68 feet, Depth: 27 feet
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The answer to your bilge-water discharge problem: Keene Marine Discharge Control System™.

Ready now–to meet the July 1 deadline.

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

Automatic fail-safe control.

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

Proof of compliance.

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

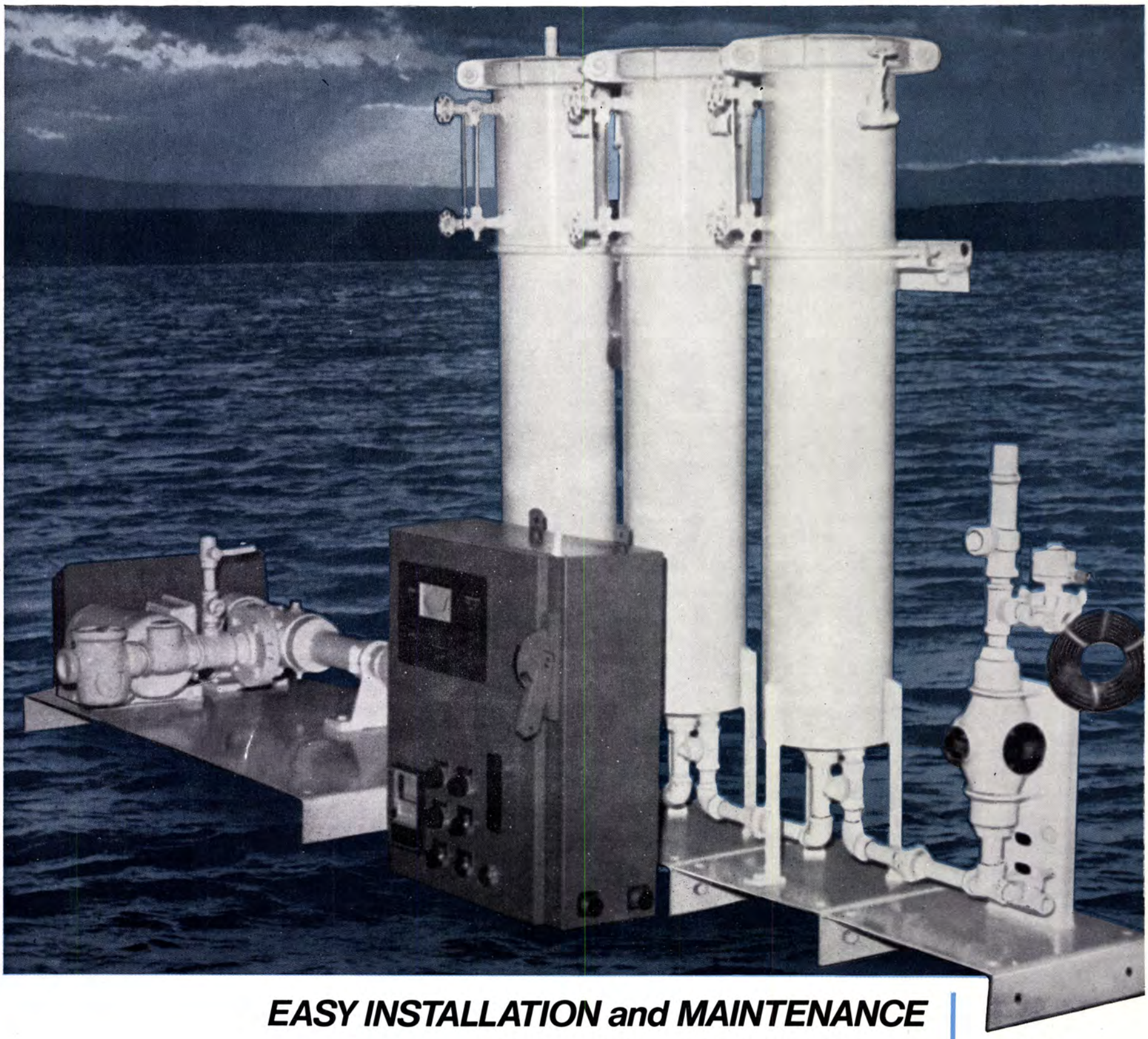
Passes Coast Guard and A.B.S. regulations

The Keene system has received a "satisfactory review" from the American Bureau of Shipping and "acceptance" by the U.S. Coast Guard under the provisions of 33 CFR 155.400 for the processing of oily bilge slops. Therefore, the retrofitting requirements of 33 CFR 155.340 through 155.360 do not apply to a vessel upon which the Keene system is properly operating.

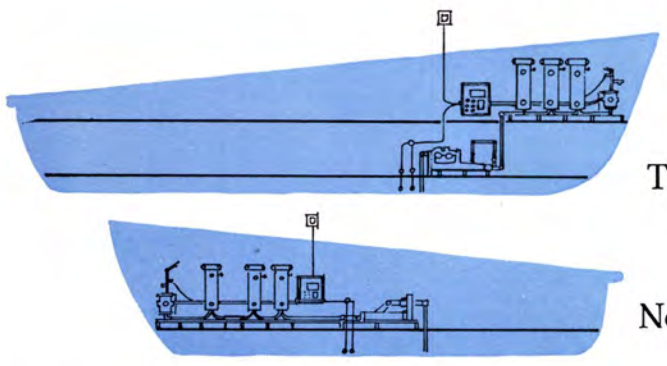
Pennant to identify installation.

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

KEENE MARINE DISCHARGE CONTROL SYSTEM PROTECTED



EASY INSTALLATION and MAINTENANCE



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

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

No steam cleaning, blow-down or backwashing required.

Modular design.

Only one moving part.

Disposable separation elements.

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

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C.R. Cushing & Co. Appoints C.A. Narwicz

Charles R. Cushing, president of C.R. Cushing & Co., Inc., has announced the appointment of **Charles A. Narwicz** as an associate of the firm, a multidisciplined international consulting organization with offices in New York, Germany and Greece. The company, headquartered in the World Trade Center, was founded over six years ago and has since completed many ship design and shipbuilding projects ranging from full containerships, feederships, barge carriers, and offshore equipment to oceangoing tank barges and ocean pipelaying vessels. The interface between marine and other transport modes has also been important areas of the firm's work. These include terminal design, port planning, crane and material handling equipment design, refinery engineering, etc.

Mr. **Narwicz,** who is a graduate of the U.S. Merchant Marine Academy, class of 1949, served in the merchant marine as an engineering officer and in the Navy as Chief Engineer and Deck Officer. While with the General Electric Co., he completed the Test Engineering Program and served as head of testing for large steam turbines and generators. On the Turbine Specialist Program, he worked as a turbine thermodynamic engineer, and as a turbine application and sales engineer. Following several years of application and sales engineering work for ship propulsion, auxiliary and cargo handling systems with leading cargo and tanker operators as well as naval architects, consultants and shipyards in the New York area, he was appointed manager of marine service, for all shipboard (non-weapon) systems.

Charles A. Narwicz

At Stanwick Co., as engineering assistant to the president, he headed reliability-maintainability projects and served as project manager for the MarAd Merchant Marine Shipboard Crew Skills and Discipline Study.

Most recently, he was manager of corporate M&R intermodal equipment at United States Lines, encompassing the management of systems development, equipment claims, ownership, and financial measurement. He is co-inventor of a containerized dry bulk system (patent pending).

Mr. **Narwicz** has completed over 10 General Electric career development courses in engineering and business management. He is a commander, USNR, and Commanding Officer of Military Sealift Command Unit 3-24. He served as chairman of the New York Section of The Society of Naval Architects and Marine Engineers, as a member of the Reliability Maintainability Panel and Applications Committee, and has been active in ANSI/ISO containerization committees and the ABS Container Panel. He has published articles on shipboard energy measurement and management.

Mr. **Narwicz,** who resides in Huntington, Long Island, N.Y., is past vice president of the U.S. Merchant Marine Academy Alumni Association.

Eric Campbell Joins Lasco Shipping As Port Captain

Eric Campbell has joined the staff of Lasco Shipping Co., Portland, Ore., as port captain. Mr. **Campbell** was born in Scotland, went to sea at the age of 16, then went to Australia eight years later, where he worked in the marine field as master of coastal vessels. He then came to the United States and entered the stevedoring field. He was formerly with Roth-Child Stevedoring and Crescent Wharf and Warehouse.

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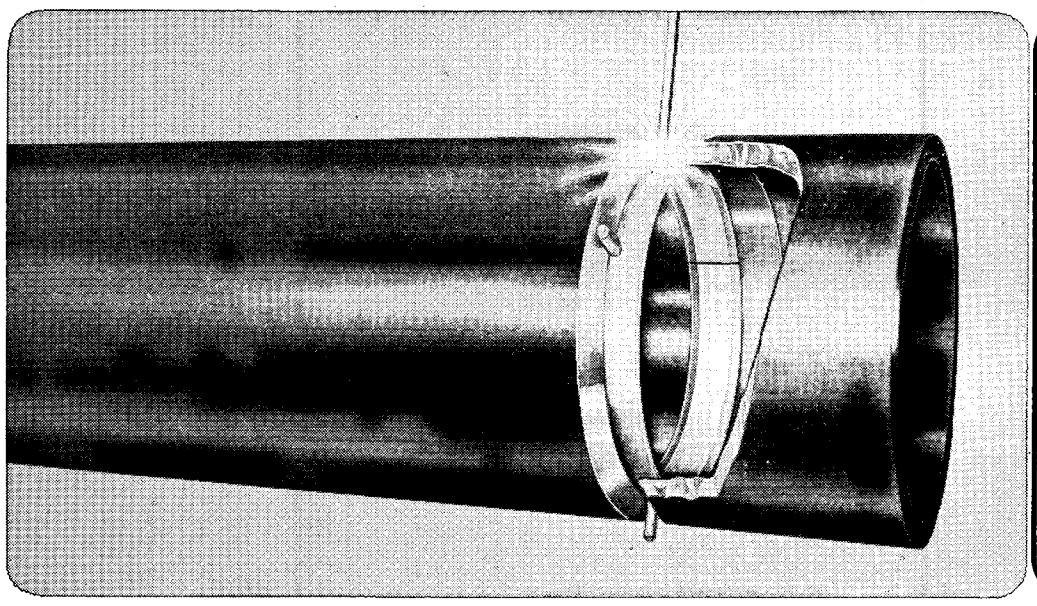

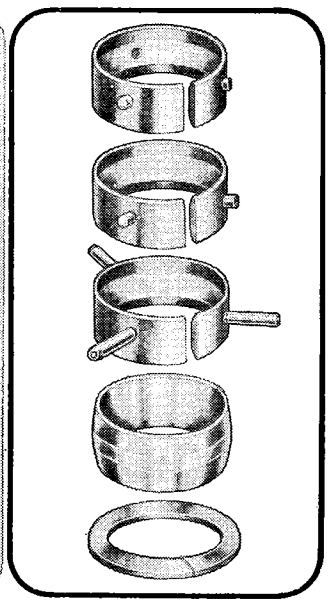

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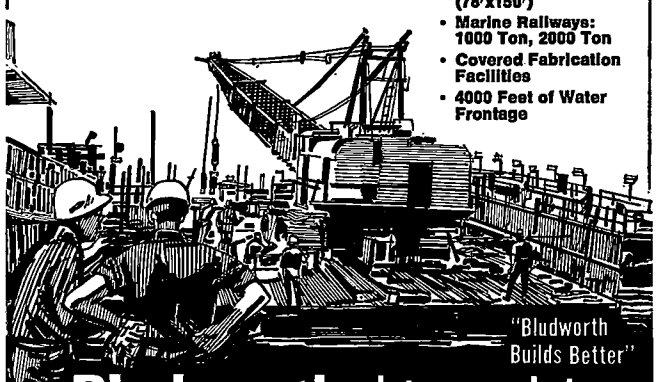

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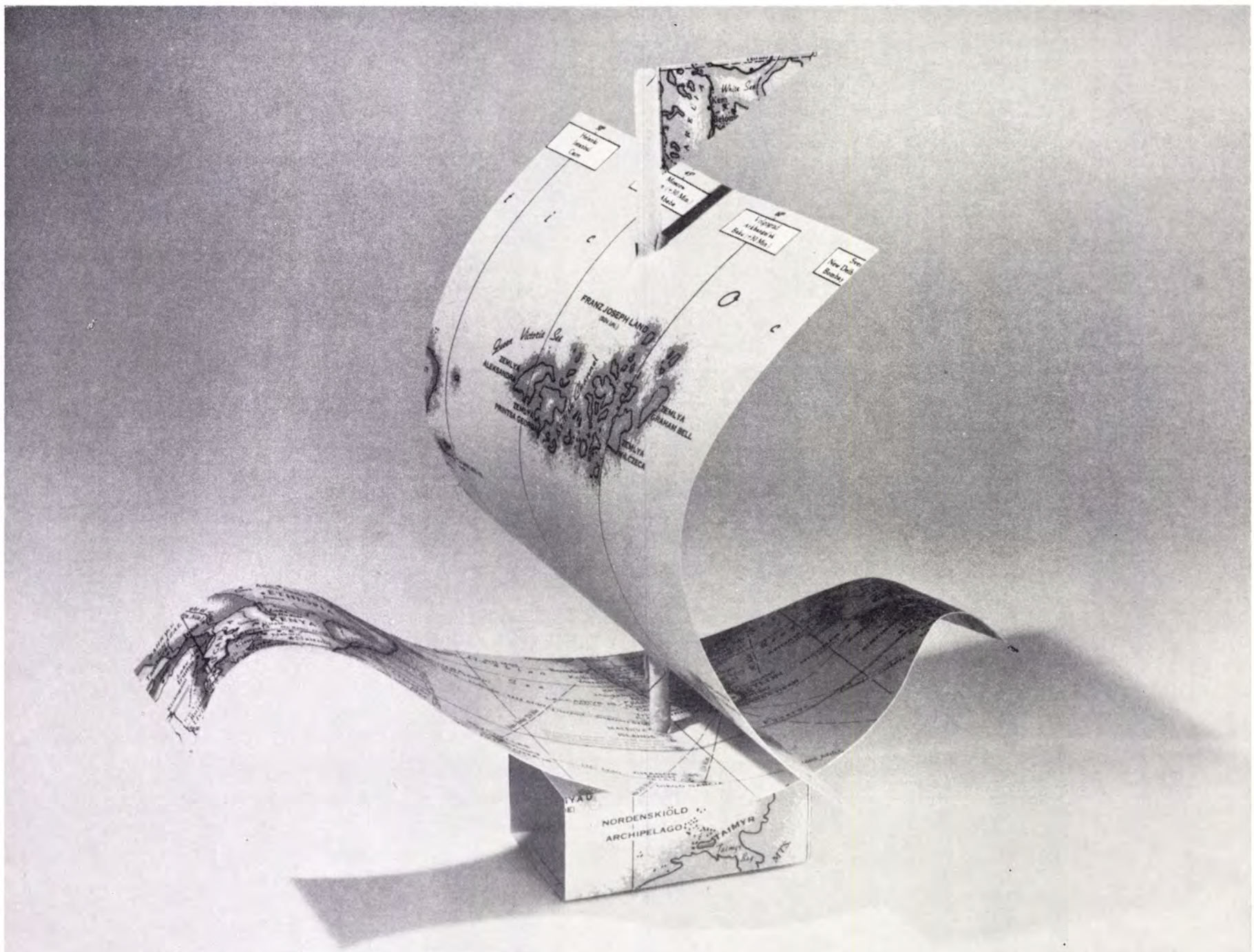

