MARITIME
REPORTER
AND
ENGINEERING NEWS

Paul A. Wronowski

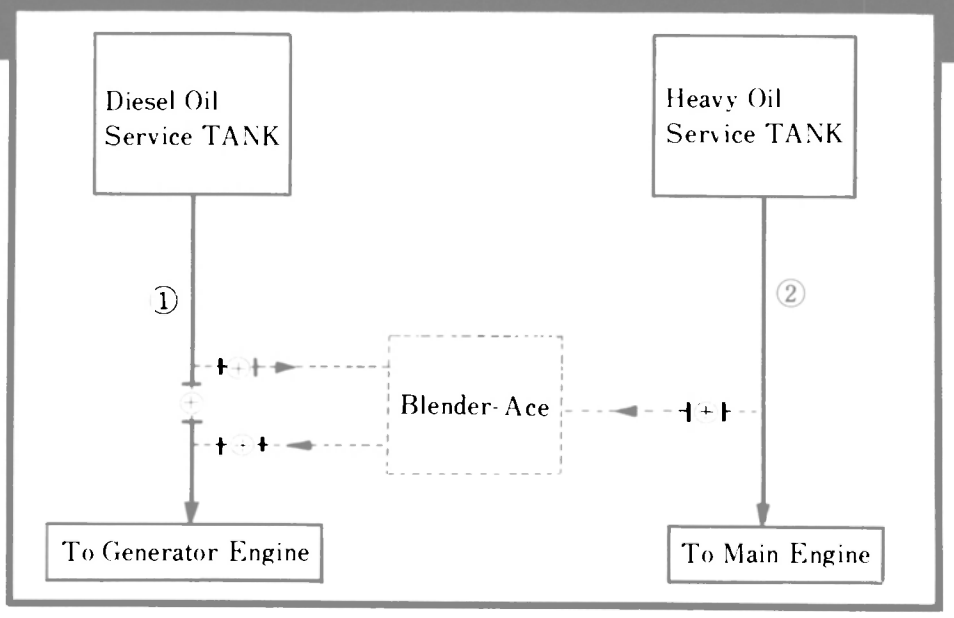
New Wronowski Tug First In U.S. Powered By Cummins KTA-3067M Engines
(SEE PAGE 10)

Propellers '81 –A Preview–
(SEE PAGE 22)

MAY 15, 1981

PENCO & BLENDER-ACE

FUEL SAVINGS FOR DIESEL OPERATORS



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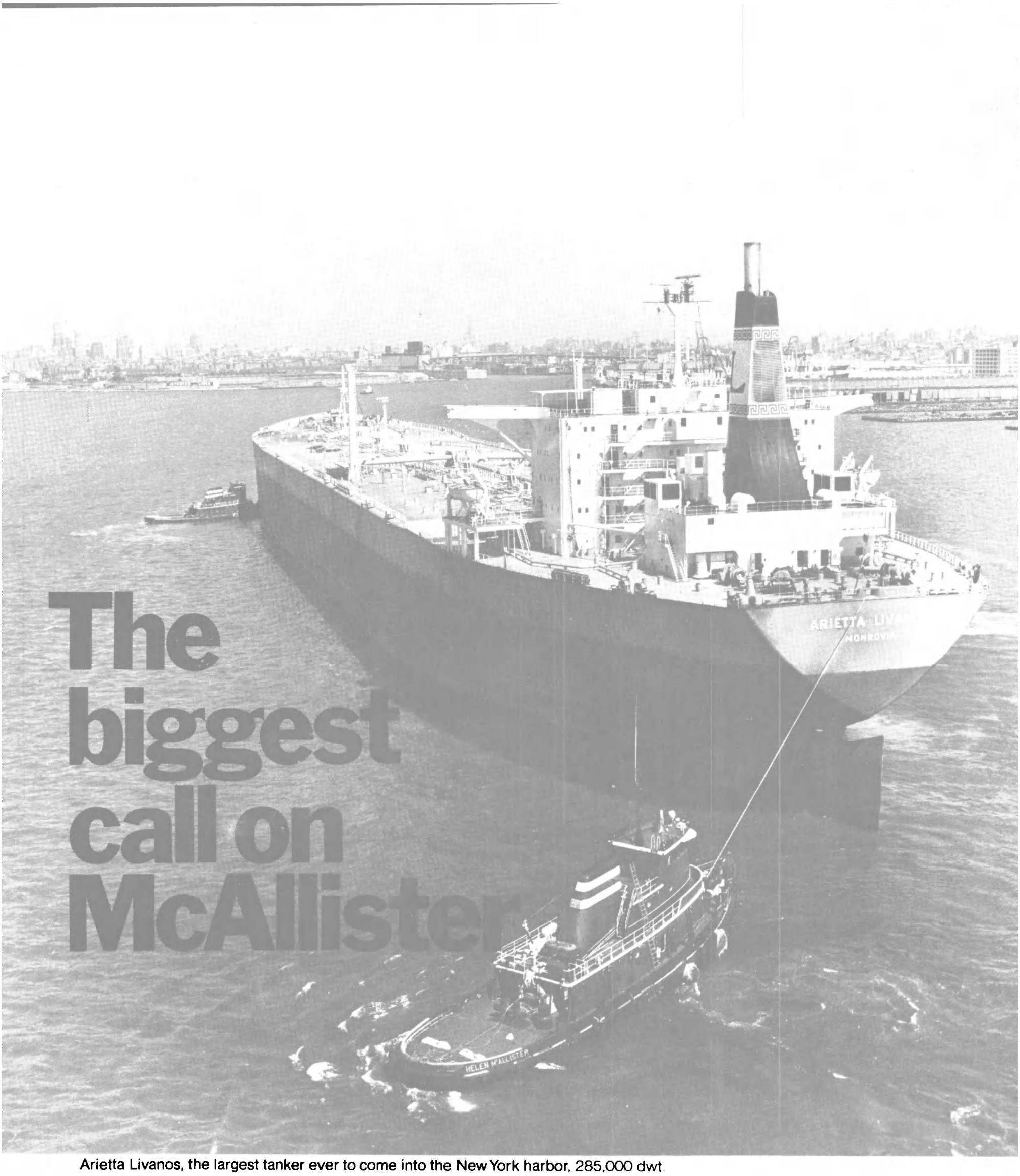

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Pelham Marine Seeks Title XI On Two Boats To Cost $8.5 Million Total

Pelham Marine, Inc., New Orleans, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 180-foot tug/supply vessels intended for operation in the U.S. Gulf of Mexico. No proposed shipbuilder was named, but the applicant indicated a December 1981 delivery was desired.

The requested guarantee is for $6,356,000, which is 75 percent of the estimated cost of $8,475,436 for the two vessels.

Hyundai Gets Contract To Build $100-Million Rig For SEDCO Joint Venture

Hyundai Shipbuilding & Heavy Industries Company Ltd. of Ulsan, South Korea, has been awarded a $100-million contract to build another SEDCO 700 type semisubmersible drilling rig for a joint venture company formed by SEDCO, Inc. of Dallas and Ranger Oil Ltd. of Calgary, Canada.

To be named SEDCO 714, the rig is designed to operate in water depths up to 1,500 feet and drill down to 25,000 feet. It will be owned 50/50 by SEDCO and Ranger, and will be contracted to the latter company for a minimum of five years following delivery in July 1983.

Hyundai now has orders for three drilling rigs. The SEDCO 714 brings the Dallas company's current building program to four semi-submersibles and nine jackup rigs.

MarAd Study Predicts Good Tanker Market

The Maritime Administration has released a report predicting a good future market for petroleum product and chemical tankers, provided some substantive legislative inducements are enacted to benefit U.S.-flag companies.

The complete report (PB-81-152936) is priced at $68.50, and the 13-page executive summary (PB-81-152944) is priced at $5. Both are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, Va. 22161.

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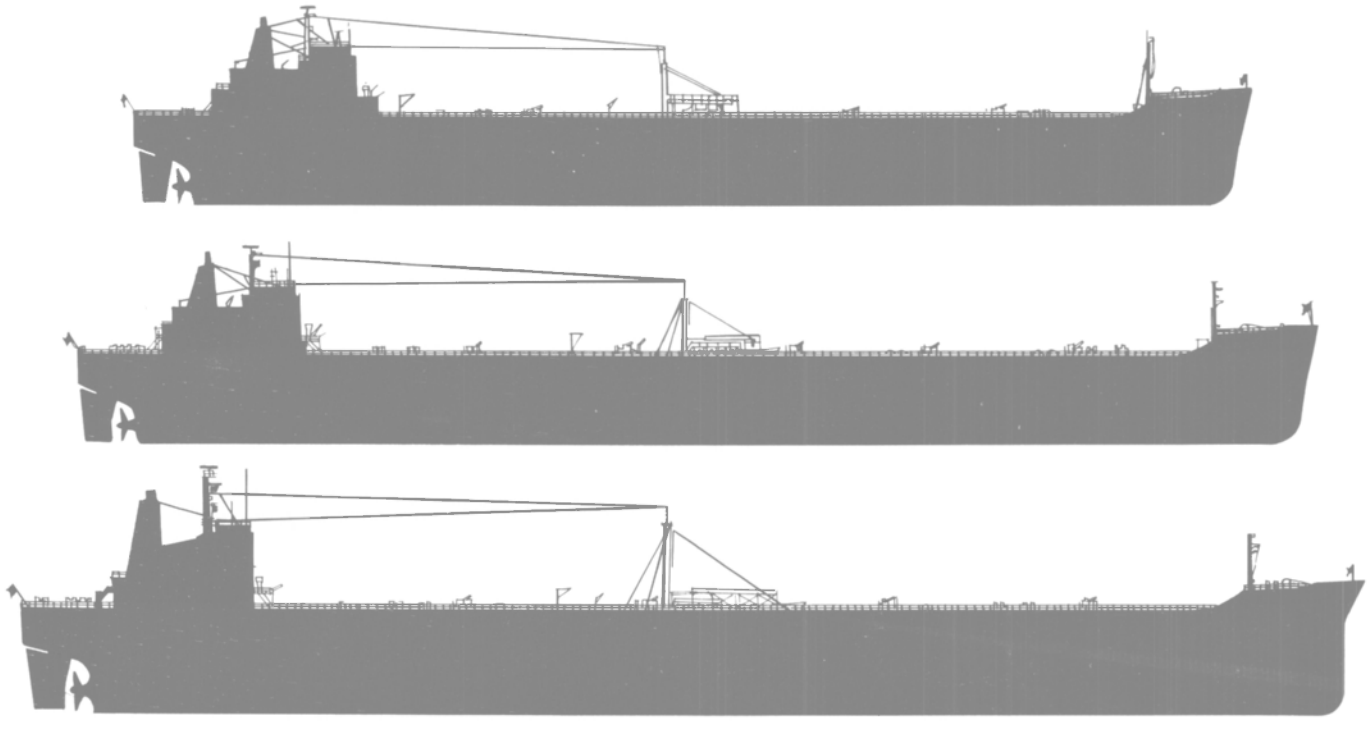
ALL MATERIAL FOR EDITORIAL CONSIDERATION SHOULD BE ADDRESSED TO ROBERT WARE, EDITOR.