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Year-End Report By Todd Shipyards

Todd Shipyards Corporation earned $1,014,744, or $68 per share on sales of $176,572,470 for the year ended March 31, 1974, according to a recent statement in New York by **John T. Gilbride,** president. In the preceding year, earnings were $287,624, or $.19 per share on sales of $182,098,352. Profit from operations of $3,327,876 before income taxes and interest expense of $2,313,132 compares with $1,467,160 and $1,179,536, respectively, for the preceding year.

According to Mr. **Gilbride,** ship construction and ship repair showed marked increases, with ship conversion work down during the year. He reported that present ship and barge construction backlog amounted to approximately $300 million, the largest peacetime backlog in the company's history, including tankers in the 25,000, 35,000 and 89,700-dwt classes, tug/supply vessels, barges, towboats, ferryboats, and drillships.

Todd's plans for building ultra large crude carriers (ULCCs) and expanding its Galveston facilities are being dropped at this time because the Department of Defense has denied the company's request for a material priority rating for vessels of this size. Since the construction of each ULCC would require more than 60,000 tons of steel, Todd could not prudently proceed without such a priority. The persistent demand for tankers up to 100,000 dwt, which do qualify for a material priority rating, now prompts Todd to evaluate the economic feasibility of investing in alternative new ship construction facilities at Galveston to build such vessels.

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East side, west side, fore, aft, port or starboard, Raytheon's newest digital Fathometer® depth sounder, the Mark Twain® , provides instant depth readout for towboat and tow and affords loading, ballasting or docking aids for larger ship applications. Depth alarm on indicator activates when any transducer senses a depth less than a preset value. Optional auxiliary indicators provide remote readouts of single or multiple transducer applications.

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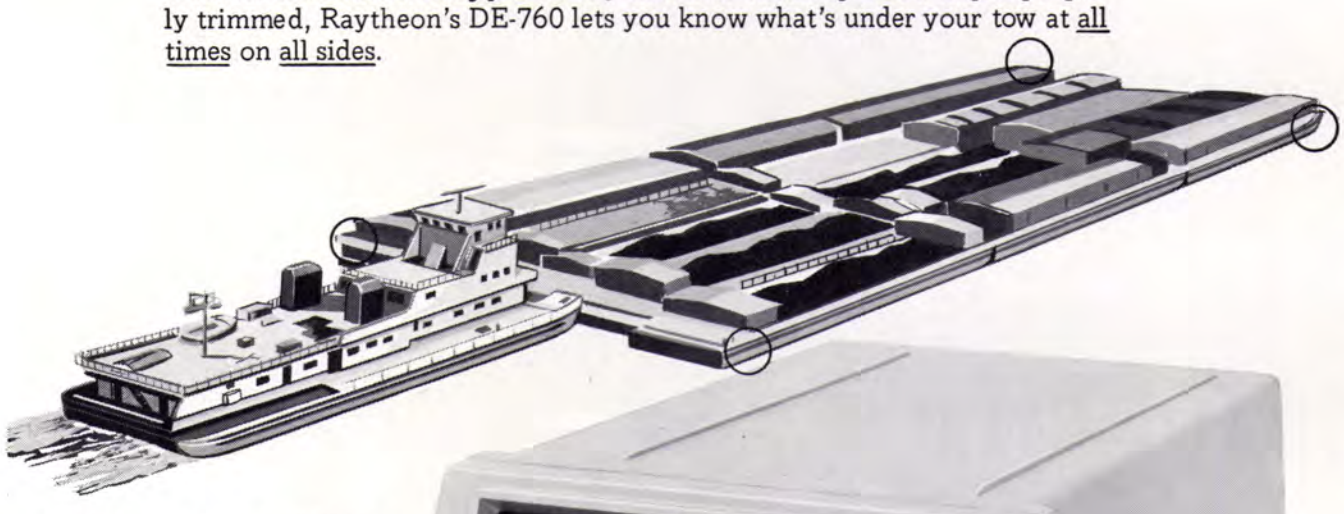

Multiple transducer application on river towboat and barge.

DE-760 MASTER INDICATOR

DE-760 AUXILIARY INDICATOR

DE-760 has two scales — 1 to 99.9 feet with a resolution of 0.1 foot; and 1 to 400 feet with a resolution of 1 foot.

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Aero-Flow Dynamics Elects John Calicchio Board Chairman

John Calicchio

John Calicchio, formerly president of Argo International Corporation, was elected chairman of the board of Aero-Flow Dynamics, Inc. at the April 23, 1974, board meeting.

Aero-Flow is the parent company of Argo International, headquartered in New York; The Wing Co., headquartered in Linden, N.J.; United Sales and Warehouse Inc., headquartered in Fort Worth, Texas, and The Pyco Division, with headquarters in Pendel, Pa.

Argo is primarily engaged in the distribution of a broad range of mechanical and electrical components and renewal parts, pumps, compressors, and general supplies for marine and industrial use. Argo's Marine Division services shipowners, operators and agents, as well as marine supply distributors, shipyards and offshore drill-rig operators. The Industrial Division services a broad range of markets, including chemical, petroleum, paper and steel.

John Calicchio and his father, **Thomas Calicchio,** founded Argo in 1951, and were jointly responsible for its successful growth and expansion. Since 1965, **John Calicchio** has been Argo's president and chief executive officer. Argo services the marine industry through a network of 16 warehouses, sales offices and subsidiaries strategically situated in major seaports in the United States, Belgium, Greece, Italy, Norway and England. Mr. **Calicchio** has been primarily responsible for establishing, staffing and developing this extensive network over the past 10 years.

Mr. **Calicchio** was born and educated in the United States and resides in New York City. He is an Associate Member of The Society of Naval Architects and Marine Engineers and The Propeller Club, Port of New York.

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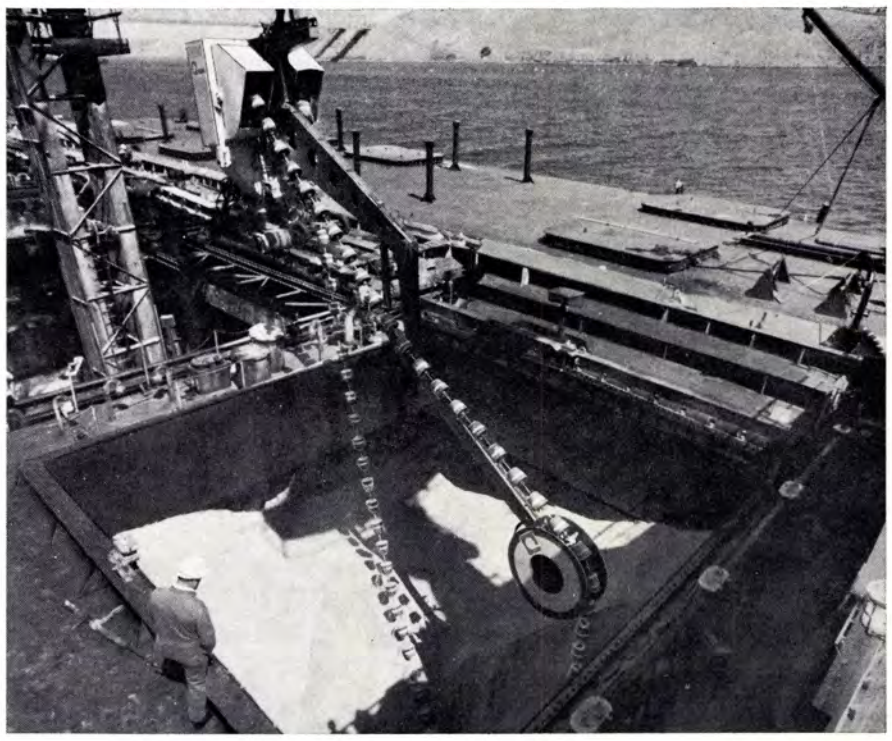

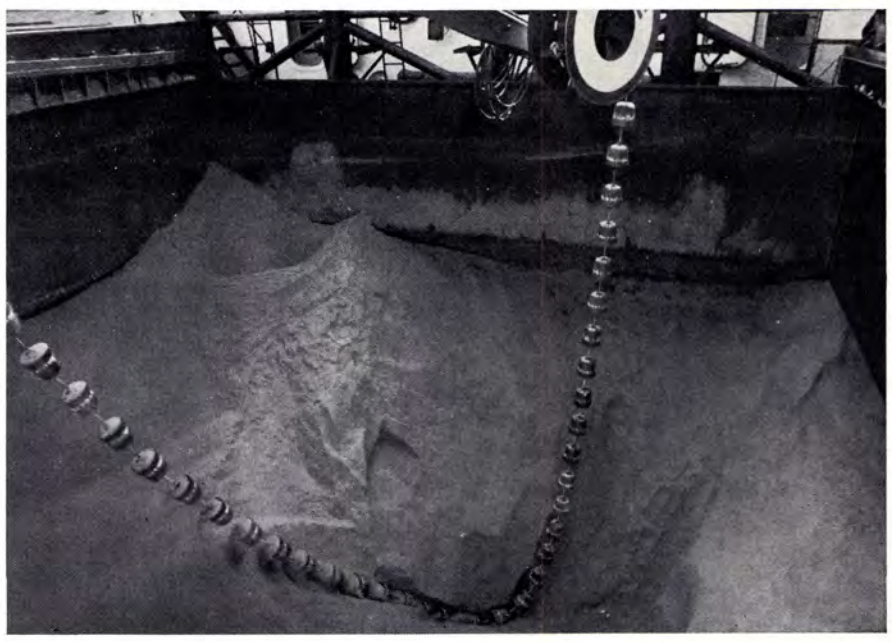

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Representatives in most major cities throughout the world. The PACECO Catenary Bulk Unloader is protected by U.S. and foreign patents and patents pending.

The Waterways Co. Contracts With ACBL For Steermaster System

The Waterways Company, Pass Christian, Miss., developers and manufacturers of the Steermaster bow steering system for inland river tows, has signed a contract with American Commercial Barge Lines, Jeffersonville, Ind., for the building of a Steermaster Model 48. The steering system will be used on American Commercial Barge Lines coal tows operating east of New Orleans through the Mississippi Sound and Intracoastal Waterway.

The Steermaster will be used primarily in the Back Bay Biloxi area, where maximum maneuverability in close quarters is required.

Announcing the contract with American Commercial Barge Lines, Waterways Company president **Walter N. Todd** said that the use of the Steermaster "would upgrade ACBL's service to its customers, one of which is Mid-South Utilities.

"The Steermaster is being used by ACBL in areas notoriously bad for shifting channels, shoaling, and adverse currents and winds, all of which contribute to loss of time for conventional towboat operations.

"The utilization of the Steermaster on ACBL tows should alleviate these problems, creating more efficient, more profitable, and greatly improved service."

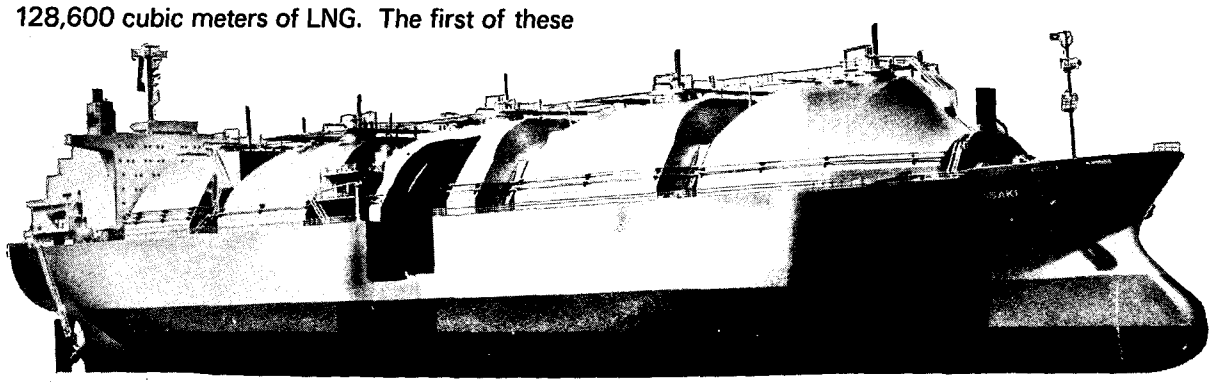
The Steermaster is a bow steering system for river towboats. It was developed to provide maneuverability and direct control of river tows, and has proved extremely effective in reducing waterway accidents and loss of operating time caused by adverse winds and currents, and has increased the margin of safety for operations on the rivers. With Steermaster, a tow is steered at the front of a tow, all components of the system being housed in a small lead barge. Operations of the system are from the wheelhouse of the towboat.