How are your tankers affected by the new USCG rules?



Where can you get your tankers retrofitted to comply with the USCG rules on inert gas systems, segregated ballast, designated clean ballast, and crude oil washing systems? How long will it take? What will it cost?

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June 1, 1981, the first deadline for compliance with the new rules, is not far away. Ship owners and operators who schedule retrofitting now may choose a layup time of convenience; those who wait may have to take the time slots that are left. If any!

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Megasystems To Supply Monitoring Equipment For 8 Oceangoing Tugs

Megasystems, Inc., manufacturers and designers of marine instrumentation and control systems, has been selected to provide the ABS ACCU monitoring and generator controls for eight oceangoing tractor tugs to be built by Omni Fabricators of Port Brownsville, Texas. The tugboats will be owned and operated by Faustug of California.

The first two vessels will be equipped with twin EMD power plants and will be fitted with Nigata Z-pellers. The remaining six in the series will be equipped with B&W heavy fuel burning engines.

The Megasystems' equipment will feature LED digital displays driven by a marine-proven microprocessor. "This will allow a natural expansion in the future to add automatic data-logging, additional monitoring parameters or remote units. Special engine diagnostics could also be incorporated when the customer is ready," said **C. Tsipouras**, vice president of Megasystems.

These units mark the introduction of Megasystems into the small boat market. The company has primarily been engaged in fitting systems on larger oceangoing vessels since 1975.

Companies interested in learning about Megasystems' state-of-the-art monitoring and control systems are invited to request a free copy of a technical paper entitled: "The Benefits of Conditioned Monitored Maintenance Using Seamatic II Systems."

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Southern Drilling Seeks Title XI On Two Rigs To Cost $55 Million Total

Southern Drilling Company, a subsidiary of Marine Drilling Company, Corpus Christi, Texas, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two jackup drilling rigs. Being built by Bethlehem Steel, Beaumont, Texas, the two rigs are scheduled for delivery in September and November this year. They are intended for operation in the Gulf of Mexico.

The estimated cost of the two drilling rigs is $55,127,000. The requested guarantee is for $38,000,000, which is less than the 75 percent financing guarantee for which the rigs are eligible.

MarAd Study Predicts Big Fuel Savings For Sail Assisted Ships

Small- to medium-sized merchant ships fitted with sails to augment their propulsion plants can achieve substantial fuel savings, and attain a competitive advantage on certain trade routes. This was a key finding of a 12-month study released recently by the Maritime Administration.

The study, "Wind Propulsion for Ships of the American Merchant Marine," was prepared by Wind Ship Development Corporation of Norwell, Mass., under a MarAd contract. It was prompted by the escalation of ships' fuel prices, which have multiplied by 15-fold during the past decade and are now the largest component of a ship's operating costs.

Sail-assisted vessels in small to medium-size ranges—of 2,000 to 40,000-dwt cargo capacity—could achieve fuel savings of 15 to 25 percent compared with conventionally powered ships, according to the study. The type of sail found to have the greatest economic potential is the wing sail rig or rigid airfoil. Resembling rectangular aircraft wings placed in upright position on a ship's deck, the wing sails can be rotated 360 degrees to obtain the best wind angle. These airfoil sails would be made of metal rather than cloth, and their operation could be automated and remotely controlled.

Copies of the 278-page study are available through the National Technical Information Service, 5285 Port Roval Road, Springfield, Va. 22161. The order number is PB-81-162455 and the price is $21.50.

MarAd Approves $1.4-Million Title XI For Newpark Offshore Marine

Deputy Assistant Secretary for Maritime Affairs **Bruce A. McAllister** has approved in principle an application by Newpark Offshore Marine, Inc., 908 Front Street, Morgan City, La., for a Title XI guarantee to aid in refinancing an oceangoing deck barge. (Newpark Offshore, a subsidiary of Newpark Resources, Inc., was formerly known as F & S Offshore, Inc.)

The 250-foot-long barge, built by Newpark Shipbuilding & Repair, Houston, Texas, in 1979, is employed in the carriage of oilfield related equipment in the Gulf of Mexico.

The Title XI guarantee covers $1,418,000, or approximately 87½ percent of the vessel's $1,621,455 estimated depreciated actual cost.

New Shell Booklet Tells How MVI Oils Perform In Medium-Speed Diesels

Shell Oil Company is offering a free eight-page booklet on questions and answers about MVI (medium viscosity index) oils used in medium-speed diesels.

The booklet compares performance of MVI oils with high viscosity index (HVI) oils in the large medium-speed diesels typically used in shallow draft marine vessels and offshore drilling rigs.

It defines MVI, HVI and LVI oils, tells how the viscosity index is determined, and describes the effect of VI on engine performance. Other areas covered are the effects of modern technology on lube oils, engine oil monitoring, engine manufacturers' lube oil recommendations, and supply and demand.

For a free copy of this new Shell booklet SOC: 204-81,

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Dr. P.W. Murrill Elected To Tidewater Board

Tidewater Inc., New Orleans, La., has elected Dr. **Paul W. Murrill,** senior vice president for research and development, Ethyl Corp. of Baton Rouge, and former chancellor of Louisiana State University, to the company's board of directors.

This was announced by **John P. Laborde,** Tidewater chairman, president and chief executive officer, who said: "Dr. **Murrill's** superior academic and business background and experience in various engineering disciplines will lend added depth and technical wisdom to the Tidewater board. We are highly pleased and fortunate that his advice, counsel, and guidance will be available to our organization."

Dr. **Murrill,** a St. Louis, Mo., native who was reared in Clinton, Miss., earned his bachelor's and advanced degrees in chemical engineering at the University of Mississippi and Louisiana State University. He had been a member of the L.S.U. faculty since 1963 and joined Ethyl Corporation last January after having served as chancellor from 1974 through 1980.

He serves as a director of the Ethyl Corp., The Foxboro Co., the First Mississippi Corp., the Fidelity National Bank of Baton Rouge, and has served as a consultant to numerous commercial, industrial, government and academic organizations in the United States and abroad.

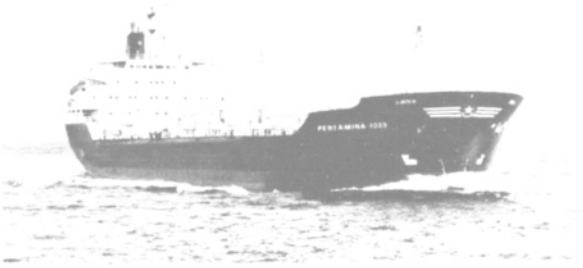
He is author or coauthor of eight textbooks in the use of computers, mathematical models and automatic control theory.

Dr. **Murrill's** honors include the Halliburton Award for Excellence in Engineering Teaching (1967); one of the Outstanding Young Men in America (1970); Who's Who in America (1975); the Andrew M. Lockett Award of the Louisiana Engineering Society (1978); and among the 100 best educators in the U.S. (1978).

His election is effective immediately, Mr. **Laborde** said.

Tidewater, organized 25 years ago, supplies marine support vessels to the offshore oil and gas industry around the world and provides compression equipment and services and oil and gas exploration and production activities on land throughout the U.S.

Hitachi Zosen Delivers Products Carrier To Panamanian Owner



The 17,780-dwt products carrier Pertamina 1023 (shown above), constructed at the Maizuru Works of Hitachi Zosen, was delivered recently to Scorpa Pranedya Shipping, Inc., Panama. She is the fifth products carrier of the same type to be delivered by Hitachi for the transportation of refined petroleum products such as jet fuel, kerosene, diesel oil, and aviation gasoline between Indonesian ports and harbors.

The ship is constructed to satisfy all oil tanker requirements of the International Convention for the Prevention of Pollution from Ships 1973, and the Convention's Protocol of 1978 that will come into effect soon. All interior walls and fittings of cargo tanks are coated with epoxy resin paint, a coating of the highest quality, to prevent rust and the paint itself from chipping off into the products during transportation.