There are at present 12 Steermasters under contract to major carriers on the inland waterways, and several installed in large vessels as an aid to maneuverability. Companies using the Steermaster include Magnolia Marine, Chotin Transportation, Thomas Marine, Radcliff Materials, Delta Queen Lines, and others.

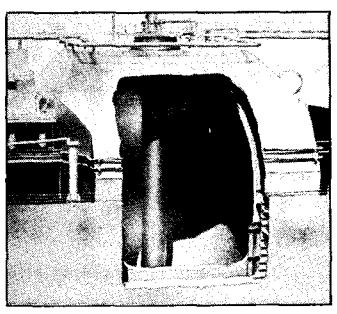
LNG Carrier

We Have a New Face at Kawasaki Kobe

Kawasaki has been shipbuilders a long time. And in this business, "a long time" translates directly into experience, technological capability, and tradition. We're using all three now at the Kobe Works in preparation for building LNG carriers that we now have orders for. They will be Moss Rosenberg design spherical, aluminum tank LNG carriers. The most advanced designed yet. It's also considered safer. The LNG carriers we will build will have a one-time carrying capacity of 128,600 cubic meters of LNG. The first of these



new era carriers will be delivered in 1977. Naturally, we're pretty busy around the Kobe Works right now. But for us, building LNG carriers comes



easier than it does for some. We've already built LPG carriers. And LNG carriers are just another step forward in our carrier-building career.

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Exploration Vessel Launched For Gulf Oil At Burrard Dry Dock

The world's most advanced marine research and exploration vessel was launched by Gulf Oil Corporation on May 4 at Vancouver, British Columbia.

The Hollis Hedberg, a $6-million vessel, has been designed primarily for operations in frontier water areas, and is the second research vessel to be put in service by Gulf since the inauguration of an ambitious marine exploration program in 1967.

The ship was christened by **Mrs. Melvin J. Hill,** wife of the president of Gulf Global Exploration Company, the subsidiary which directs the corporation's long-range exploration activities.

Technical advances incorporated on the vessel include:

• Satellite, inertial and shore-based radio navigation systems, regarded as the best commercially available today;

• Air guns to obtain seismic data, thus eliminating environmental danger to water and aquatic life;

• A marine hydrocarbon analyzer which can measure hydrocarbon seeps simultaneously at three depths—surface, 200 feet and 600 feet, and

• On-board data processing and interpretation capability to provide, on location, a complete geophysical interpretation of the operating area. Previously, collected data was sent to Gulf Research & Development Company, Hamarville, Pa., and Houston Technical Services Center for processing and interpretation.

Powered by two 1,950-hp GM-EMD diesel engines, the ship has a displacement of 1,700 tons, a range of 9,000 miles, cruising speed of 14 knots, a crew of 47, and is equipped with twin rudders and props.

The ship was built by Burrard Dry Dock Company, Limited of North Vancouver, and is on long-term charter from Cayman Island Vessels. It will be administered by the Exploration and Production Department at Gulf Research, and is supplied with geophysical instruments and technicians from Western Geophysical Company.

MSAT Holds Seminar In Texas— Gray Named Association President

Members of the "Marketing to the Marine Industry" panel for the conference were, from left to right: Capt. **James E. Baker,** Lykes Bros. Steamship Co.; **John Kennedy,** Todd Shipyards Corp.; **O.C. Webster,** Central Gulf Steamship Co.; **Eddie Dyer,** Dearborn Marine Service Corp., and **John Atwood,** Atwood Oceanics, Inc.

New president of the Marine Services Association of Texas (MSAT) is **George D. Gray,** Texas Gulf Coast area district manager for Alexander Industries, Inc.

Other officers of the organization of marine supply and services personnel are **Gene Pettit,** vice president, and **Dewayne Hollin,** secretary-treasurer.

Mr. **Pettit** is president of Glynn-Pettit Company of Houston, and Mr. **Hollin** is a research associate in the Houston office of Texas A & M University's Industrial Economics Research Division (I.E.R.D.).

The new officers were named at a recent association meeting held in conjunction with a marine industry conference and marketing seminar co-sponsored by the Association, I.E.R.D., and Texas A & M's Sea Grant Program.

The 120 persons attending the conference heard **Ralph Anselmi,** general manager of Todd Shipyards Corporation's Galveston Division, describe the five-year outlook for the industry's growth as favorable.

Mr. **Anselmi** noted that the U.S. shipbuilding and repair industry was continuing to expand, with most yards operating at near-full capacity. Principal factors hampering growth, he said, are shortages of steel, marine equipment, and trained personnel.

Other speakers and panelists on the day-long program included **Fred Ashford Jr.,** president of SEADOCK, Inc.; **John H. Atwood,** president, Atwood Oceanics, Inc., and Capt. **James E. Baker,** assistant manager of Lykes Bros. Steamship Company's Marine Division.

Also on the program were **John A. Kennedy,** Houston Division purchasing agent for Todd Shipyards and **O.C. Webster,** general purchasing agent for Central Gulf Steamship Company.

Conference On Texas Ports And Waterways Set For June 20-21

A conference to probe current and future problems of Texas's ports and waterways will be presented in Houston June 20-21 by Texas A & M University, the Texas Coastal and Marine Council, and the Texas Ports Association.

The one-and-a-half-day program will be at the Royal Coach Motor Hotel, 7000 Southwest Freeway.

State Senator **A.R. Schwartz** of Galveston will direct the opening session Thursday, June 20, on "Current Issues facing Texas Ports." Senator **Schwartz** is chairman of the Texas Coastal and Marine Council.

The chairman of the Friday morning session on "Port Planning and Development" will be **Willis H. Clark,** associate director of the Texas A & M Sea Grant Program.

Al Cisneros, director of the Port of Brownsville, will be chairman of a session Friday afternoon, on "The Gulf Intracoastal Waterway."

The luncheon speaker Friday will be **Armour Armstrong,** director of the Office of Ports and Intermodal Systems, U.S. Maritime Administration.

Other speakers and panelists will include **Fred Ashford Jr.,** president of Seadock, Inc.; State Representative **Jim Clark** of Pasadena; and **C.S. Devoy,** director of the Port of Galveston and president of the American Association of Port Authorities; also, **Wayne Etter,** associate professor of finance at Texas A & M; **David Hughes,** assistant chief of the transportation division, Texas Attorney General's office, and **Hugh Yantis,** executive director of the Texas Water Quality Board.

Conference coordinator is **Dan Bragg,** associate research engineer with Texas A & M's Industrial Economics Research Division (I.E.R.D.).

To register or obtain further information about the program, write I.E.R.D., P.O. Box 83FM, College Station, Texas 77843, or telephone (713) 845-5711. Registration fee is $25.

Capt. Spicer Describes Pollution Prevention In Tanker Salvage

Prevention of pollution is the first concern of the oil company tanker operator in a salvage operation, Capt. **Hugh Spicer** declared in a paper delivered recently at a symposium on marine salvage jointly sponsored by the Marine Technology Society and The Maritime Association of the Port of New York.

Captain **Spicer** is manager of fleet and terminal coordination for Mobil Oil Corporation and has served as chairman of the tanker salvage committee of the American Institute of Merchant Shipping. His paper was entitled "Salvage—The Tanker Operator's Point of View."

"The most important factor in salvaging a damaged or grounded tanker is removal of oil by lightering," the tanker authority stated. "The key to successful lightering is having adequate fenders such as the large diameter pneumatic type."

He pointed out that oil companies have developed elaborate contingency plans and have organized emergency task forces to deal with actual or threatened oil spills in salvage operations.

Captain **Spicer** introduced a motion picture which showed an incident in which Mobil, acting as the owner's agent under the terms of a charter party contract, prevented pollution by lightering the tanker Silver Castle.

Multimillion Dollar Contract Awarded To Alabama Dry Dock

Esso Europe Inc. and Shell International Petroleum Maatschappij B.V. of London have awarded Alabama Dry Dock and Shipbuilding of Mobile, Ala., a multimillion dollar contract to build a 400-foot long, 180-foot wide pipelaying barge. The vessel—due to be operational for the 1976 drilling season in the North Sea—is designed for laying large-diameter pipe in water depths up to 1,000 feet. The barge will be equipped with a 500-ton revolving crane and a center ramp, with living accommodations for 250 men.

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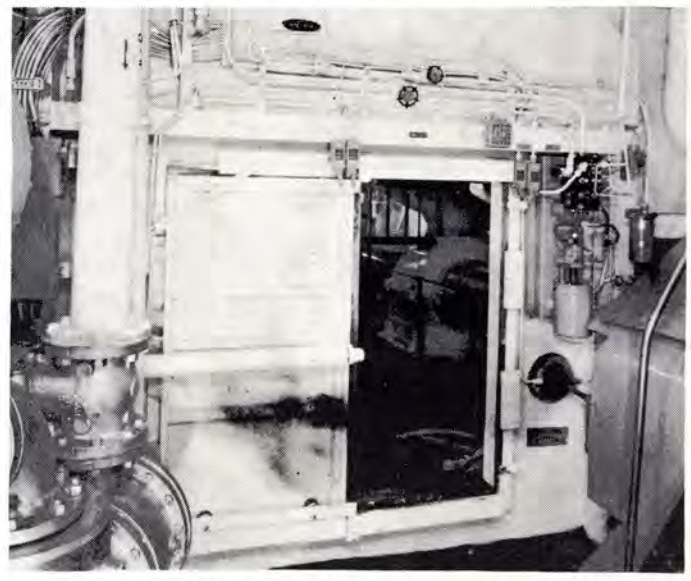

These comply fully with U.S.C.G. requirements for Subpart 163.001 Class II and Class III Sliding WT doors. They also can be furnished to meet the specifications of other regulatory bodies throughout the world.

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Kerr Moves To New Bahrain Headquarters For Santa Fe Engr'g

Donald A. Kerr

Santa Fe Engineering & Construction Co., a division of Santa Fe International Corp., Orange, Calif., announced plans for a new operations base in Bahrain to serve as its Middle East headquarters.

Donald A. Kerr, vice president, will relocate in Bahrain from Saudi Arabia as area manager in charge of Middle East construction activities. Current Santa Fe operations in the area include projects in Saudi Arabia, Abu Dhabi, Das Island, Iran and Kuwait.

Others assigned to the Bahrain headquarters include **G.R. Chaffin** and **Robert C. Paulson Jr.,** area operations managers, and **W. Van Stuijvenberg,** area financial administrator.

Besides staff offices, facilities there will include an equipment yard and dock space for the company's construction vessels operating in the Middle East.

Two major Santa Fe construction units are being transferred from the Gulf of Mexico to the Middle East because of increased company activities there. These are the 325-foot 400-ton derrick/pipelaying barge Navajo and the Shawnee, a 250-foot launch barge.

Santa Fe recently purchased two cargo barges, the Miwok IX and X, which are now under tow to the Middle East from Singapore. The company also has awarded a contract to a Singapore shipyard for the construction of a crane barge and four work barges to be assigned to Bahrain following their completion about mid-year.

Santa Fe vessels currently working in the area include two smaller derrick barges, Pacific Atlas and DB-21, plus support equipment.

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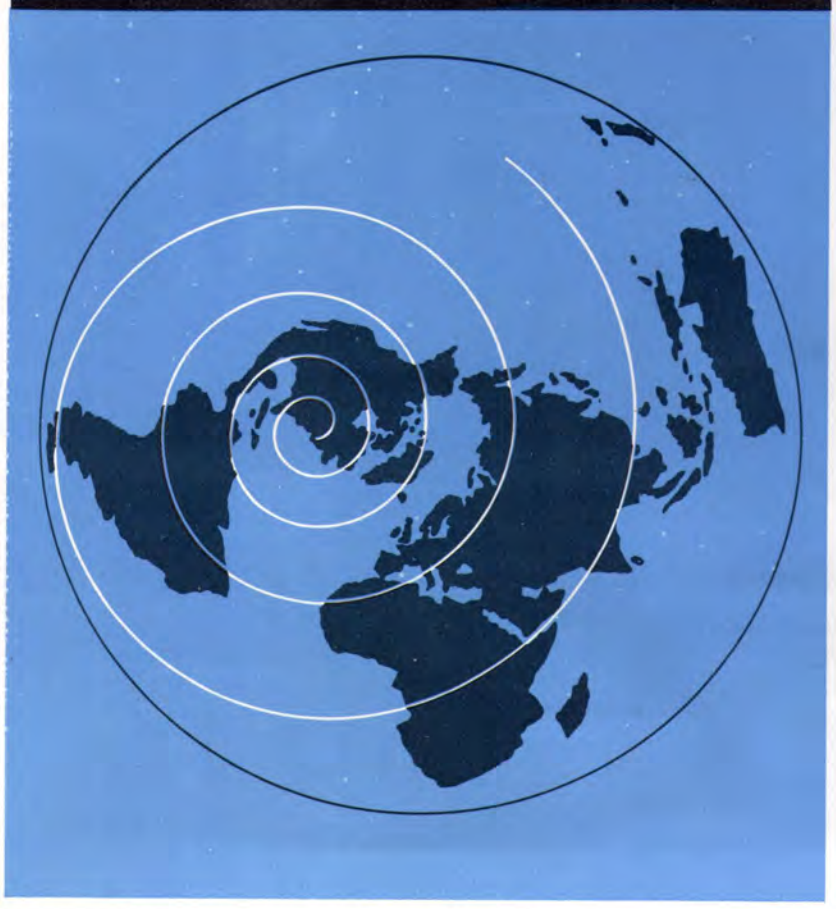


SNAME Philadelphia Section Hears Paper On Submarine Tankers For The Arctic

Participants in the Philadelphia Section meeting, left to right: (seated) **David C. Weong,** Sun Shipbuilding & Dry Dock Co., discusser; **D.F. McMullen,** J.J. Henry Co., Inc., coordinator; Dr. **Herman E. Sheets,** University of Rhode Island, author; **M.A. Morris,** I.T.E. Imperial Corp., Philadelphia Section secretary-treasurer, and **T.J. Kavanagh,** Philadelphia Naval Shipyard, Section chairman; (standing) **F. Beltz,** Delaval Turbine Inc., Section executive committee; **H.T. McVey,** Sun Shipbuilding and Dry Dock Co., Section vice chairman; **S.S. Morse,** Atlantic Richfield Co., discusser; **W. Wiley** (ret.) discusser for **Richard Neuendorffer,** Sperry Marine Systems, and **A.C. Brown,** J.J. Henry Co., Inc., Section executive committee.