The Pertamina 1023 has an overall length of 518.4 feet, beam of 84.6 feet, depth of 35.4 feet, and full-load design draft of 23 feet. Her power plant is a single Hitachi B&W, 7-cylinder type L45GFC diesel with a maximum continuous output of 6,160 bhp at 170 rpm. Maximum trial speed was 13.95 knots. The vessel is classed by Lloyd's Register of Shipping.

Matson Orders Econics Fuel Optimizers—Reports 3.5% Savings In Fuel

Matson Navigation Company has ordered 11 Econics fuel optimization systems to equip all of the boilers on the major ships of the fleet. This order followed a six-month evaluation of a system that was installed on one of the two 110,000 pound hour B&W boilers of Matson's Manulani, a 27,165-dwt, 23-knot containership.

According to **James J. Sweeney**, manager of shipboard energy conservation for Matson Navigation, the Econics system reduced fuel consumption by 3.5 percent compared with previous boiler operation. These savings are achieved through advanced technology measurement and control of the boiler's combustion of residual fuel oil, maximizing the usable energy recovery from the oil.

Installation of the Econics systems is part of Matson's continuing program to achieve fuel savings through the application of newly developed technology. This program has included installation of satellite navigation systems and use of newly developed antifouling coatings in addition to the combustion systems. This program is expected to save more than 200,000 barrels of oil per year for Matson. For more information on the Econics system,

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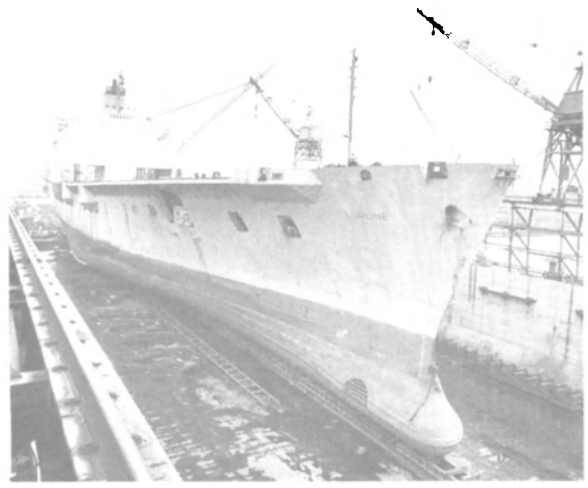
TOWBOAT TO CHINA — The last of four Friendship-Class river towboats ordered by the Chang Jiang Shipping Administration of the People's Republic of China from Dravo Corporation was launched into the Ohio River from Dravo's Neville Island (Pittsburgh) shipyard recently. When fully outfitted later this year, all four vessels will be towed down the Ohio and Mississippi Rivers to New Orleans where they will be loaded on an oceangoing vessel and shipped via the Panama Canal to China.

Sun Ship Jumboizing 'Lurline' Using Unique "Reverse Launch"



Sun Ship, Inc. of Chester, Pa., began a new era of ship repair and conversion business with a recent "reverse launch," as a 700-foot ship was inched carefully out of the water onto dry land. The procedure took about six hours as hydraulic devices moved Matson's RO/RO ship Lurline (shown above) onto a slab at the rate of 3 feet per minute.

Designed and built as a trailership by Sun Ship in 1973, the Lurline is being lengthened 126½ feet by insertion of a new midbody, and the forward roll-on/roll-off area is being converted to container holds, which will more than double the vessel's present cargo-carrying capacity. Ordinarily, the ship would be kept in the water or drydock, but such major structural work on land is much more efficient and less costly because of easy access and less need for complicated equipment.

Work on the conversion of the 13,860-deadweight-ton Lurline began in November 1980 and will be completed by December 1981. The ship is now being separated and the bow moved forward 127 feet so the midbody can be erected between the sections.

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ON THE COVER

The Paul A. Wronowski was designed for docking nuclear subs and other large vessels at the U.S. Naval Base in Groton, Conn. The 90-foot tug was built by Thames Shipyard in New London, and is the first boat outfitted with 16-cylinder Cummins KTA-3067 engines.

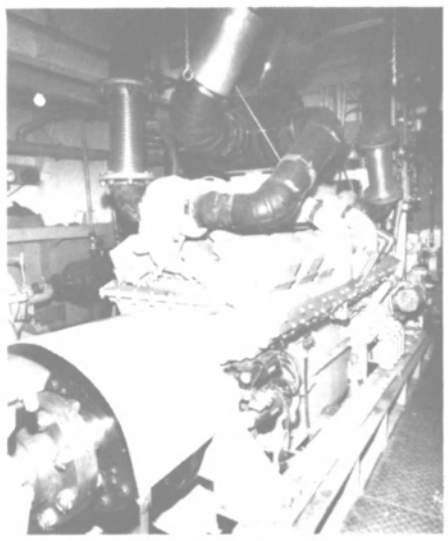
Wronowski Fleet Adds First Boat With Cummins KTA-3067M Engines

The New London, Conn., fleet of **John H. Wronowski** gained a new member recently with the addition of the heavy-duty tugboat Paul A. Wronowski. The vessel was built by Wronowski-owned Thames Shipyard in New London, and joins a fleet of five towboats and 12 ferryboats operated by the Wronowski family.

The Paul A. Wronowski is the first boat in the U.S. powered by Cummins KTA-3067M marine diesel engines, supplied by Cummins Diesel Engines of Connecticut, Inc. of Hartford. The engines provide a combined 2,500 bhp for the 300-ton tug. A Niigata (Nico) reduction gear with 2.51:1 reduction transmits power through 5-inch shafts to the Niigata ZP-2 propulsion units, which provide an additional 2.12:1 reduction to the propellers. Kort nozzles house 72-inch propellers that can be set at a variable drive, a feature of the Niigata Z-drive system.

The Z-drive system permits the whole propeller assembly to rotate. When more power is required, the propeller pitch is steepened, lifting the stern and creating more forward thrust power. Mr. **Wronowski** estimates the system effectively raises the propulsion drive power by 15 percent.

Mr. **Wronowski** plans to use the boat to service the U.S. Naval Submarine Base located in Groton, Conn. He designed the boat in conjunction with naval architects at John Gilbert & Associates of Boston, with the expectation of handling Trident-class nuclear submarines and long tows.



Twin Cummins KTA-3067 engines power the Paul A. Wronowski. Each engine produces 1,250 hp at 1,800 rpm in a compact package that weighs 10,700 pounds without gear.

The tug has a beam of 30 feet and a draft of 10 feet 6 inches. The half-inch plate hull is reinforced at critical points with three-quarter-inch plate, enabling the tug to handle icebreaking chores in harbor areas. Cabin quarters can house eight crewmen, although the owner estimates that the boat will normally operate with three to six crew members.

Mr. **Wronowski** says he chose Cummins KTA-3067M engines for two reasons: his concern over the rising cost of fuel, and past experience with Cummins. He concluded the KTA-3067s could provide fuel savings of more than 20 percent. The engine is rated 1,250 horsepower at 1,800 rpm with continuous-duty fuel consumption of 63 gallons per hour. The 16-cylinder engine weighs 10,700 pounds without gear, and stands 120 inches long, 53 inches wide and 76 inches high.

On-site service will be provided by Cummins Diesel of Connecticut, Hartford. Additionally, two of Mr. **Wronowski's** mechanics have been instructed in Cummins diesel maintenance to provide immediate response to any maintenance needs.

Other equipment onboard reflects the variety of oceangoing and harbor assignments the owner expects to handle. Hydraulically operated Allen-Johnson winches command a 50-ton maximum pull rating. Seven fuel tanks hold more than 70,000 gallons of fuel, while potable and ballast water tanks have storage capacity for more than 12,000 gallons of fresh water.

Electrical power is supplied by two 60-kw Detroit Diesel generators. Two Quincy 725 air compressors and six Burke transfer pumps run off the generators.

Navigational needs are met by a North Star Loran C unit and Commar autopilot. A Kelvin & Hughes 1700 radar unit monitors short-range traffic while Furuno supplies long-range radar. The boat is also equipped with two Raytheon radios.

American Line Asks Title XI On Inland Cruise Vessel To Cost $3.8 Million

American Line, Inc., a subsidiary of C.A. Robertson, Inc., 1 Marine Park, Haddam, Conn., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of a 165-foot cruise vessel intended for operation on the inland and coastal waterways of the U.S. East Coast.

Chesapeake Shipbuilding, Inc., Salisbury, Md., is the proposed builder, with delivery estimated for April 1982. The requested guarantee is for $2,850,000, or 75 percent of the vessel's estimated cost of $3,800,000.

Promet Launches Offshore Supply Vessel For Jackson Marine

Promet Private Limited, Singapore, recently launched another of its offshore supply vessels. Sponsor of the NMS 209 (shown above) was **Mrs. Hugh Jackson**, wife of the president of Jackson Marine Corporation, owner of the vessel.

This $3.5-million vessel is the ninth among the 12 contracted Promet for construction. She measures 176 feet by 38 feet by 14 feet, and is designed with developed hull forms and propulsion system for optimum performance, maneuverability, speed, range, and cargo/bulk carrying capacity.

NMS 209 has a free-running speed of approximately 12 knots, and is equipped with bow thrusters, and firefighting and foam dispersal equipment. In addition, she has a Halliburton cement unit with a capacity of 4,200 cubic meters.

This vessel can perform a range of unrestricted ocean services such as marine transportation, exploration, and general services. Her function is mainly to service offshore oil drilling rigs. The vessel is classed by the American Bureau of Shipping.

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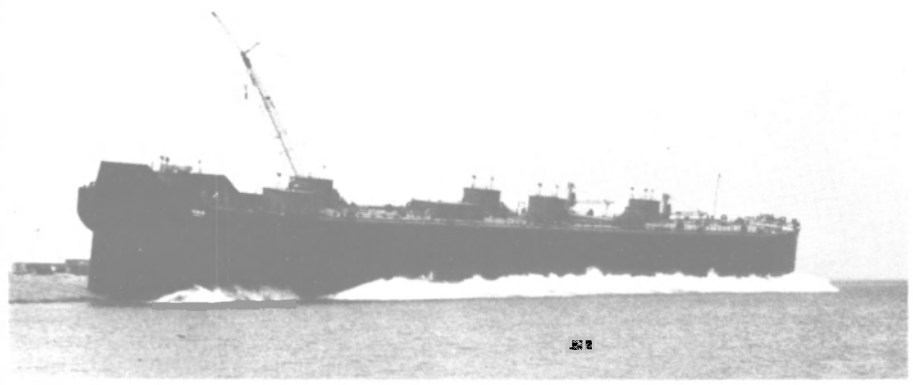

Big IOT Petroleum Barge Launched At Galveston Shipbuilding

Ocean 210 (shown above), a 200,000-barrel petroleum barge, was launched recently at the Galveston Shipbuilding Company yard in Galveston, Texas. The 25,000-dwt barge, under construction for Interstate and Ocean Transport Company (IOT), will be employed in the U.S. coastal transportation of petroleum products. Attending the ceremony from Interstate's Philadelphia headquarters were **Stephen A. Van Dyck,** president and chief operating officer, and his wife, **Barrie**. Representing Galveston Shipbuilding were **H.J. Fiegel Jr.,** president; **Lowry E. Gilbreath,** vice president, operations; **M. Dan Jones,** vice president, engineering; **Louis H. Runge,** vice president, finance; **Charles B. Smith,** secretary; and **Nat McClure,** marketing manager.

With dimensions of 511 feet by 84 feet and a depth of 37 feet, the Ocean 210 is equipped with six cargo tanks that are divided into four cargo systems, each with a deepwell pump. The barge is also fitted with a cargo heating system to enable the carrying of cargoes such as No. 6 oil as well as clean petroleum products. The barge will be powered by a twin-screw 6,000-bhp tug that is similar to nine other tugs in the Interstate fleet. The tug/barge unit is fitted with a deep notch and patented Stinger system for improved maneuverability and fuel efficiency. Like other recently built Interstate tugs, this tug will be fitted with the latest in electronic communications and navigations equipment, including collision-avoidance radar.

The Ocean 210 is one of two 200,000-barrel barges currently under construction for Interstate. The sister barge, Ocean 211, is scheduled for delivery in early 1982.

SNAME Northern California Section Hears Paper On "Dejumboizing"

A recent meeting of the Northern California Section of The Society of Naval Architects and Marine Engineers was held at the Engineers Club in San Francisco. The Section's Annual T. Douglas MacMullen Award was presented during the business portion of the meeting to **Irene Halpern,** wife of past chairman **Stephen**

At recent Northern California Section, SNAME, meeting (from left): **Roger L. Potash,** vice chairman; **Irene Halpern; Stephen Halpern,** past chairman; and **Thomas B. Cole,** chairman.

Halpern. The award is named after the late **T. Douglas MacMullen,** West Coast correspondent for Marine Engineering / Log magazine, who suggested that the spouse of the Section chairman should be recognized by a special award for her patience and understanding during his tenure.

The technical portion of the program consisted of a paper by **Mark R. Buetzow** of Chevron Shipping Company titled "Dejumboizing of Four 212,000-dwt VLCC's to 150,000 dwt." Between January and October 1980, the tanker D.L. Bower and three sister vessels were shortened by removing 101 feet of parallel midbody from each. Various other modifications were carried out to meet current safety and pollution control regulations as well. The vessels are now in service between Indonesia and the U.S. West Coast.

Economic and engineering considerations that led to the conversions as an alternative to purchase of new vessels were described in the paper. The paper also gave characteristics of the vessels before and after conversion, and details of how the conversion was accomplished. The presentation was illustrated with slides showing the shortening process, and was followed by an extensive discussion.

Seaport Asks Title XI On Two Derrick Barges To Cost $7.5 Million Total

Seaport, Inc., New Orleans, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 250-foot derrick barges to be operated in New Orleans Harbor. The applicant is a subsidiary of Southern Harbor & Towing, Inc., Metairie, La.

The barges are being built by Bergeron Industries, Braithwaite, La., and Todd Shipyards, Galveston, Texas, with deliveries scheduled during the first and second quarters of 1981. The requested guarantee is for $6,562,000, which is 87½ percent of the $7,500,000 estimated cost of both vessels.

Mobil Orders Sperry Advanced Navigation System For The 'Mobile Search'

Mobil Exploration and Producing Services, Inc., a unit of the Exploration and Producing Division of Mobil Oil Corporation, has awarded the Sperry Division, Great Neck, N.Y., of Sperry Corporation contracts to develop and produce one of the most advanced navigation systems ever developed for a commercial ship.

The navigation system will be used aboard Mobil's second Seismic Research Vessel, the Mobile Search, whose keel is expected to be laid in mid-1981 by Mitsubishi Heavy Industries Ltd. of Japan.

The Sperry navigation system will allow Mobil to conduct worldwide seismic oil exploration with high positioning accuracy. Included in the equipment being provided by Sperry are: two Sperry MK 29 Mod 1 high accuracy gyrocompasses, a newly developed Sperry Parametric Array Doppler Sonar (PADS) system, two Sperry SRD 301 speed logs, two specially modified Sperry CAS II collision avoidance systems, a dual Sperry Universal Gyropilot and both X- and S-band models of the Sperry MK 4016 SEATHRU radars.

In addition, Sperry will provide the computer equipment, Loran C and satellite navigation receivers and the navigation system displays and controls. The entire system will be integrated utilizing all available navigation inputs and appropriate sensor information to produce the best possible estimate of ship position and velocity at all times. Advanced signal processing programmed on a powerful 32-bit minicomputer will enable the Sperry navigation system to exceed the accuracy limitations in deep water of previous commercial navigation systems. The system is easily expandable to include inputs from a bottom acoustic transponder system and, when available, the Navstar Global Positioning System.

B&W Delivers Second Panamax Bulker–14 More On Order

Burmeister & Wain Shipyard, Copenhagen, recently delivered the second ship of the yard's series of fuel-efficient, Panamax bulk carriers of 64,000 dwt (shown above). Named the Hydrolock, she was built for Stanhurst Shipping Limited, a member of the Wheelock Marden Shipping Group of Hong Kong. This Group also is the owner of the first ship in the series, the Danelock, delivered several months earlier.

HYDROLOCK MAJOR SUPPLIERS

Main engine, Mitsui (B&W licensee), Japan
Auxiliary engines, B&W Holeby, Denmark
Generators, Unilec, France
Hatch coamings and covers, MacGregor, Sweden
Deck machinery, Norwinch, Norway
Steering gear, Porsgrunn, Norway
Coatings, Jotun, Norway
Boiler, Aalborg Boilers, Denmark
Bulkhead and ceiling panels, Akers Panel, Norway
Separators, Alpha Laval Zeta, Sweden
Shaft system, Thyssen Rheinstahl, West Germany
Propellers, Ostermann, West Germany
Radio station, Dansk Radio, Denmark
Internal communications system, L.M. Ericsson, Sweden
Crew call system, Due Petersen & Kryger, Denmark

During the naming ceremony for the Hydrolock, W.J. Lees, managing director of Wheelock Marden & Company Ltd., announced that his Group has ordered another four Panamax bulkers from B&W. This brings to 16 the number ordered during the year since the design was introduced — seven of them for the Wheelock Marden Group.

When B&W announced its plans for construction of this new 64,000-dwt bulk carrier, the design criteria included an average speed fully loaded of 15 knots, with a fuel consumption of less than 40 tons daily. This represents a 15-20 percent reduction in fuel oil consumption compared with more conventional bulk carriers.

This improvement in operating economy has been achieved through successful development of the hull design, with bulbous bow and flat-sectioned aft body, and by the installation of a two-stroke/long-stroke diesel engine with an output of 12,600 bhp at 90 rpm.

Built to Det norske Veritas class, the Hydrolock has an overall length of about 738.2 feet, beam of 105.8 feet, depth of 59 feet, and maximum draft of 43 feet. Total hold capacity (grain) is 79,100 cubic meters. Her seven almost identical hatches have inclined coamings and are fitted with MacGregor hydraulically operated steel covers. The four odd-numbered holds can be utilized for transportation of ore.

Main propulsion is provided by a Mitsui/B&W 5-cylinder, long-stroke diesel engine, type L80-GFCA, with a maximum continuous output of 12,600 bhp at 90 rpm. Auxiliary machinery consists of three B&W Holeby diesels, type 5T23LH, each driving a 500-kw generator. A sound-insulated room with control instruments for the machinery is arranged on the port side of the engine room. Remote control of the main engine from the bridge allows unmanned engine room operation.

Steering gear is of the rotary vane type. The B&W type spade rudder has an area of 44 square meters and weighs about 90 tons. In accordance with DnV requirements, it can be turned from 35 degrees on one side to 30 degrees on the other in 28 seconds.