The subject of the April meeting of the Philadelphia Section of The Society of Naval Architects and Marine Engineers was submarine tankers for the Arctic.

Dr. **Herman E. Sheets,** University of Rhode Island, presented his paper titled "Submarine Tankers for the Arctic."

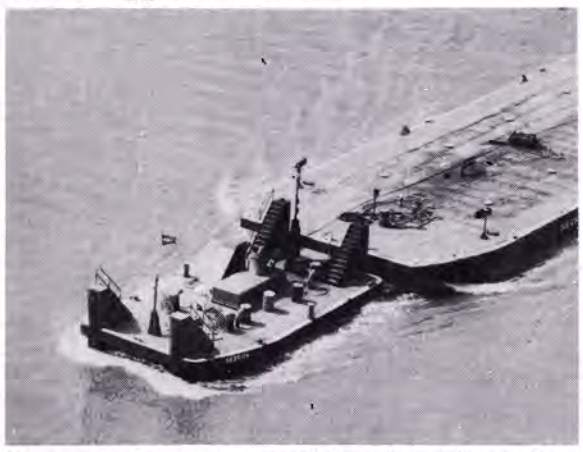
The paper is a general review of the "past and current concepts of submarine tankers for the transport of oil. A review of existing nuclear surface ships and their power plant is presented to analyze their operational and economic experience. The submarine tanker has advantages for certain Arctic routes, and it has been proposed in large sizes. The critical technical systems are the power plant and underwater navigation. The submarine tanker must be considered as an element of a subsea transportation system requiring substantial investments. The submarine tanker may also find applications in the future for sub-surface oil completion systems in conjunction with sub-surface storage systems."

David F. McMullen, J.J. Henry Co., Inc., coordinated the meeting for the local section.

Discussers included **Samuel S. Morse,** Atlantic Richfield Co.; **David C. Weong,** Sun Shipbuilding & Dry Dock Co.; **Joseph Richartz,** J.J. Henry Co., Inc., for **John Klose** of the same company, and **W. Wiley** (ret.) for **Richard Neuendorffer** of Sperry Marine Systems.

SNAME HAMPTON ROADS SECTION MEETS: The Hampton Roads Section of The Society of Naval Architects and Marine Engineers met recently at the Mariners Museum in Newport News, Va. On this occasion of the annual Ladies Night, **Robert H. Burgess,** curator of publications of the Mariners Museum, gave an entertaining lecture titled "A Voyage on a Four-Masted Schooner, Doris Hamlin—1936." Mr. **Burgess** sailed on that vessel as a seaman, and the pictures he took were used to illustrate his talk. Section chairman **C.E. Peacock** introduced the newly elected officers for the 1974-75 term, they are: **R.C. Strasser,** chairman; **C.M. Brooks,** vice chairman; **C.W. Coward,** secretary-treasurer, and **B.L. Skeens,** new member, executive committee. Shown above, left to right, Messrs. **Brooks, Yeager, Peacock, Wilkinson, Strasser,** and **Burgess.**

Breit Engineering Develops New Type Bow Boat



Close-up of the steering vessel Redfish assisting a Dixie Carriers tow near the West Port Arthur (Texas) Bridge.

A full utilization bow boat that can function entirely independent of a towboat and provide propulsive thrust in any direction, has been developed by Breit Engineering, Inc., a naval architectural and marine engineering firm of New Orleans, La.

HE. Breit Jr., president of Breit Engineering, said the "Breit Bow Boat," has completed full testing under operating conditions by Dixie Carriers, Inc., a major inland operator and subsidiary of Kirby Industries, Inc.

A patent is now pending on the Breit Bow Boat, which is equipped with a 455-horsepower diesel engine mounted in a 52-foot by 28-foot by 9-foot 6-inch hull.

Mr. **Breit** said the new bow boat performs the primary functions of assisting the towboat operator in steering, maneuvering the tow in swift currents, curves and bends, high winds and heavy waterborne traffic, thereby resulting in fewer accidents and reduced insurance rates.

"But the Breit Bow Boat can also function entirely independent of the towboat," said Mr. **Breit,** "which means it can provide propulsive thrust in any direction, even when disengaged from the tow.

"Because of this added capability," he stated, "the bow boat can assist before the tow departs, during the entire time the tow is under way, and upon arrival at its destination."

He also said that tests conducted by Dixie Carriers under actual operating conditions "were very gratifying and far surpassed the operator's expectations."

The vessel can be completely controlled as a manned separate and independent vessel or as an integrated component of the tow, remotely controlled from the console of the towboat. As a result, the Breit Bow Boat can be used to assist make up and break up of tows at fleets and terminals, particularly when resident switch boats are not available.

Large tows requiring double lockings would eliminate preparation delays and thereby reduce costs as the tow can be divided into independent tows, one part with the bow boat and one part with the towboat.

During tow, the Breit Bow Boat can be operated remotely as an additional means of continuous propulsion, thus reducing overall trip time, without diminishing its ability to function as a bow steering device.

Mr. **Breit** said that the bow boat can be directed full astern to reduce the amount of time and distance required to bring a tow to a complete stop.

Safety features include a system which monitors key points in the pilothouse of the towboat and engine room of the bow boat. In the event of equipment malfunction, steering and propulsion automatically revert to neutral prior to shutting down.

Mr. **Breit** said that in testing, delays caused by high winds when operating in canals and crossing bays, lakes, sounds, etc., were eliminated or greatly reduced. The prototype continued under way in winds up to 50 mph.

Although the remote control system of the prototype is accomplished through use of a cable run between the bow boat and towboat, a radio-controlled system is also available.

Six additional Breit Bow Boats are now under construction and designs are being formulated for a larger version with increased horsepower, particularly suited to very large tows on the lower Mississippi.

Plans are also under way to adapt the concept to assist in the steering and docking of large oceangoing vessels. This will be accomplished by means of a somewhat smaller, but perhaps more powerful portable unit, arranged to attach rigidly to the bow of the ship and controlled from the bridge. Such units could be carried aboard the ship, or in cases where a single company frequently docks in the same area, may be stored afloat at the dock.

Kockums Control Systems Ordered For 4 Vessels

Kockums Shipyard, Sweden, has received an order for electronic boiler control systems from the Eriksberg Shipyard, Goteborg. The value of the order is about $528,000 and is intended for two turbine vessels for Livanos and two for Nav Alta Italia.

The order includes complete sets of Kockums combustion control, Kockums burner control, Kockums controller systems, Kockums boiler safety systems and Kockums flame guard, with deliveries during 1975 and 1976.

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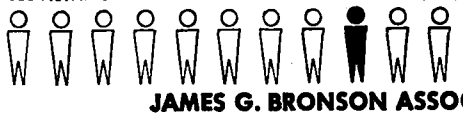

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General Dynamics Orders Inert Gas Systems From Gas Atmospheres For LNGs

Gas Atmospheres, Inc. has been awarded a $2-million contract by General Dynamics for the manufacture of seven custom-designed self-contained inert gas generating systems for use on a like number of liquefied natural gas vessels. Each ship has a capacity of nearly 4½-million cubic feet of LNG. Delivery of the first system is scheduled for December.

The new General Dynamics vessels are the largest of their type ever built domestically. The carriers will transport liquefied natural gas to areas of the world where shortages are reaching critical proportions.

The gas generating systems will provide 336,000 SCFH of high-purity moisture-free inert gas. The inert atmosphere will be used for gas-freeing the tanks prior to inspection. The units may also serve as part of the ship's standby safety system, since inert gas may be used to blanket the areas surrounding the cargo tanks should any LNG leakage or similar emergencies occur at sea.

Gas Atmospheres, Inc., an Alco Standard Corporate Partner, is a leading designer and producer of inert gas generating systems for a wide range of applications. Although furnishing General Dynamics with fully integrated systems represents a "first" for any U.S. manufacturer in the relatively new area of large-scale transportation of liquefied natural gas by ship, similar systems can be provided for vessels carrying other volatile liquids.

Further information can be obtained by contacting Gas Atmospheres, Inc., 21945 Drake Road, Strongsville, Ohio 44136.

LONGEST FOR CAPE TOWN DOCK: The 103,383-dwt Grand Bassa tanker, the W. Alton Jones, shown above, is the longest vessel to be serviced in the Sturrock Graving Dock in Table Bay Harbor, Cape Town, South Africa. The Sturrock Dock, one of two large graving docks employed by Murray & Stewart (Marine Pty.) Ltd., has a length of 1,156 feet. The Alton Jones, jumboized last year in Japan, now has a length of 945 feet and was also heightened to increase her draft and capacity. The vessel was in the drydock for three days for hull cleaning and painting, and for checking of her plates, her underwater valves, propeller and rudder. She was then placed alongside a repair berth to enable Murray & Stewart (Marine), to continue work for her annual survey requirements, which included extensive pipe work and tank work, as well as engine, boiler, and auxiliary machinery overhauls. This repair job is one of nine major tanker contracts that Murray & Stewart (Marine) have handled in the last four months. **C.N.D. Riddell,** manager of M & S Marine, said that the increase in big vessel work being handled by his firm was largely due to the increased number of agents that the company now has overseas and to the frequent work-seeking trips made by himself and others. Murray & Stewart is represented in the United States by **Frederick A. Ganter,** Marine Repair & Construction Corporation-International, 17 Battery Place, New York, N.Y. 10004.

Maritime Transportation Seminars June 20-23 At SCI In New York

In response to numerous requests from members of the maritime transportation industry throughout the United States and abroad, the Seamen's Church Institute of New York will provide two intensive three-day review and training seminars in "Intermodal Transportation, Containerization and Pricing," and in "EDP (Computer): Its Application to the Transportation Industry," June 20-23, 1974 at SCI, 15 State Street, New York City.

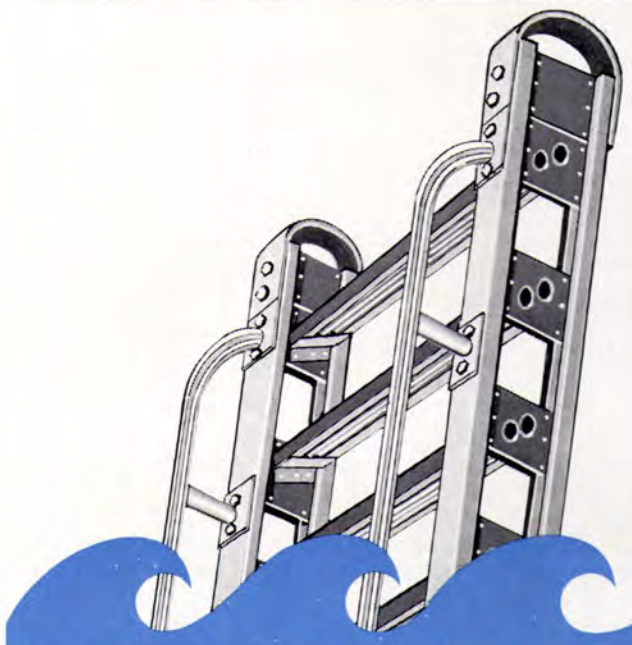
Planned especially for industry personnel, educators, Government and professional groups, and service personnel to the maritime industry, each seminar will include 20 hours of in-class instruction to provide a maximum amount of up-to-date practical information within a limited period of time. The seminars are based upon the highly acclaimed 12-week maritime courses taught by SCI's evening adult education school, the Franklin D. Roosevelt Institute.

Edward Norberg, director of conference and regulatory affairs, Dart Containerline, Inc. and senior lecturer at the Roosevelt Institute, will conduct the ITCP seminar. **Gerald Walker,** statistical systems manager, United States Lines, Inc. and maritime lecturer at the Roosevelt Institute, will teach the EDP program.

In addition to intensive in-class instruction, special guest speakers are scheduled for luncheons and dinners.

Registration is $195, which includes tuition, class materials, housing accommodations at the Institute, and all meals and social hours for the three days (excepting Saturday dinner).

Additional information and descriptive brochures, including registration forms, are available by calling **Miss Faye Argentine** at (212) 269-2710, or by writing to the Roosevelt Institute, 15 State Street, New York, N.Y. 10004.