Accommodations for officers and crew are arranged aft in a five-deck superstructure. The lowest deck contains galley provisions and cold storage rooms, hospital, and hobby room with exercise and film equipment. Quarters for deck crew, cook, and galley personnel, and a laundry are arranged on the boat deck. On the saloon deck, living rooms for officers and crew, mess rooms, steward's cabin, pantry, and duty mess are arranged. Accommodations for the deck and engine officers are located on the officer deck.

The captain and chief engineer each have a separate suite comprising office, dayroom/bedroom, and bathroom. A special room for the pilot is also arranged on this deck.

Hapag-Lloyd Invests $40-Million In 500 New Reefer Containers

Hapag-Lloyd announced that a recent $40-million investment will greatly expand its current fleet of refrigerated containers. Delivery of 500 new 40-foot refrigerated units is scheduled for mid-1981, and will bring to 1,900 the number of reefers available to Hapag-Lloyd customers.

G.W. Yarbrough Promoted At Bultema Dock And Dredge

George W. Yarbrough

John R. Parmater, president of Bultema Dock and Dredge Company, Muskegon, Mich., recently announced the promotion of **George W. Yarbrough** to director of estimating, engineering and equipment. Reporting directly to the president, Mr. **Yarbrough** will develop, direct, coordinate and control all activities of the Estimating, Engineering and Equipment Departments.

Bultema Dock and Dredge Company's capabilities include installation of underwater pipelines, harbor, breakwater, cofferdam, dock, pier, dike and reef construction.

Mr. **Yarbrough** came to Bultema in 1979 with a strong background in commercial and marine construction. He has held positions as chief estimator and superintendent. A native of Florida, Mr. **Yarbrough** holds a degree in building construction from the University of Florida.

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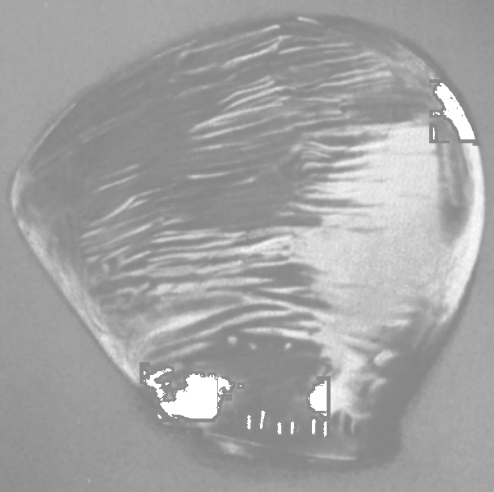
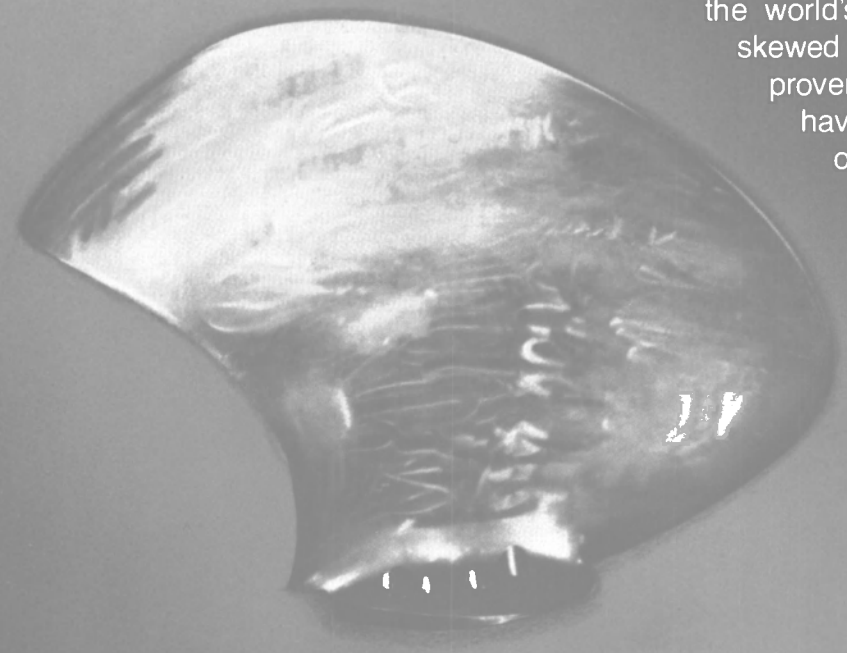
We Have Designs For Your Future

Skewed Propeller Technology

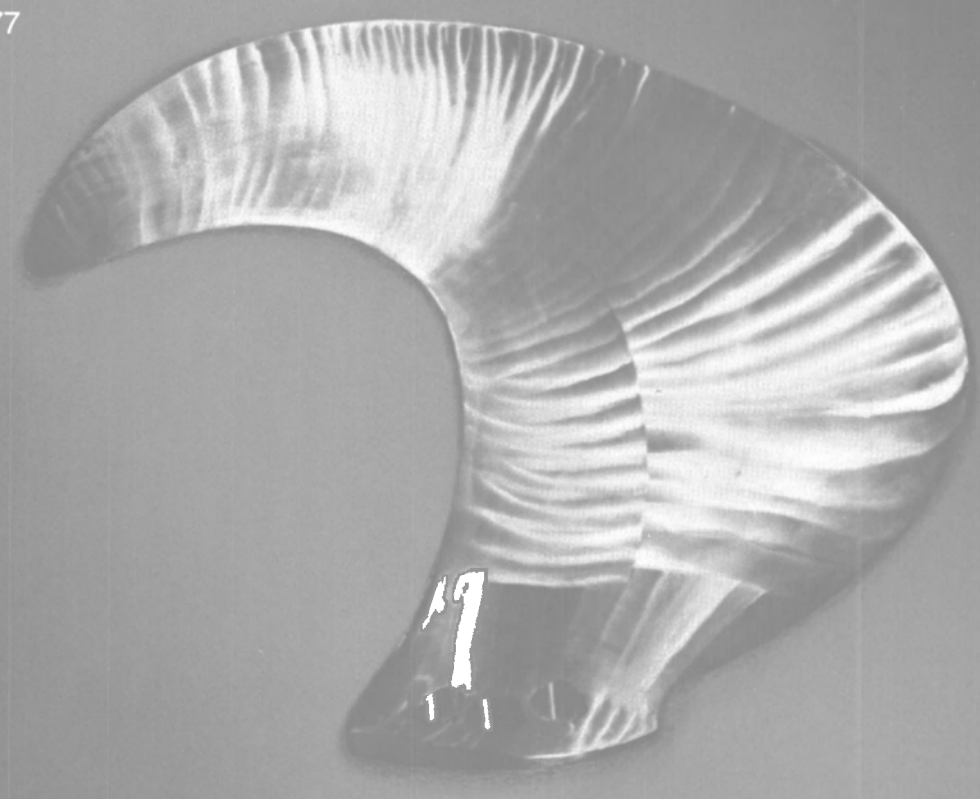


1975

Why compromise economic ship design because of concerns for propeller-induced vibrations? An advanced solution from the world's most experienced manufacturer of highly skewed propeller blades—the techniques used and proven in producing quiet running naval propellers have now been applied to commercial ships. Find out why this technology is uniquely suited to controllable pitch propellers and can contribute to increased fuel economy, simplified control and improved maneuverability for your ship. Write or call Gary W. Dayton for further information.



1977



1981

BIRD-JOHNSON COMPANY MARINE DIVISION

110 Norfolk Street, Walpole, MA 02081, (617) 668-9610

Promet Will Build The First Of Its Kind Of Rig For Elf

Drilling Investments Ltd., a subsidiary of Societe Nationale Elf Aquitaine has recently purchased a jackup drilling rig from leading rigbuilder, Promet Pte Ltd.

The US$50-million rig, measuring 212 feet by 210 feet by 26 feet, is one of the largest three-legged jackup platform rigs. It will be fitted with three open lattice truss type legs of 430 feet in length.

This Elf's rig, designed by Baker Marine Corporation, USA, will be completed by the middle of next year. It will be equipped with Baker's electric jacking system.

This rig is capable of working in water up to 300 feet deep, and has a drilling depth of 25,000 feet. The total holding capacity in drilling position is 21,600 short tons and its jacking speed could reach up to 60 feet per hour. It can house 100 men. In addition, it is equipped with the latest offshore safety devices and a helideck. Including this new rig, Promet has constructed more than 10 offshore drilling units to date.

Other projects now underway at its yard include several additional drilling rigs, supply boats and well-service vessels.

Germinario Appointed By Ocean Salvors Company

Sergio Germinario of Colonia, N.J., has been appointed by Ocean Salvors Company as manager of their Northeast Station based in Carteret, N.J. Ocean Salvors Company, a joint venture of Moran Towing Corporation of New York, N.Y., and Crowley Maritime Corporation of San Francisco, Calif., is an American salvage firm offering a full range of salvage and environmental services throughout the Western Hemisphere, with principal offices in New York, N.Y.; Carteret, N.J.; and Miami, Fla.

Mr. **Germinario** continues as operations manager of Moran-Crowley Environmental Services Company, a wholly-owned subsidiary of Ocean Salvors.

Global Marine Oil And Gas Unit Names Hatcher President

David A. Hatcher has been appointed president of Challenger Minerals Inc., the oil and gas exploration and development subsidiary of Global Marine Inc., it was announced recently by **C. Russell Luigs,** president and chief executive officer of Global Marine.

David A. Hatcher

Mr. **Hatcher** previously was a vice president in the oil and gas division of Mapco, Inc., with total responsibility for the exploration and lease acquisition effort.