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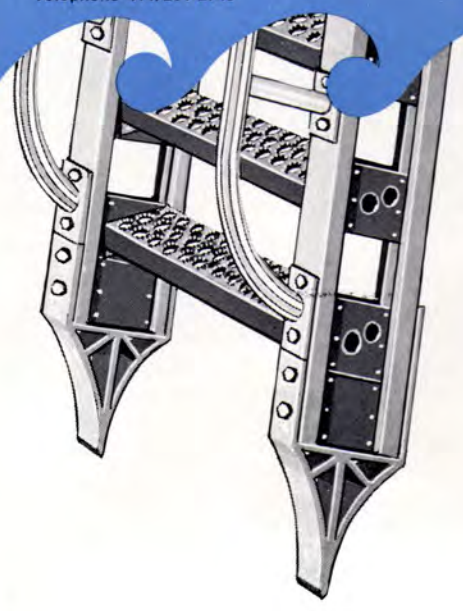

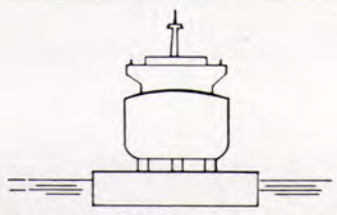

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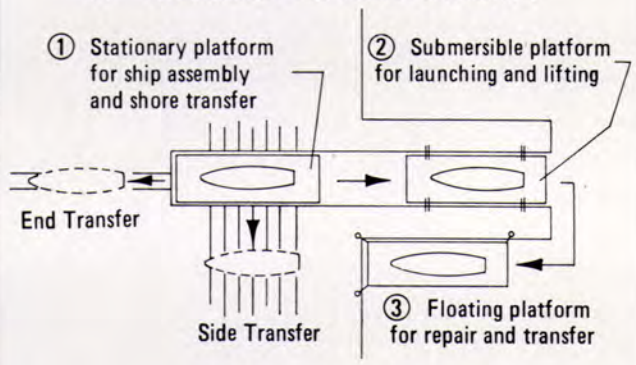

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Diamond M Drilling Acquires 36-Acre Shipyard In Houston

Diamond M Drilling Company, Houston, Texas, has announced that the company has acquired a 36-acre shipyard on the Houston Ship Channel from Metal Arts Company, a subsidiary of Dixilyn Corporation.

The facility is located on the north shore near the east end of the channel, off Interstate 10 and adjacent to the Jacinto Port Industrial Plant.

Don E. McMahon, president and chief executive officer of Diamond M, said management considers the shipyard to be a prudent investment, as well as an excellent potential support facility for the Houston-based international drilling contractor.

Diamond M will lease the shipyard and support facilities for a two-year period to Port Houston Barge & Shipyard Corporation. According to **T.J. Bryant Jr.,** executive vice president of Port Houston Barge, his company will use the yard for the construction of cryogenic barges.

'Phillyship' Relocates Office In New York

Philadelphia Ship Maintenance Co., Inc. of Philadelphia, Pa., has announced that it has moved its New York City office, and is now located in Suite 900 at 25 Broadway, New York, N.Y. 10004.

Wagstaffe Elected To Head San Francisco Shipper Advisory Board

William D. Wagstaffe, general traffic manager, Del Monte Corporation, has been elected chairman of the San Francisco National Maritime Council Shipper Advisory Board, according to an announcement by outgoing chairman **Paul O'Leary,** vice president, Connell Brothers Company.

The Shipper Advisory Board is composed of a group of prominent shippers in the Bay Area who lend their expertise to the American-flag steamship companies in matters of shipping cargoes in international trade.

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Shown above during the meeting at the Stevens Institute of Technology, left to right: **Walter M. Maclean,** chairman, papers committee; **A.C. Landsburg,** Manager, Design Division, Office of Ship Construction, Maritime Administration, author; **William H. Garzke Jr.,** Hull Division, Gibbs & Cox, Inc., author; **Ralph E. Johnson,** naval architect, Office of Merchant Marine Safety, USCG, author; **Patricia M. McGovern,** chairman, meetings committee; **Donald B. Carpenter,** chairman, New York Metropolitan Section; **Arnold M. Stein,** chairman, membership committee, and **Robert F. Fulton,** Gibbs & Cox, Inc., Section secretary-treasurer.

The New York Metropolitan Section of The Society of Naval Architects and Marine Engineers met on April 23, 1974, at the Stevens Institute of Technology, Stevens Center, Hoboken, N.J.

Following a social hour and dinner, the technical session was held during which a paper was presented entitled "Stability and Loading Manuals—A Survey of Needs, Uses and Improvements," by **W.H. Garzke Jr.,** Gibbs & Cox, Inc., **A.C. Landsburg,** Maritime Administration, and **R. Johnson,** U.S. Coast Guard.

This paper reviews the contents and purposes of the stability, trim and loading manuals and proposes some changes that could be made to improve their value in view of present requirements for general cargo, container, barge carrying, bulk dry cargo and bulk liquid ships. The results of a survey questionnaire concerning the use of such information by shipboard personnel and the opinions of shipowners on the value and use of such information is presented. Special needs of new designs are considered in such areas as high-speed containerships, barge carrying, VLCC loading, slurry loading, grain shifting, computerization, strain gauges, damage control, maneuvering and seakeeping studies. Various techniques and format changes are presented and discussed as to their relative merits. Emphasis in the paper is placed on creating booklets of greater utility to shipboard personnel.

Acurex Announces Torsionmeter System For Large Shafts

Acurex Corporation announces a new non-contacting high-accuracy torsionmeter for large shafts. It is an easily installed, virtually maintenance-free system for measuring torque on shafts up to more than 30 inches in diameter. Typical torque loads range from 50,000 ft-lb to over 4.5 million ft-lb.

This Acurex system is factory calibrated before installation, which eliminates difficult and costly on-shaft calibration. Accuracies of better than 1 percent can be achieved over wide variations in ambient temperature; the unique design of the sensor accounts for changes in the shaft modulus of rigidity with temperature. Another feature is that maintenance requirements are minimal and infrequent because there is no contact between rotating and stationary components.

Originally, this torsionmeter was designed for, and will be used on, the U.S. Navy DD-963 Spruance-Class Destroyer. As a result of having met stringent military specifications, this torsionmeter is capable of performing under extremely rugged environmental conditions.

The Acurex torsionmeter is based on reliable design concepts made possible by the invention of solid-state microcircuitry. It consists of a hermetically sealed strain gage transducer which senses the relative twist angle between two lightweight collars clamped on the shaft. A microcircuit, sealed inside the transducer, provides stable excitation voltage to the strain gages as well as amplification and encoding of the gage output signal.

One collar acts as both the secondary winding of a transformer for input power, and a capacitive antenna for the signal. Available outputs include analog voltage for feedback control, digital readout and BCD output for computer analysis.

Further information can be obtained by contacting **Ted Tilton,** Acurex Corporation, 485 Clyde Avenue, Mountain View, Calif. 94042.

NEWEST ADDITION TO SKAARUP FLEET CHRISTENED AT SASEBO: The M/S Colon Brown (shown above), newest addition to the Skaarup fleet, was christened recently at the Sasebo Shipyards in Japan by **Miss Cathrine Skaarup,** daughter of **Ole Skaarup,** chairman of the board of Skaarup Shipping Corporation. Designed by **Ole Skaarup** jointly with naval architects, **Knud E. Hansen** of Copenhagen and **Nordstroms Linbanor** of Sweden, the 26,000-ton Colon Brown represents a further development of the self-unloading bulk carrier concept pioneered by Skaarup in the mid-1950's, with the construction of the M/S Melvin H. Baker. Following her maiden voyage to Bunbury, Australia, the Colon Brown will be delivered to National Gypsum Company for service in the Nova Scotia to U.S. East Coast gypsum trade.

NEW the 10-2510 Series BELL LOGGER

Automatically records Bridge engine orders and Engineroom reply, throttle setting, actual shaft speed and direction. It also logs Control location and such other information as you may require: propeller pitch, course, speed, use of thruster, etc. It prints data for each shaft, if a multiscrew vessel, records it periodically with the date and exact time to the nearest second.

Somewhat smaller and more compact than the earlier models, with a wider tape for greater data capacity, the Logger is designed for platform mounting in any convenient location. It presents its information continuously in a lighted digital display and permanently records the identical data on tape for easy reading as a sequence of precisely timed events.

New delay circuits, controllable from the panel, eliminate needless repetitive printouts as when shaft speed varies slightly due to heavy weather, to minor throttle adjustments, or while the ship is responding to a change in speed demand.

A built-in crystal controlled time standard and an emergency power supply ensure continuing accuracy under virtually any shipboard condition. Solid state circuitry and plug-in modules make this a system of high reliability and easy maintenance.

The Henschel Bell Logger is often used as the ship's master clock. Any number of remote digital clock units can be provided in a system to show identical exact time anywhere on board.

Write for complete information and data sheets. Or telephone 617 388 1103.

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Terrin Group Of Yards Report Satisfactory Year

The turnover of the Terrin group of ship repair companies last year approached the 410 million francs mark (about $82 million) and in spite of varying forecasts, the companies were all kept busy.

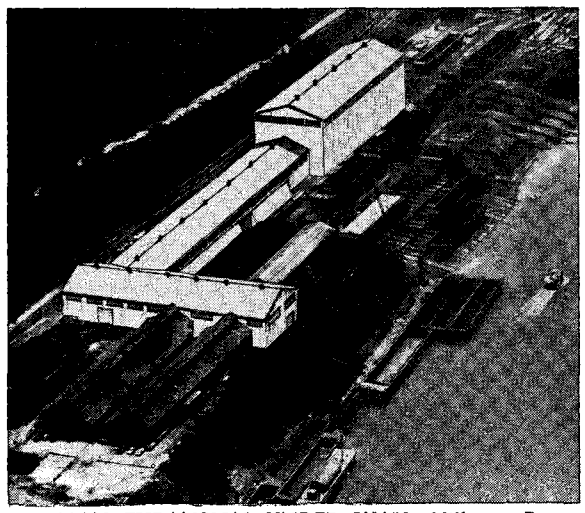
The main company of the group, Société Provençale des Ateliers Terrin, reported a 23 percent increase in the number of man-hours worked but only a moderate increase in the turnover for ship repairs, which reached FFr. 263 m. Wages rose by an overall 10 percent.

Customers included many of the major international oil companies, such as Esso, Fina, Mobil, Shell, Conoco and the chief French owners. Many Greek owners also continued to use the services of Terrin.

Some work was provided by Sudoimport, but the most noteworthy trend was the increase of work for the Algerian national line (CNAN). A refit and conversion job was carried out on the car ferry El Djazair at a cost of FFr. 12.5 million, and important work was also performed on the Setif and Tiaret.

The spectacular development of the Algerian merchant fleet and the planned expansion of Libya's fleet should provide work for technically competent Mediterranean repair yards for some years, and it is of interest that CNAN has ordered five gas carriers recently from the La Ciotat (CNC) and La Seyne (CNIM) yards, both within 40 miles of Marseilles.

Terrin's customers continue to consist of 70 percent foreign and 30 percent French vessels, and the figures of occupancy for the four largest drydocks at Marseilles show that the Terrin group drydocked 142 vessels of 167 repaired in 1973. A total of 248 vessels were repaired in drydock by the group. Terrin is represented in the United States by Robert M. Catharine, 405 Park Ave., New York, N.Y. 10022.



HILLMAN EXPANSION UNDER WAY: Hillman Barge & Construction Company of Brownsville, Pa., has launched a three-phased $3,000,000 expansion and modernization program. In addition to providing in excess of 100,000 square feet of covered work space in three new buildings, as depicted in the artist's conception above, the project will include the installation of four new overhead cranes with capacities of up to 50 tons. Pittsburgh Bridge and Iron Industries of Rochester, Pa., has been awarded the contract for design and erection of the buildings, which will be fitted with the latest in modern industrial and emergency lighting systems in addition to large areas of transluscent glass paneling to take advantage of natural light conditions. The entire program, due for completion by December 31, 1974, will allow Hillman to achieve increased efficiency and production capability not only in the complete range of barges they now produce, but also in the 1,800 to 3,200-horsepower towboat class.

GPE Controls Receives Order To Supply Venting Equipment For Seven LNG Tankers

GPE Controls, division of Vapor Corporation, has been awarded a major contract to provide the venting equipment for seven of the largest LNG tankers yet to be built.

The ships are being built at General Dynamics' Quincy Shipbuilding Division, Quincy, Mass., for the transportation of liquefied natural gas by Burmah Oil Tankers, Limited. Each LNG tanker will have a total cargo capacity of 125,000 cubic meters.

Venting of cargo areas and void areas will be handled by GPE's unique double pilot, 12-inch safety relief valves, which utilize magnetic latching instead of diaphragms or springs to bring about the desired valve pressure relief. This is said to be particularly important in LNG and other low-temperature applications, where diaphragm stiffness is often a problem.

For more information on safety relief valves, write GPE Controls, a Vapor Corporation division, 6511 Oakton Street, Morton Grove, Ill. 60053, Department 250.

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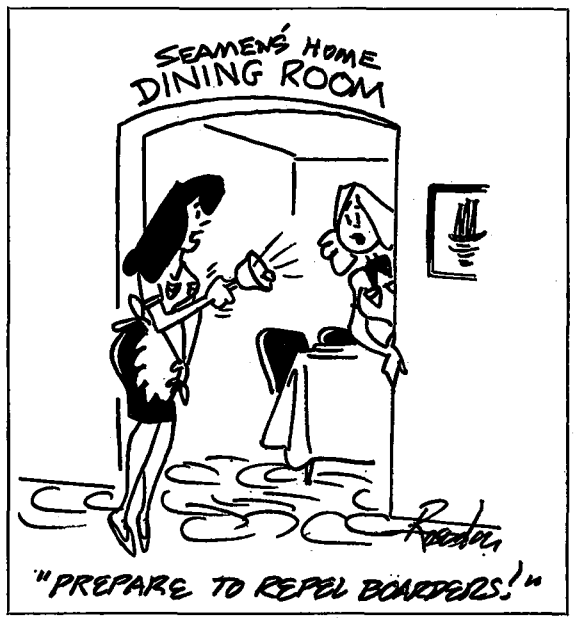

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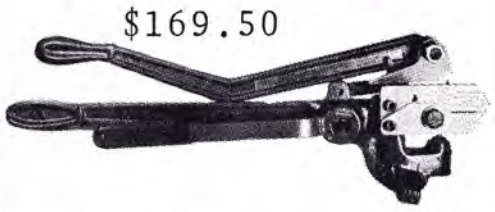

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Equitable Launches Second In Series Of 3 Offshore Supply Vessels For Otto Candies, Inc.