He began his professional career in 1961 as a geologist for Standard Oil Company of California in the Gulf Coast area and progressed to a series of assignments with Aminoil International, including a three-year term as vice president, exploration. He holds a master's degree in geology from the University of Kansas and a bachelor's degree in geology from West Texas State University.

Mr. **Hatcher** will report to **William R. Montgomery,** Global Marine corporate group vice president who had been acting president of Challenger Minerals.

It also was announced that Challenger Minerals is relocating from Los Angeles to new headquarters offices in the North Houston area. Challenger Minerals has an exploration and development budget for the current year in excess of $90 million, and is planning increasing outlays in succeeding years. Total spending for the 1981-85 period is projected at more than $800 million.

First Saudi-Owned Shipping Company Gets First Vessel

The first shipping line totally owned by Saudi Arabia became a reality recently following formal acceptance of the first cargo vessel by the newly established Saudi National Shipping Company. The 23,000-gt Saudi Riyadh, a RO/RO-containership, is the first of seven similar vessels S.N.S.C. expects to be operating in the near future.

Claiming his country sought "independence from foreign shipping companies," S.N.S.C. managing director Dr. **Abdulaziz M. Al-Turki** said the firm has also purchased the Ryadh's sister ship, renamed Saudi Mecca, which will be claimed in Bremen within a month. Still another similar vessel will be chartered shortly. Bids for construction of four larger RO/RO-containerships will be opened in the near future.

The company hopes to capture a major share of the United States-Saudi shipping trade, including all of the construction-booming country's contract cargo. The U.S. is the Saudis' largest supplier of sea cargo, Dr. **Al-Turki** noted. All told, last year the Saudis imported 42 million tons of surface cargo worldwide.

S.N.S.C. is 25-percent owned by the Saudi Government. Other principals include a large cross section of leading Saudi business interests (30 percent), with the remainder owned by 13,600 Saudi shareholders.

Anastasio Elected President Of Marine Concrete Structures

Frank L. Anastasio Jr. has been elected president of Marine Concrete Structures, Inc. The New Orleans-based company is the largest builder in the United States of precast, prestressed concrete gravity structures used in the offshore oil and gas industry. It operates construction yards at Port Bienville, Miss., and a concrete component plant in Metairie, La. The company also fabricates and erects precast, prestressed concrete, multi-story buildings in the New Orleans area.

Mr. **Anastasio** headed the MCS design team that developed the concrete gravity structures—the first seven are now on site — at the LOOP terminal facilities on shore in coastal Louisiana. He joined the company 10 years ago as a project engineer and was vice president in charge of sales. As a design engineer, Mr. **Anastasio** was actively involved in developing the first concrete gravity structure placed in U.S. offshore waters.

C.T. Palo Appointed Marine Superintendent For McAllister-Philadelphia

Christopher T. Palo

Capt. **Donald F. Stephens,** general manager of McAllister Brothers, Inc., Philadelphia, has announced the appointment of **Christopher T. Palo** as marine superintendent. He will be responsible for all engineering and vessel maintenance and repair for the entire Philadelphia fleet and the offshore vessels operated out of that office.

In 1975, Mr. **Palo** joined McAllister Brothers at Tug & Barge Dry Docks, Bayonne, N.J., as assistant port engineer. Prior to joining McAllister, he worked for Puget Sound Towing on the West Coast; he is a graduate of the U.S. Merchant Marine Academy.

In 1979, Mr. **Palo** was promoted to port engineer of the McAllister Norfolk Division. He adds a new depth and dimension for the drydock and shipyard repair operations for the Philadelphia fleet of the company.

Krupp MaK To Supply Nine 6 Mu 452 Engines In Three Rhine Pusher Tugs

Krupp MaK Maschinenbau GmbH, Kiel, Germany, recently received orders for nine 6 Mu 452 type engines totaling 11,880 kw to be installed in three pushers of the upper power range. These vessels will all be built at the De Biesbosch shipyard in Holland, and will operate on the Rhine.

Two of the ships were ordered by the Europese Waterweg Transporten (E.W.T.), Rotterdam, each to be equipped with three 6 Mu 452 MaK engines. The output of each engine is 1,320 kw at 500 rpm. The vessels will be used in the pusher service between Rotterdam and Basel.

The third pusher was ordered by B.v. Ertslijn, Rotterdam, and the same type of MaK engine was chosen.

New Catalog Available From WABCO Describes Marine Control Valves

Bulletin A4-61.00, just released by WABCO Fluid Power Division of American-Standard, Lexington, Ky., describes the full line of Controlair® pneumatic valves for marine applications. The valves are widely used for pneumatic engine and clutch control as well as to control bow thrusters, winches, and accessories on tugs, workboats, supply vessels and other craft.

Included in the 16-page catalog are details of newly modified 2A-2A Controlair valves, which are 60 percent more sensitive in operation than previous models, giving operators finer control in maneuvering, as well as providing easier synchronization for multi-engine operation.

Other control valves, including H, HC, and HD Series types, offer various function, piping, control movement and appearance options. All are lightweight, rugged, non-ferrous construction.

Bulletin A4-61.00 has information about 12 different valves and their variations. Information includes operating details, mechanical drawings, dimensions, part numbers and ordering information.

For further information,

Write 27 on Reader Service Card

McDermott Unit Renamed —Earles And Foster Appointed Senior VPs

Robert E. Howson, president and chief operating officer of McDermott Marine Construction, recently announced a management realignment. The McDermott Operating Unit has been officially renamed McDermott Marine Construction. It employs 20,000 people in both foreign and domestic marine engineering and construction operations.

W.E. Earles has been named senior vice president and group executive, domestic operations, Western Hemisphere. He will have responsibility for the Morgan City Structural Group, the Shipyard Group, and the Harvey Group, including projects in Central and South America. After joining the company in 1954, Mr. **Earles** served in several administrative posts. In 1972, he became general manager of both the fabrication and offshore divisions, and was named vice president in 1972 and group vice president in 1974. Since February 1980, he has been senior vice president and group executive, North American Operations, Fabrication and Structural, Gulf of Mexico-USA.

I.R. Foster Jr. has been named senior vice president and group executive, marine engineering, with responsibilities for engineering organizations in New Orleans, Houston, Singapore, and London as well as the Equipment and Materials Group, and Canada. He joined McDermott in 1957 and became manager of offshore construction in 1965. In 1975, he was named vice president of Oceanic Contractors, Inc., and in 1978, group vice president and assistant to the president, McDermott Operating Unit. Since February 1980, Mr. **Foster** has been senior vice president and group executive, North, Central and South America areas.

In attendance at recent SNAME Chesapeake Section were (L to R): **William Rogalski** Jr., Gibbs & Cox, Inc., publicity chairman; Capt. **James V. Jolliff,** USN, Naval Sea Systems Command, speaker; **Robert J. Scott,** Gibbs & Cox, Inc., chairman, Chesapeake Section; and **Alexander Landsburg,** Maritime Administration, secretary-treasurer.

Electric Propulsion Systems Discussed At SNAME Chesapeake Section

A recent meeting of the Chesapeake Section, The Society of Naval Architects and Marine Engineers, was held at the Walter Reed Army Medical Center in Washington, D.C., and featured a presentation on electric propulsion systems for naval combatants by Capt. **James V. Jolliff** of the Naval Sea Systems Command. Electric propulsion has proven quite successful in the past in such ships as the Maryland class of battleships, the liner Normandie, T-2 tankers, conventional submarines, and more recently, the Coast Guard's Polar class icebreakers. Based on arrangement, flexibility, operational flexibility, speed control, and ability to use fixed-pitch propellers with nonreversing prime movers, electric drive is being investigated as a new propulsion option for Navy ships.

In his talk, Captain **Jolliff** concentrated on "near term" or relatively conventional electric components for use in Navy surface combatants. Advanced concepts, i.e., superconducting machinery, were not discussed as the associated risks are considered to be too high to meet the proposed goal of beginning detail design and construction of an electrical system for preliminary approval for service use (PASU) in Fiscal Year 1986.

The electric propulsion option presented by Captain **Jolliff** is an integrated system, consisting of three General Electric LM 2500 gas turbines, each driving an 18-mw electric propulsion generator. The generators feed a propulsion bus that powers two synchronous ac propulsion motors, one on each shaft. The generators and motors have water-cooled stators and air-cooled rotors, and the motors are rated at a maximum of 38,000 shp each.

Although the plant appears rather straightforward when viewed from a total system viewpoint, a number of new concepts have been included. One of the gas turbines is designated as an integrated cruise unit, and in addition to its propulsion generator it powers a 4-mw ship's service generator through a single reduction gear unit. This ship's service generator is complemented by two 4-mw diesel generator sets when required. Constant frequency is maintained on this unit by utilizing state-of-the-art power conditioners between the cruise generator and the propulsion motors allowing steady speed operation of the gas turbine.

The ship can operate up to 23 knots on the cruise unit, and if additional speed is required one or two boost gas turbine generator sets can be brought on line to supplement the cruise gas turbine generator. With both boost units on line, a sustained speed of 30 knots is achieved. The system is extremely flexible from an arrangements standpoint and can be reconfigured as necessary to obtain maximum performance in the context of speed, endurance and maneuverability. More importantly, the effects of battle damage on the propulsion system can be mitigated by reconfiguring the system around damaged portions by switchboard arrangements resulting in a type of selective degradation.

New Lifting Technique Lowers Costs In Construction Of Drilling Rigs

A new technique, which utilizes a multipurpose hydraulic system for constructing the main deck structures of offshore drilling rigs, has been announced by Hydranautics, Inc. The technique has been applied successfully by Chicago Bridge & Iron Company (CBI) at Pascagoula, Miss., and Ingleside, Texas, in fabricating a semisubmersible rig for World Drilling Company of Tulsa.

The technique allows complete deck fabrication and installation of truss connectors at near-ground level, thereby saving on crane work and other costs associated with high construction. Using part of a multipurpose hydraulic tool designed and built by Hydranautics for translating the finished drilling rig by skidding, CBI was able to lift the 1,050-ton ground-level-fabricated deck section approximately 100 feet in the air in less than eight hours, and lock the structure on oil at that height for approximately 10 weeks.

With the suspended structure locked on oil, CBI was able to monitor in real time the weight of the total load as well as the actual load of each support point, and easily made the adjustments in height to compensate for support settlement and to accomplish part fittings.

The lift was started on a weekend at 7:35 am and by 3:20 pm the total deck structure had been lifted to the elevation required for assembly of trusses under the platform by the regular work crew on Monday morning. The time required to accomplish the ground-level work staging prior to the actual lift was included in the eight-hour period.

The components used to lift the triangular deck (200 foot/side) were later used as part of the Hydranautics transfer system to skid the entire 5,000-ton drilling rig. According to Hydranautics, the lift tool may be acquired

7:35 am: start lift.

9:20 am: lift one-third complete.

3:20 pm: lift complete.

as part of the combination lift-skid system or as a single-functional unit with the capability for additions at a future date.

The components of the lift-skid system that were used by CBI during the lift operation consisted of the following: six chain jacks, each rated 175 tons at 3,500 psi; 12 balance cylinders (borrowed from the Gripper Jack portion of the complete system), each rated at 21.86 gpm at 5,000 psi; and 12 length (each 120 feet long) of 2¼-inch stud link GR3 chain with a total minimum breaking strength of 342 tons.

Key advantages offered by the Hydranautics equipment used to lift main deck structures are numerous. Use of the equipment allows construction from the top down at yard level, minimizing high time, its problems and cost. Hydraulic load equalization is provided between load points. Real time load readouts are possible for each lift point as well as the total deck weight. There is an inherent stiffness of chain support with the safety of steel to steel positive lockout at each chain pitch. The load can be lifted any distance from a fraction of an inch to hundreds of feet, then stopped and held as long as required.

Hydranautics points out that there are two primary advantages to purchasing the complete multipurpose system. The cylinders are interchangeable between lift, positioning, and transfer modes of operation. The same power units may be used for lift, positioning, and transfer functions.

Far East-Levingston To Build Drillship For Global Marine

Far East-Levingston Shipbuilding Ltd. (FELS), Singapore, recently announced it has signed a contract to construct a drillship for Global Marine Drilling Company of USA. The vessel will be built in Singapore and is scheduled for delivery in the first quarter of 1983.

The vessel will be a twin-screw, diesel electric-powered single-hull drilling unit designed to drill up to 25,000 feet in water depths up to 2,000 feet. It will meet the intact and damage stability criteria of the current ABS and USCG Rules for "Mobile Offshore Drilling Units," and will incorporate the latest drilling technology.

The 445-foot by 76-foot by 35-foot vessel will include a helicopter deck designed to support the landing weight of a fully loaded Sikorsky S-61 helicopter. The self-propelled drillship will have accommodation facilities for 96 offshore personnel, including a six-person hospital.

The drillship will be christened Glomar Bismarck Sea and will be among the largest drillships to be built in this part of the world. It will be the fifth drillship to be fabricated by Far East-Levingston Shipbuilding.

— A PREVIEW —

PROPELLERS '81

VIRGINIA BEACH — MAY 26-27

The third in a series of international symposia on ship propellers that have been attracting wide attention in the marine engineering community in recent years will be presented on May 26-27, 1981, at the Cavalier Hotel, Virginia Beach, Va. Titled Propellers '81, the meeting is being presented by the Technical and Research Program of The Society of Naval Architects and Marine Engineers in cooperation with the Hampton Roads Section.

A total of 24 papers on various aspects of marine propellers and related propulsion components are scheduled for delivery at the symposium, the authors representing a cross section of expertise from the United States and Europe.

Propellers '81 is intended to:

- Encourage vitally needed research efforts through the presentation and publication of the most recent developments in hydrodynamic theories of propeller design and wake interaction, and present the most up-to-date information available on the problem of propeller wake-induced vibration.
- Provide a forum for the discussion of the special problems associated with the operation of fixed- and variable-pitch propellers in ice, with an in-depth study of Ice Class Rules as they pertain to propeller design parameters.
- Disseminate propeller design information for a wide range of small craft.
- Give an opportunity for a free exchange of views between members of the marine community as to the present state of propeller design, performance, maintenance procedures, and the economic gains resulting from them.

Robert P. Giblon, chairman of the Ships' Machinery Committee, is general chairman of Propellers '81; **Andrew A. Szvpula** is chairman of the Technical Committee, which is made up of the members of Panel M-16 (Modernization of Propulsion Shaft Systems) of SNAME.

A banquet will be held on Tuesday, May 26, at 7:00 pm. The principal speaker will be **John J. Nachtsheim** (FL '54), 33rd president of the Society, 1981-82. At the time of his election, he was assistant administrator for shipbuilding and ship operations, Maritime Administration. In December 1980 Mr. **Nachtsheim** assumed the position of executive director, Maritime Transportation Research Board of the National Academy of Sciences.

TECHNICAL PROGRAM
TUESDAY, MAY 26

Session 1A—Hydrodynamics. Presiding: John G. Hill; assisting: **Brendt Hansen**.

9:45 am The Flowfield near the Propeller of a Self-Propelled Slender Body with Appendages: **J.A. Schetz** and **H.P. Stottmeister**.

10:50 am Semi-Submerged Propellers for Monohull Displacement Ships: **D.A. Rains**.

11:35 am The Pinnate Propeller: **P. Simonsson**.

Session 1B—Ice. Presiding: **Frank Zaher;** assisting: **Watt V. Smith**.

9:45 am A Study of Ice Class Rules for Propellers: **P.G. Noble** and **V. Bulat**.

10:50 am Design of Baltic Ferries for the Eighties — Propeller and Aft End Vibrations: **R. Salminen** and **M. Kanerva**.

11:35 am Full Scale Icebreaking Stresses on Propellers of the Polar Star: **G. Antonides, A. Hagen,** and **D. Langrock**.

Session 2A — Small Boats. Presiding: **Robert A. Levine;** assisting: **Robert A. Giuffra**.

2:15 pm Sizing Segmental Section—Commercially Available Propellers for Small Craft: **D.L. Blount** and **E.N. Hubble**.

3:00 pm Simplified Plotting of Nondimensional Propeller Parameters and its Application to a Propeller Series for High-Speed Small Craft: **H.F. Hillman**.

4:05 pm Propulsion Systems for Slow Amphibians: **J.C. Daidola, H. Hui-tzeng Ting,** and **E.D. Wolfe**.

Session 2B — Vibrations. Presiding: **Angelos Zaloumis;** assisting: **John A. Albino**.

2:15 pm Investigation into Modeling and Measurement of Propeller Cavitation Source Strength at Blade Rate on Merchant Vessels: **L.M. Grey**.

3:00 pm Periodic Blade Loads on Propellers in Tangential and Longitudinal Wakes: **R.J. Boswell, S.D. Jessup,** and **K.H. Kim**.

4:05 pm Minimization of Unsteady Propeller Forces that Excite Vibration of the Propulsion System: **N.A. Brown**.

WEDNESDAY, MAY 27

Session 3A — Hydrodynamics. Presiding: **Francis J. Dashnaw;** assisting: **Robert A. Levine**.

9:15 am The Influence of the Propeller on the Wake Distribution as Established in a Model Test: **J. Laudan**.

10:20 am On Optimum Propeller Performance: **T.A. Loukakis** and **G. Politis**.

11:05 am Prediction of Propeller Hydrodynamic Coefficients Using Unsteady Lifting Surface Theory: **L. Vassilopoulos** and **M. Triantafyllou**.

Session 3B—Vibrations. Presiding: **John E. Ancarrow Jr.;** assisting: **Robert H. Murray**.

9:15 am Added Mass and Damping Estimates for Vibrating Propellers: **M.G. Parsons** and **W.S. Vorus**.

10:20 am Propeller Induced Noise in Ships: **A.C. Nilsson, B. Persson,** and **N.P. Tyvand**.

11:05 am Propeller Tip Vortex Cavitation Noise Inception: **R. Latorre**.

Session 4A — Hydrodynamics. Presiding: **George W. Morris;** assisting: **John G. Hill**.

1:45 pm Lifting-Line Theory for a Supercavitating Unsteady Hydrofoil as a Singular Perturbation Problem: **J. Pylkkanen**.

2:30 pm Lifting Surface Hydrodynamics for Design of Rotating Blades: **T. Brockett**.

3:35 pm Propeller Design Optimization—An Integral Theoretical and Experimental Procedure: **F. Bau, G. Bellone, B. Chilo,** and **A. Columbo**.

Session 4B — Conditions. Presiding: **Paul E. Speicher Jr.;** assisting: **Jan Karlsen**.