The Amelia Candies is designed and built to American Bureau of Shipping Class "Maltese Cross A-1 Maltese Cross AMS," and is in accordance with the current requirements of the U.S. Coast Guard.

Equitable Equipment Company, Inc., one of the world's largest shipbuilders for the marine, oil, and gas industries, launched the Amelia Candies, second of three new 175-foot twin-screw offshore supply vessels at its Madisonville, La., shipyard. The three new vessels are being built for Otto Candies, Inc., for service in offshore drilling operations.

Principal particulars of the vessels are: length overall, 175 feet; beam, molded, 38 feet; depth, molded amidship, 14 feet, and draft, DLWL, 10 feet 6 inches.

The two propulsion engines in the vessel launched are General Motors EMD-12-645E2 engines having a total continuous rating of 3,000 bhp. Reduction gears are Western Model RH-27 marine gears. Air-conditioned quarters and electric galley to accommodate 17 men are provided. The vessel is fitted with a bow thruster unit driven by a GM-6-71 engine. The vessel is equipped with a pneumatic bulk mud system.

When completed, the vessel will be delivered to the owners at the builder's shipyard, New Orleans, La.

Equitable Equipment Company, Inc., builds various types of offshore support vessels, oceangoing tugs, tugs for harbor and inland waterway operations, self-propelled drilling ships, pipelaying barges, and other marine equipment for the maritime and petroleum industries worldwide.

ALCO "POWER BOSS" ON THE GO: An artist's concept of Dearborn Marine's new 200-foot anchor handling/supply/towing tug scheduled for launching from the Burton Shipyards in Louisiana late this month uses two V-18 Alco "Power Boss" diesels for main propulsion engines. Paired, the Alco "Power Boss" diesels will develop 7,200 hp and give the tug a bollard pull of over 100 tons, making Dearborn's 200-Series of vessels rank among the biggest and most powerful tugs in operation anywhere. Equipped with a material handling conveyor, the Dearborn 201 can also handle a total of 6,700 cubic feet of dry materials separated into four categories. Construction of four Dearborn Marine 200-Series tugs is scheduled for completion in 1974. The first, Dearborn 201, is under contract for a drilling rig tow to Brazil this summer, and will continue to work in the Brazilian offshore area for an indefinite period.

MARINE EMPLOYMENT SPECIALISTS

If you are a marine professional who desires employment assistance on a company fee paid basis or are an employer seeking qualified Marine Design Engineers, Naval Architects, Shipbuilding Supervisors or other shoreside marine personnel, you get results by contacting:

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Personnel Services
Incorporated
823 West Street, Wilmington, Delaware 19801
302/655-9661

SUPERINTENDENT ENGINEER

A young fast-growing shipping company has opening for experienced superintendent engineer to work out of Oyster Bay office.

This job will go to a man with a Chief Engineer's License, steam and diesel, who can demonstrate ability to handle a maintenance program for 5-15 medium sized ships, all foreign built.

Age bracket preferably 38-45, though others considered.

Successful applicant will be expected to travel as required, will be expected to personally supervise shipboard repairs, from the engine room platform when on shipboard and to maintain adequate repair program from the office.

Please reply giving salary requirements and resume to:

SOVEREIGN MARINE AGENCY, INC.
P. O. BOX 508
OYSTER BAY, NEW YORK 11771

Attention: General Manager

TECHNICAL ASSISTANT
(Marine)

An immediate opening exists for a Technical Assistant to work in the Marine Division of a major oil company based in Connecticut. This individual will work under the broad supervision of the Technical Director and under the direct supervision of the Chief Naval Architect. The selected candidate should have a minimum of 5 years' experience and should possess a Marine Engineer's license of second or third assistant category. In addition, the applicant would preferably have ship operating experience in the administrative and technical categories.

Please forward resume including salary history in complete confidence to:

Box 601 Maritime Reporter/Engineering News
107 East 31 Street New York, N.Y. 10016

NAVAL ARCHITECT

New York based shipping company with extensive tanker/bulk carrier new building program desires to employ a Naval Architect and a Marine Engineer. Positions require 5 to 10 years experience. Plan approval, specification review, shipyard negotiation. Interested candidates please send letter/resume to:

Box 603 Maritime Reporter/Engineering News
107 East 31 Street New York, N.Y. 10016

PORT CAPTAIN

A major international petroleum company has an opening for a Port Captain in the Marine Department, located in Houston. Supervise the daily operations of assigned vessels; issue voyage instructions to agents; continuing review of vessel operation with recommendations for changes/improvements; administer the storing, provisioning and supplying of services to assigned vessels; coordinate day-to-day activities relative to the manning function and marine safety program.

Previous marine operating experience as Tanker Master or Chief Deck Officer necessary. Some travel involved.

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Box 605
Maritime Reporter/Engineering News
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Degree in engineering and some experience in quality control or industrial engineering, preferably in a shipyard. Responsibilities will be to ensure availability of quality control procedure inspection equipment and manpower, and to develop and maintain a QC plan to assure compliance with contract requirements.

Designing and building nuclear submarines which are, in fact, miniature worlds deployed in inner space, calls for a marriage of literally hundreds of disciplines. It provides challenge of the highest order to the Quality Control Engineer.

If you are interested in a career of this type . . . as well as the advantage of living and working in the relaxing environment of a New England community along the shores of Long Island Sound . . . a position with General Dynamics' Electric Boat Division may be the answer.

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JUNIOR NAVAL ARCHITECT

Recent graduate from N.A. school. No experience necessary.

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TODD NEW YORK U.S.A.

MARINE CHARTERING ASSISTANT

A new department, in a long-established recognized firm serving the marine industry is expanding and requires a bright, aggressive sales-oriented person possessing college background.

Familiarity with the commercial aspect of shipping and knowledge of the petroleum and petrochemical industries will be helpful. Send complete resume with salary requirements in confidence to:

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Maritime Reporter/Engineering News
107 East 31 Street New York, N. Y. 10016

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Excellent knowledge of marine communications and navigation market. Willing to relocate.
Resume upon request.
Salary desired $17,000 through $20,000.

Box 604 Maritime Reporter/Engineering News
107 East 31 Street New York, N.Y. 10016

PORT ENGINEER

A major international petroleum company has an opening for a Port Engineer in the Marine Department located in Houston.

Responsibilities will include the supervision of maintenance, repairs and dry docking of foreign flag vessels. Marine Engineering degree and/or Chief Engineer's license required. Shore experience with shipyard repairs and negotiations is desirable. Good background and broad knowledge of worldwide ship repair facilities advantageous. Considerable travel involved.

Excellent starting salary and outstanding benefit program. Send resume, in confidence, stating salary requirements to

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BS or MS in Engineering. At least 4 years' shipyard design experience. Should be familiar with design details and construction drawings used by shipyards and be able to guide an engineering drafting team in the development of such drawings. Location: Transworld Drilling Company headquarters in Oklahoma City. Send resume and salary history, in confidence, to: Larry B. Williamson, TRANSWORLD DRILLING COMPANY, Kerr-McGee Center, Oklahoma City, Oklahoma 73125.

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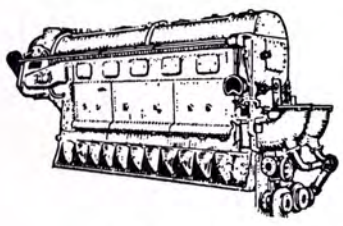

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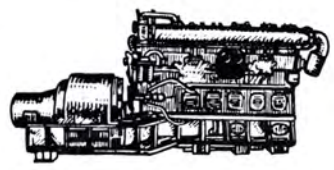

4—GENERAL MOTORS, Model 3-268A, marine, 150 BHP, 1200 RPM, 3 cylinders, with 100 KW Generators, 450/3/60.

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

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A.C.

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D.C.

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

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

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

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

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

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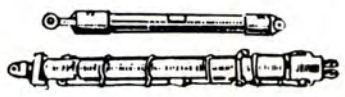

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3″	8″	1.37″	15½″	double
6″	8Ft.	4″	144″	double

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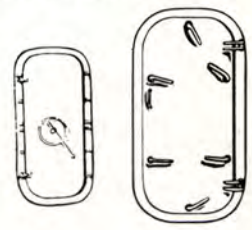

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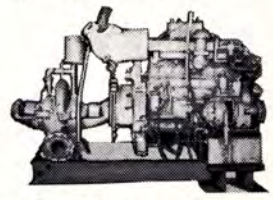

2—BUDA, Model 6-LD-468, Diesel Engines, 6 cylinders, 100 BHP, Marine, Gardner-Denver, centrifugal Pumps, Bronze, horizontally split case, 1000 GPM, 280′ head, 6″ suction and 5″ discharge.

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2—WESTINGHOUSE AIR BRAKE Steam, Size 11x11x12, approximately 60 CFM at 100 PSI.

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

2—WORTHINGTON, 20 CFH, 3000 PSI, 4 stage, 585 RPM, with Worthington Steam Turbine, 47 HP, 5502 RPM.

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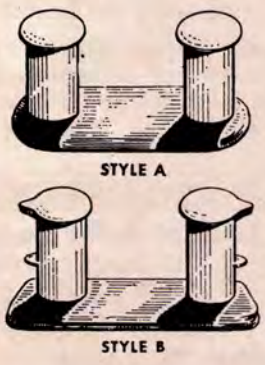

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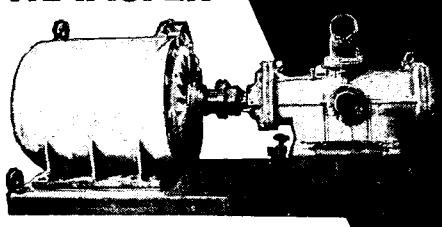

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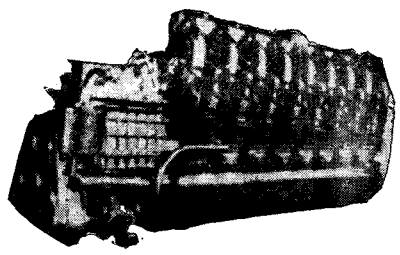

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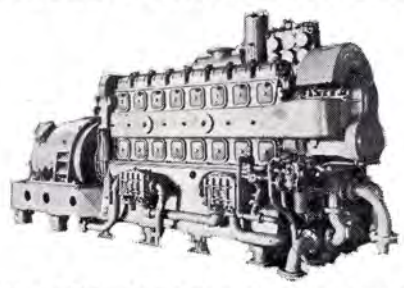

ENGINE: 8-268A—6½" bore x 7" stroke—1200 RPM—driving 200 KW Westinghouse generator—440 volts—3-phase—60 cycle—321 amps—80% power factor at 1200 RPM. Switchgear available.

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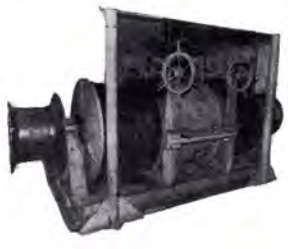

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CAPACITY: Each drum stows 1800' of 1¼" wire. Each drum independently 30,000 lbs. on 2nd layer at from 10 to 50 feet per minute. Both drums simultaneously 15,000 lbs. each. Drums equipped with clutch shift levers. 24" Winch heads for 8" circumference manila rope. Static load 52,000 lbs. applied at mid-length. Base 10' 6" wide with 2 outboard winch heads 20¼" each. Drum diameter 22½"—flange 50"—28" between flanges. Equipped with level wind spooling devices and compressor hand brake. MOTOR: 75 HP—under deck with horizontal drive through worm gear. Drip-proof—fully protected. Mfg by Allis-Chalmers—type EB-127-DC—compound wound—125/250 volts—254 amps—reversible—575/1150 RPM. CONTROLLER: Allis-Chalmers drum type—with 1 off position and 5 heave in positions and five payout conditions in opposite directions. Control cabinet also located below deck. Worm gear reduction 62T at 1½ CP worm wheel 31:1 reduction. Drum shaft beveled bull gear 61T. Drive shaft beveled pinion gear 14T—ratio 4.857:1.

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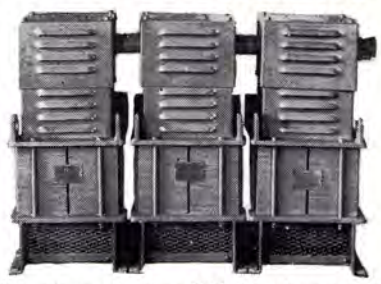

15 KVA—3 per bank—450 V primary—177 volt secondary. $295.00 PER BANK

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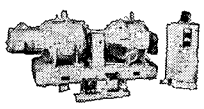
M.G. SETS

UNUSED—10 KW—120/1/60 M.G. SET



INPUT: Motor 25 HP — 120 VDC — 156 amps — 1800 RPM —flange-coupled to output generator.

OUTPUT: 10 KW generator — 120 volts 60 cycle single phase —108 amps — 0.80 PF — with direct-connected 125 volt 8 amp exciter. Motor starter by Cutler-Hammer. AC generator has voltmeter and ammeter. Bassler voltage regulator.

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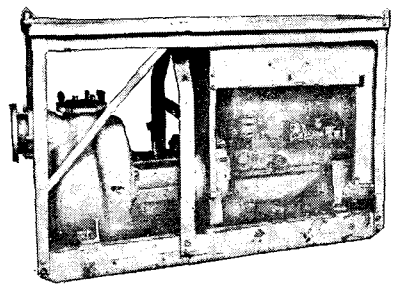

Reconditioned—mounted in portable steel frame. 1750 RPM—1100 GPM @ 100' head; 1500 GPM @ 70' head; 1800 GPM @ 50' head; 2100 GPM @ 20' head. Leroi gas engine—model D-201P3 —4 x 4—1750 RPM—hand crank— —wt. 600 lbs.

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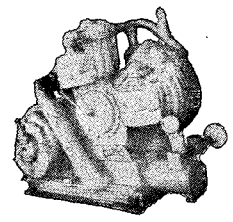
2-STAGE 5x4x4 50 CFM @ 150 LBS



INGERSOLL RAND AIR COMPRESSOR

Class R—type 30—5x4x4—750 RPM 3-cylinder air cooled 2-stage compressor with air intake filter. 20 HP Vee-belt drive motor—440 volts—3-phase—60 cycle—27 amps—1800 RPM continuous duty—class A insulation—ball bearing dripproof squirrel cage—low starting current. Motor weight 500 lbs. Complete with GE magnetic starter size 2—27.2 amps—weight 75 lbs. Copper finned intercooler between stages. Total weight motor, compressor and base 1505 lbs. OAL: 4' 1⅝"; OAW: 2' 6½"; OAH 3' 2½".

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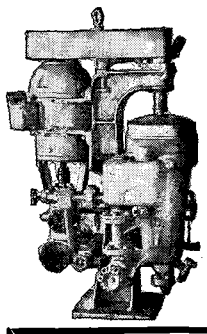
FOR FUEL OR LUBE OIL



DIESEL LUBE OIL: 225 GPM —viscosity 180-220 SSU @ 130°F. DIESEL OIL: 225 GPM —viscosity 45 SSU @ 100°F. MODELS: Lube Oil M-85-34-5-23BM-44; Fuel Oil M-85-35-5-8CA-13. SPECIFICATIONS: Bowl speed 17,000 RPM—1" oil inlet & outlet. 2 HP verticle GE motor—440/3/60/3400 — complete with starter. Plans available.

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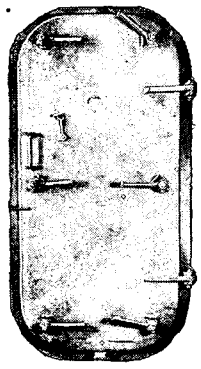

6-Dog right and left hand hinged steel doors—with frames. Built and tested to A.B.S. specifications.

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26"x48"	250 lbs.
26"x60"	300 lbs.
26"x66"	320 lbs.

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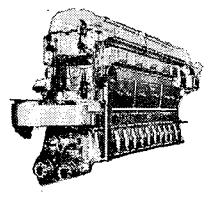

1800 HP @ 800 RPM—2-cycle—8½ x 10—air starting. Complete with operating gauge board. Very clean condition.

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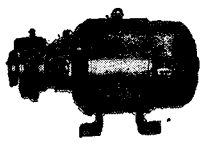

200 GPM — 180' head — 2½"x2"—bronze—flange connections. MOTOR: 20 HP—115 volts DC—2400 RPM—153 amps.

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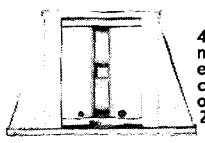

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4 Rollers — 8"x18" — 2 horizontal mount—2 vertical mount. Clear opening 3". Center to center on vertical & horiz. rollers 11". Fairlead 36" overall width—24" high—24" deep. 28 available.

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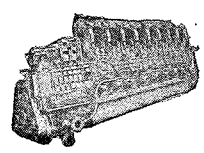
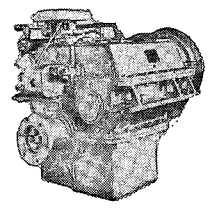
2 Sets Available





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

Will sell engines & gears separately

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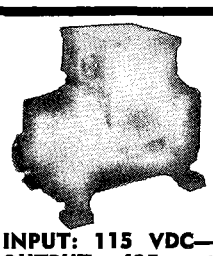

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APPROX. ½ KW 110/1/60 M.G. SETS NEW-UNUSED

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INPUT: 115 VDC—6.1 amps—3600 RPM. AC OUTPUT: 425 watts—4.55 amps—110/1/60. Ball bearings. 13⅜" long—7-9/16" wide—10½" high. Has radio noise suppression filter. Net wt. 58 lbs.—83 lbs. packed for shipping.

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Mfg by Electric Specialty Co. INPUT: 5 HP 115 VDC 38.5 amps 1800 RPM. AC OUTPUT: 2.5 KW —120/1/60 41.6 amps 1800 RPM. With controls. Write for price.

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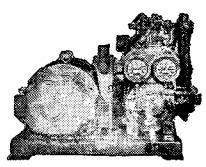

Two stage—water cooled—single acting verticle type—10 CFM—600 lbs. Type 30—Class T. Ingersoll-Rand Compressor—4x1½ x3½ @ 630 RPM. Motor 7½ HP—440/3/60 — 1750 RPM — complete with starter—intercoolers and aftercoolers.

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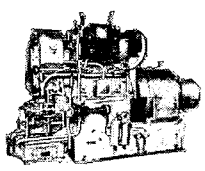
G.M. 3-268A 100 KW A.C. Diesel GENERATOR SET



Like new, ENGINE: G.M. 3-268A —3 cylinder—6½"x7" bore & stroke. GENERATOR: Century — 100 KW—440 volts—3-phase—60 cycle. Switchgear available.

AIR STARTING **$2450** ELECTRIC STARTING **$2775**

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
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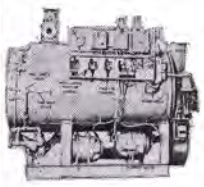
SELF-CONTAINED—ALL CONTROLS

CYCLOTHERM STEAM BOILERS

MODEL MC-90
OUTPUT
2600 LBS/HOUR



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

SMALL CYCLOTHERM STEAM BOILER

Made by American Iron Works, Oswego, N.Y. 100 pound working pressure—A.S.M.E.—complete with all accessories. Dimensions: 5'7" overall length—36" overall width—60" high.

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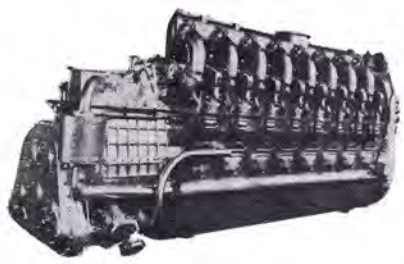
G.M. 16-278A
1700 H.P.
DIESEL ENGINES



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

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MARINE PUMPS
115 Volts D.C.
Very Little Use

FIRE & BILGE

350 GPM—100 lb. head—1750/3500 RPM—40 H.P. Furnished with Nash Hytor Pump MO-571 & float switch, for self-priming. All controls. Pump & primer weight 900 lbs.

BILGE & FLUSHING

15 GPM—20 lb. head—1750/3500 RPM—¾ HP motor. Furnished with Nash Hytor MD-2 vacuum pump. Approx. weight 250 lbs.

SANITARY SERVICE

35 GPM—40 lb. head—3500 RPM—1 H.P. Pump weight 40 lbs.

DIESEL FUEL OIL TRANSFER

Positive displacement—gear head—15 GPM—20 lb. head—350 RPM—1 HP—pump weight 260 lbs.

LUBE OIL SERVICE

Positive displacement—gear head—30 GPM—35 lb. head—273 RPM—2 HP motor—weight of pump 350 lbs.

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

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Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186
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Combustion Engineering, Inc., Windsor, Connecticut 06095
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Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
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Eaton Corporation, Industrial Drives Div., Airflex Plant, 9919 Clinton Rd., Cleveland, Ohio 44111
Wichita Clutch Co., Inc., Wichita Falls, Texas 76307
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Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
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International Paint Co., Inc., 21 West Street, New York, N.Y. 10006
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Philadelphia Resins Corp., 20 Commerce Dr., Montgomery, Pa. 18936
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Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
CONTAINER LASHINGS & COMPONENTS
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Frederick Cowan & Co., Inc., 120 Terminal Drive, Plainview, L.I. New York 11803
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Chas. Lowe Company, 5845 Harper Road, Cleveland, Ohio 44139
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
WABCO Fluid Power Division, 1953 Mercer Road, Lexington, Kentucky 40505
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Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
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AB Hagglund & Soner, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
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Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Mechanical Marine Co., 900 Fairmount Ave., Elizabeth, N.J. 07027
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Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
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A.G. Schoonmaker Co., Inc., P.O. Box 757, Sausalito, Calif. 94965
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Alco Engines Division, White Industrial Power, Inc., 100 Orchard St., Auburn, N.Y. 13021
Bruce GM Diesel, Inc., 180 Route #17 S. at Interstate 80, Lodi, N.J. 07644
Colt Industries Inc., Power Systems Div., Beloit, Wisc. 53511
De Laval Turbine Inc., Engine & Compressor Div., 550 85th Ave., Oakland, Calif. 94621
Electro-Motive Division General Motors, La Grange, Illinois 60525
M.A.N. Maschinenfabrik Augsburg-Nurnberg AG, Werk Augsburg, West Germany.
H.O. Penn Machinery Co., Inc., 1561 Stewart Ave., Westbury, N.Y. 11590
Waukesha Motor Co., 1000 W. St. Paul Ave., Waukesha, Wis. 53186
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GHH Sterkrade Ferrostaal Overseas Corp., 17 Battery Place, New York, N.Y. 10004
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Overbeke-Kain Co., 20905 Aurora Rd., Cleveland, Ohio 44146
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AMP Special Industries, P.O. Box 1776, Paoli, Pa. 19301
ASEA Marine, Rep. in U.S.A. by Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Brown and Ross of New Jersey Incorporated, 370 Paterson Plank Road, Carlstadt, N.J. 07072
Elkan Electric Cable Co., 248 Third Street, Elizabeth, N.J. 07206
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Oceanic Electrical Mfg. Co., Inc., 159 Perry Street, N.Y. 10014
Port Electric Supply, 157 Perry Street, N.Y., N.Y. 10014
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201
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Sifco Metachemical Div/Sifco Industries, Inc., 5708 Schaaf Road, Independence, Ohio 44131
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Riley-Beaird, Inc., Maxim Evaporator Profit Center, P.O. Box 1115, Shreveport, Louisiana 71130
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Crosby Group, Box 3128, Tulsa, Okla. 74101
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Uniroyal, Inc., 1230 Avenue of the Americas, New York, N.Y. 10020
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Esco Corporation, Wire Rope Rigging Div., 2141 N.W. 25th St., Portland, Oregon 97210
Robvon Backing Ring Co., 675 Garden St., Elizabeth, N.J. 07207
GANGWAYS
Rampmaster Inc., 1226 N.W. 23rd Ave., Fort Lauderdale, Fla. 33311
GAS DETECTION SYSTEMS
Mine Safety Appliance Co., MSA International, 201 Penn Center Blvd., Pittsburgh, Pa. 15235
HULL CLEANING
Butterworth Systems, Inc., P.O. Box 9, Bayonne, N.J. 07002
INSULATION—Marine
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
LADDERS
Duo-Safety Ladder Co., 513 West 9th Ave., P.O. Box 497, Oshkosh, Wisc. 54901
LIGHTS—Emergency, Search & Navigation
Phoenix Products Co., Inc., 4751 North 27th St., Milwaukee, Wisc. 53209
LNG TANKAGE
LGA—Liquid Gas Anlagen Union GmbH, c/o Ferrostaal Overseas Corp., 17 Battery Place, New York, N.Y. 10004
Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh, Pa. 15225
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Carboline Co., 350 Hanley Industrial Court, St. Louis, Mo. 63144
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Philadelphia Gear Corp., Schuylkill Expressway, King of Prussia, Pa. 19406
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Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
ITT Henze Service, P.O. Box 1745, Mobile, Ala. 36610
Kearfott Marine Products, 780 South 3rd Ave., Mt. Vernon, N.Y. 10550
Nicolai Joffe Corp., P.O. Box 2445, 445 Littlefield Ave., So. San Francisco, Calif. 94080
Merrin Electric, 162 Chambers St., New York, N.Y. 10007
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wis. 53186
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Smit Nymgen Corp. (Smit Ovens Nymegen), 275 Kisco Street, Mt. Kisco, New York 10549
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Adams & Porter, 1819 St. James Place, Houston, Texas 77027
Midland Insurance Co., One State St. Plaza, New York, N.Y. 10004
R.B. Jones Corp., 301 West 11th St., Kansas City, Mo. 64105
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Delaval Turbine Inc., Turbine Div., Trenton, N.J. 08602
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Ark. 72204
Murray & Tregurtha, Inc., 2 Hancock St., Quincy, Mass. 02171
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Stal-Laval, Inc., 400 Executive Blvd., Elmsford, N.Y. 10523
Turbo Power & Marine Systems, Subsidiary of United Aircraft Corp., 1690 New Britain Ave., Farmington, Conn. 06032
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General Electric Credit Corp., 4 Corporate Drive, White Plains, N.Y. 10604
Qualpeco Services, Inc., 750 Third Ave., New York, N.Y. 10017
Rhode Island Hospital Trust National Bank, 15 Westminster Street, Providence, R.I. 02903
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Amirikian Engineering Co., 1401 Wilson Blvd., Arlington, Va. 22209
J. L. Bludworth, 608 No. Clear Creek Drive, Friendswood, Texas 77546
Breit Engrg. Inc., 441 Gravier St., New Orleans, La. 70130
James G. Bronson Associates, 166 Altamont Ave., Tarrytown, N.Y. 10591
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
C.D.I. Marine Co., Suite 151, 5400 Diplomat Circle, Orlando, Fla. 32810
Coast Engineering Co., 711 W. 21st St., Norfolk, Va. 23517
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Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Design Associates, P.O. Box 2674, Palm Beach, Florida
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
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Nickum & Spaulding Associates, Inc., 71 Columbia St., Seattle, Wash. 98104
Ocean-Oil International Engrg. Corp., P.O. Box 6173, New Orleans, La. 70114
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
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Potter & McArthur, Inc., 50 Hunt Street, Watertown, Mass. 02172
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 657 Mission St., San Francisco, Calif.
Seaworthy Engine Systems, Pond Road, Canton, Conn. 06019
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
Southern Engineering Associates, P.O. Box 748, Ocean Springs, Miss. 39564
T. W. Spaetgens, 156 West 8th Ave., Vancouver 10, Canada
R. A. Stearn, Inc., 100 Iowa St., Sturgeon Bay, Wisc. 54235
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Tremayne, Jeffrey and Associates, Inc., 951 Government St., Suite 216, Mobile Ala. 36604
Whitman, Requardt & Associates, 1304 St. Paul St., Baltimore, Md. 21202
Xplo Corporation, 229 Fifth St., P.O. Box 492, Gretna, La. 70053
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American Hydromath Co., 55 Brixton Rd., Garden City, N.Y. 11530
Benmar Division, Computer Equipment Corp., 3000 W. Warner Avenue, Santa Ana, Calif. 92704
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Edo Corporation, 13-10 111th Street, College Point, N.Y. 11356
Edo Western Corporation, 2645 South 2nd West, Salt Lake City, Utah 84115
Electro-Nav, Inc., 1201 Corbin St., Elizabeth Marine Terminal, Elizabeth, N.J. 07201
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
ITT Decca Marine, Inc., 386 Park Ave. South, New York, N.Y. 10016
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Lorain Electronics Corp., 2307 Leavitt Road, Lorain, Ohio 44052
Magnavox Navigation Systems, 2829 Maricopa St., Torrance, Cal. 90503
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Co., Submarine Signal Div., P.O. Box 360, Portsmouth, R.I. 02871

Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Standard Communications Corp., 639 N. Marine Ave., Wilmington, Calif. 90744
Tracor, Inc., 6500 Tracor Lane, Austin, Texas 78721

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Exxon International Company, 1251 Avenue of the Americas, New York, N.Y. 10020
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

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International Paint Co., 21 West St., New York, N.Y. 10006
Patterson-Sargent, P.O. Box 494, New Brunswick, N. J.
Transocean Marine Paint Association, P.O. Box 456, Delftseplein 37, Rotterdam, Holland

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Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231
Philadelphia Resins Co., 20 Commerce Dr., Montgomeryville, Pa. 18936

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

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Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Coolidge Propellers, 1601 Fairview Ave. East, Seattle, Wash. 98102
Escher Wyss Gmbh, P.O. Box 798, Ravensburg, Germany
Federal Propellers, 1501 Buchanan Ave. S.W., Grand Rapids, Mich. 49502

PUMPS
Coffin Turbo Pump, FMC Corp/Pump Division, 326 So. Dean St., Englewood, N.J. 07631
Colt Industries, Inc., Fairbanks Morse Pump & Electric Div., 3601 Kansas Ave., Kansas City, Kansas 66110
Crisafulli Pump Co., Box 1051, Glendive, Montana 59330
Delaval Turbine Inc., IMO Pump Division, P.O. Box 321, Trenton, N.J. 08602
Houttuin-Pompen N. V. Sophialaan 4, Utrecht, Holland
Jacuzzi Bros., Inc., 11511 New Benton Highway, Little Rock, Arkansas 72204
Johnston Pump Company, 1775 East Allen Ave., Glendora, Calif. 91740

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Foster Refrigerator Corp., Mill & North Second Streets, Hudson, N.Y. 12534
Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014

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

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

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

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

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

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

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

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The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
National Metal & Steel Corp., 691 New Dock St., Terminal Island, Cal. 90731
Zidell Explorations, Inc., 3121 S. W. Moody St., Portland, Ore. 97201

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

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., 25 Broadway, New York, N.Y. 10004

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Astilleros Espanoles, S.A. Zurbano, 70, Madrid 10, Spain
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans La. 70150
Beliard, Crighton & Cie, P.O. Box 2074, Route des Docks, 59, Dunkirk, France
Beliard Murdoch S. A., Kattendijkdok Westkaai 21, Antwerp, Belgium
Bell Aerospace Company, Div. of Textron, P.O. Box 1, Buffalo, N.Y. 14240
Bethlehem Steel Corp., Shipbuilding, 25 Broadway, N.Y., N.Y. 10004
Bludworth Shipyard, Inc., Box 5426, Cypress St., Brady Island, Houston, Texas 77012
Carrington Slipways Pty. Ltd., Tomago, N.S.W. 2322, Australia
C.M.R. (Compagnie Marseillaise de Reparations), 274 Chemin du Littoral, 13 Marseille (15E) France
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock, Inc., P.O. Box 153, Willemstad, Curacao, N.A.
Dillingham Shipyard, Pier 41, P.O. Box 3288, Honolulu, Hawaii 96801
Empresa Nacional Bazon, 65 Castellana, Madrid 1, Spain
Equipment Systems Division, AMCA International Corporation, P.O. Box 95, Port Deposit, Md. 21904
Equitable Equipment Co., Inc., P.O. Box 8001, New Orleans, La. 70122
Fincantieri Yard, Via Sardegna, 40, Rome, Italy
General Dynamics, Electric Boat Division, 99M Eastern Point Road, Groton, Conn. 06340
General Dynamics, Quincy Division, Quincy, Mass. 02169
Halter Marine Services, Inc., Route 6, Box 287H, New Orleans, La. 70126
Havre de Grace, Havre de Grace, Md.
Hillman Barge & Construction Co., Grant Bldg., Pittsburgh 19, Pa.
Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hongkong United Dockyards Ltd., Kowloon Docks, Hong Kong
Jeffboat, Inc., Jeffersonville, Ind. 47130
Kawasaki Dockyard Co., 8 Kaigon-dori, Ikuta-ku, Kobe, Japan
Kelso Marine, Inc., P.O. Box 268, Galveston, Texas 77550
Keppel Shipyard (Private) Ltd., P.O. Box 2169, Singapore
Kockums Mekaniska Verkstads AB, Malmo 1, Sweden
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
Marathon Manufacturing Company
Marathon LeTourneau Offshore Company, 1700 Marathon Building, 600 Jefferson, Houston, Texas 77002
Marathon LeTourneau Gulf Marine Division, P.O. Box 3189, Brownsville, Texas 78520
Marathon LeTourneau Marine Division, LeTourneau Rural Station, Vicksburg, Mississippi 39180
Marathon LeTourneau Offshore Pte., Ltd., P.O. Box 83, Taman Jurong Post Office, Singapore 22, Singapore
Marathon Shipbuilding Company, P.O. Box 870, Vicksburg, Miss. 39180
Marathon Shipbuilding Company (U.K.) Ltd., Clydebank Bunbartonshire, G81-1YB, Scotland
Marine & Rail Equipment Division/FMC Corp., 4700 N.W. Front Ave., Portland, Oregon 97208
Matton Shipyard Co., Inc., P.O. Box 428, Cohoes, New York 12047
Mercantile Marine Engineering & Graving Docks Co., N.V., Antwerp, Belgium
Mitsui Shipbuilding & Engrg. Co. Ltd., 6-4, Tsukiji 5-chome, Chuo-ku, Tokyo, Japan
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
Murray & Stewart (Marine) (Pty) Ltd., Ocean Road, Table Bay Harbour, P.O. Box 4854, Cape Town, South Africa
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Northwest Marine Iron Works., P.O. Box 3109, Swan Island, Portland, Oregon 97208
O.A.R.N. (Officine Allestimento-Riparazioni Navi), P.O. Box 1395, Genoa, Italy 16126
Odense Steel Shipyard Ltd., P.O. Box 176, DK-5100 Odense, Denmark
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501
Pearlson Engineering Co., P.O. Box 8, Kendall Branch, Miami, Fla. 33156
Perth Amboy Dry Dock Co., Perth Amboy, N.J. 08862
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
Sasebo Heavy Industries Co., Ltd., New Ohtemachi Bldg., Chiyoda-ku, Tokyo, Japan
Savannah Machine & Shipyard Co., P.O. Box 787, Savannah, Ga. 31402
Sembawang Shipyard (Pte) Ltd., P.O. Box 3, Sembawang, P.O. Singapore, 27
Service Machine & Shipbuilding Corp., Box 1578, Morgan City, La. 70380
Slocum Iron Works, Inc., P.O. Box 2506, 1752 Telegraph Road, Mobile, Ala. 36601
Sumitomo Shipbuilding & Machy. Co., Ltd. 2-1 Ohtemachi 2-chome, Chiyoda-ku, Tokyo, Japan
Terrin Shipyards, Societe Provencale des Ateliers Terrin, 287, Chemin DeLa Madrague, 13345 Marseille—Cedex 3, France
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Tracor/Mas, Inc., P.O. Box 13107, Port Everglades, Fla. 33316
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
Vancouver Shipyards Co., Ltd., 50 Pemberton Ave., North Vancouver, B. C., Canada

SHIP MODEL BASIN
Hydronautics, Incorporated, Laurel, Maryland 20810

SHIP MODELS
Yankee Shipwrights, P.O. Box 35251, Minneapolis, Minn. 55435

SHIP STABILIZERS
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

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

STEAM TURBINES
Nicolai Joffe Corporation, P.O. Box 2445, South San Francisco, Calif. 94080

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

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

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

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

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Colt Industries, Water & Waste Management Operation, Beloit, Wisc. 53511
Keene Corporation, Fluid Handling Div., Cookeville, Tenn. 38501
Koehler-Dayton, Inc., P.O. Box 309, New Britain, Conn. 06050

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

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

WIRE ROPE
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
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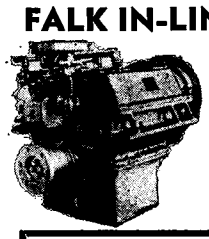
ZINC
Smith & McCrorken, 153 Franklin St., New York, N.Y. 10013

FALK IN-LINE MARINE REVERSE REDUCTION GEAR



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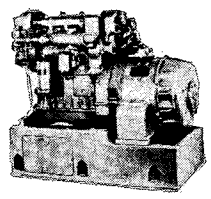

30 KW GM 3-71 DIESEL SET

GENERATOR: Delco 30 KW—120 Volts DC—250 amps—1200 RPM—Type I-3563. ENGINE: GM 3-71—45 HP—electric starting—shock mounted. In Navy crate. New Navy rebuilt. **$4500**

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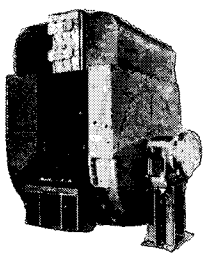
ALLIS-CHALMERS 1200 KW D.C. GENERATORS



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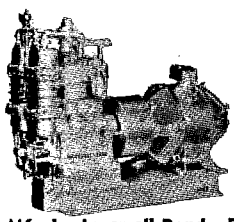

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44 CFM PISTON DISPLACEMENT AT 400 PSI

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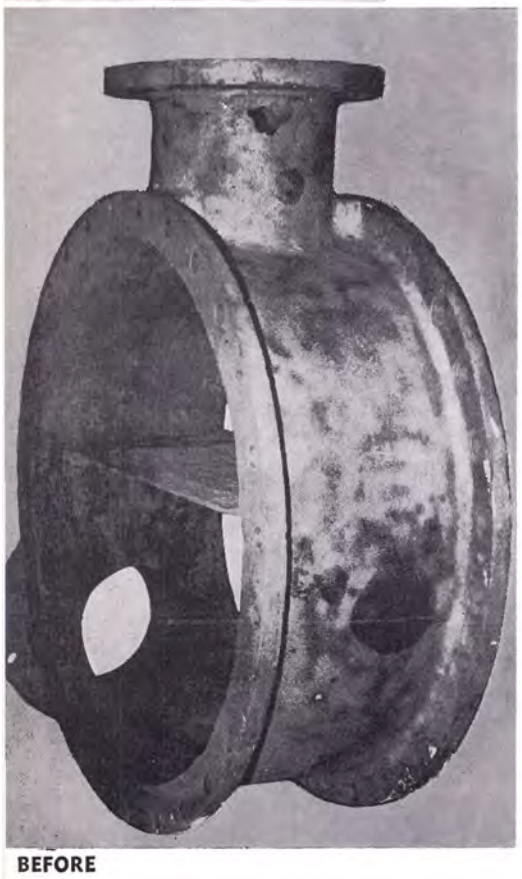
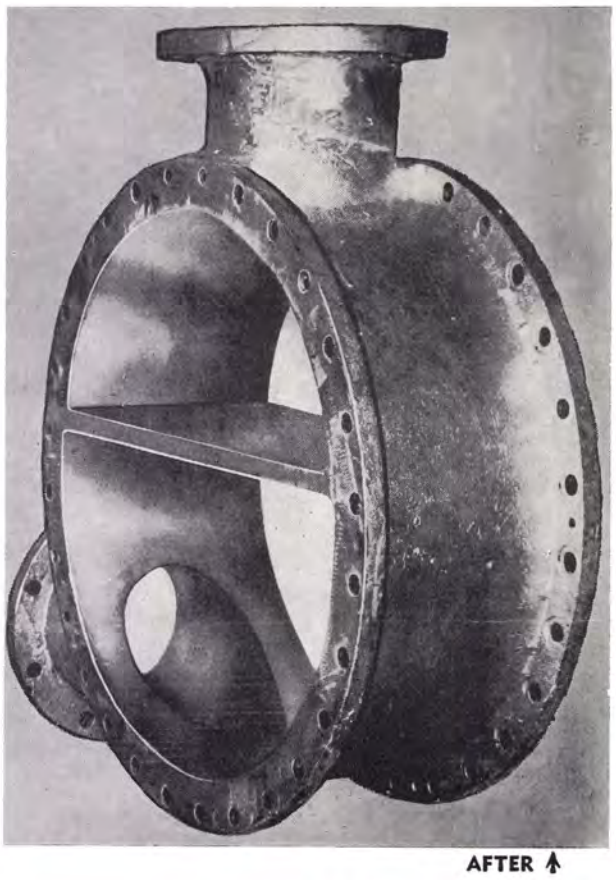


BEFORE



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Machinery Castings	**Stacks**
Ducts	**Pumps**
Pipes	**Sea Valves and Chests**
Condenser Covers	**Tanks, Bulkheads and Decks**
Cooler Heads	**Shell Plating Etc.**
Tail Shafts	**Frozen Pipes, etc.**

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