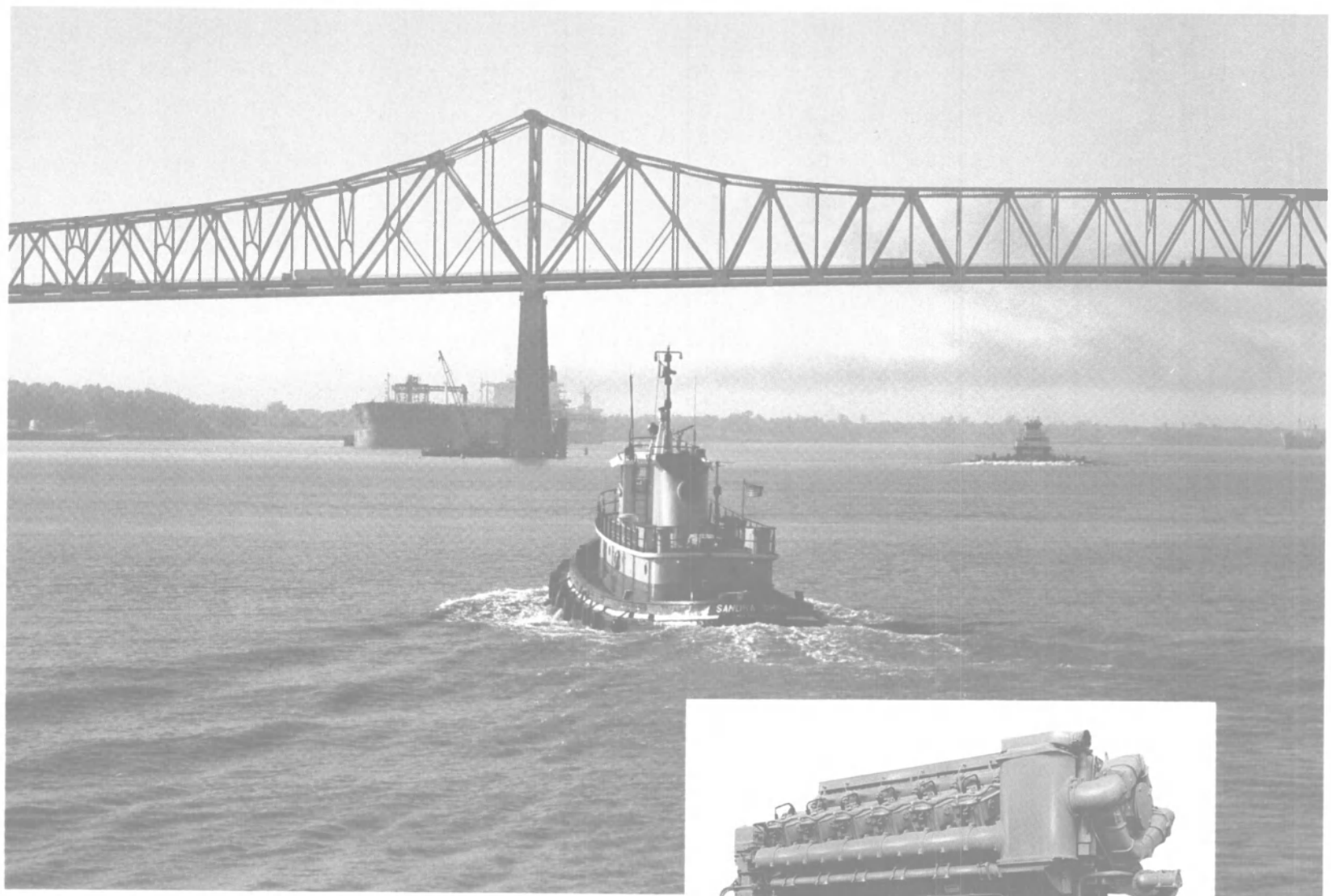
1:45 pm Evaluation of Selected Lip Seals/Liners for Propulsion Shafts of Merchant Ships: **L.W. Winn** and **F.J. Dashnaw**.

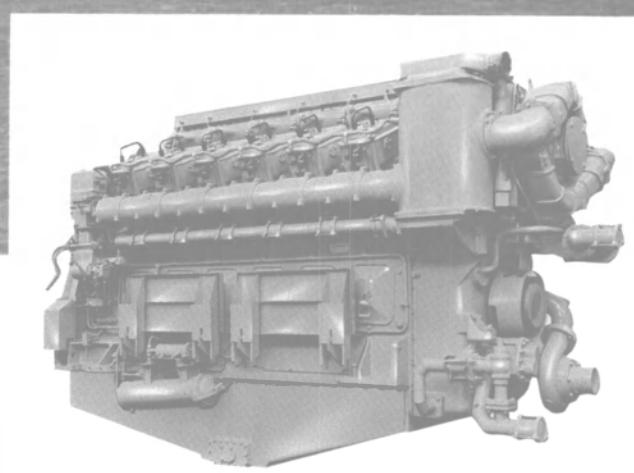
2:30 pm Timing of Drydocking Intervals to Most Economical Effect: **F. Prochaska**.

3:35 pm An Integral Prediction Method for Three-Dimensional Turbulent Boundary Layers on Rotating Blades: **N.C. Groves**.

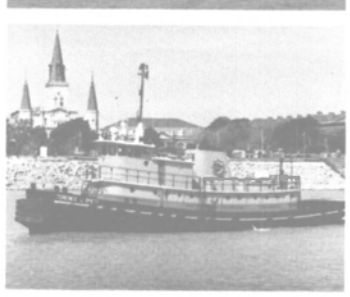
4:25 pm Concluding remarks.

For further information on Propellers '81, contact **Trevor Lewis-Jones**, manager, publications and technical programs, SNAME, One World Trade Center, Suite 1369, New York, N.Y. 10048; (212) 432-0310.





Crescent Towing and Salvage Adds Its Third GE Engine. The Fourth Is On Its Way.



According to Ellis P. Rushing, Port Engineer at Crescent Towing and Salvage Company, the decision was easy. More than 35,000 hours of repair-free service and increasingly significant fuel economy have been provided by the 12-cylinder, turbocharged General Electric diesel engine on their MV Port Hudson. This more than justified across-the-fleet conversion to GE power plants. When the repowering project is completed in 1981, "the most sought after fleet of boats in the New Orleans area" should become one of the most cost-effective in the country.

For more information, contact Diesel Power Products, General Electric Co., 2901 East Lake Road, Erie, PA 16531. (814) 455-5466, ext. 2319 or your GE M&DFSO representative.

GENERAL ELECTRIC

Write **191** on Reader Service Card

TANO Awarded $1.9-Million Contract By BIW Yard For Automation Systems

TANO Corporation of New Orleans has signed a contract for $1,907,538 to provide sophisticated machinery plant automation systems for two petroleum tankers being built at Bath Iron Works in Bath, Maine. The ships are being built for Falcon I Sea Transport Company of Houston, and when complete will be under long-term charter to the Military Sealift Command of the U.S. Navy.

The TANO system will provide extensive monitoring and control of the ships' propulsion, electrical generating machinery, and auxiliary engine room equipment. Bridge propulsion control will also be provided.

The solid-state electronic system will be designed to the latest requirements of the U.S. Coast Guard and the American Bureau of Shipping to allow for operation when the engine room is unattended. Extensive logging of machinery conditions, off-normal alarm conditions, and engine orders will be a part of this integrated automation system.

The ship's propulsion plant will consist of two medium-speed diesel engines coupled through a reduction gear to a single controllable-pitch propeller. Electrical power will be supplied by two diesel generators. Automation is currently being designed and equipment delivery will be in 1982.

Ingram Seeks Title XI Aid On 50 Barges To Cost Total Of $13.75 Million

Ingram Towing Company, a subsidiary of Ingram Industries Inc., Nashville, Tenn., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of 50 hopper barges (35 rake type and 15 box type). The application did not include the name of the builder or builders, but indicated deliveries were to be in April (five barges), June (16 barges), and July (29 barges).

The requested guarantee is for $12,000,000, or approximately 87½ percent of the $13,750,000 total estimated cost of the 50 barges.

Bombay Port Trust Orders Two Voith Water Tractors

The Bombay (India) Port Trust recently ordered two Voith Water Tractors from the Indian shipyard, The Hooghly Docking and Engineering Co. Ltd., Calcutta. The Voith Water Tractors will each have the following dimensions: length overall, approximately 33 meters (108 feet); beam, 9.5 meters (31 feet); and total draught, approximately 4.8 meters (15¾ feet).

Two size 28G/185 Voith-Schneider propellers are connected to slow-rpm diesel engines via hydraulic couplings. The vessels are designed for a static bollard pull of approximately 35 tons and a free-running speed of about 12 knots.

Texaco Names Dubuisson To New Offshore Post

Elliott Dubuisson has been appointed assistant manager-Central Offshore Engineering, effective immediately, it was announced recently by **Robert C. Shields,** vice president in charge of Producing-East for Texaco U.S.A. In his new assignment, Mr. **Dubuisson** will be located in New Orleans, and will be responsible for supervising the design of production facilities for use in waters outside the territorial United States.

Mr. **Dubuisson** graduated from Mississippi State University in 1968 with a Bachelor of Science degree in civil engineering and joined Texaco that same year as a civil engineer in New Orleans. He served with Texaco Overseas Petroleum Company Nigeria in Lagos as a construction engineer from 1974 until 1976 when he was named petroleum engineer there. In 1977, he was appointed senior engineer with Dansk Boreselskab A/S (DANBOR) in Copenhagen.

How will you be rewarded when you save your company millions of dollars with Intersmooth SPC® ?

Nothing will be too good for the man who can cut your fuel bills by 12 to 15% - just by changing the paint on the bottom of your ships.

Imagine savings of about:

$2,000,000* a year in fuel for passenger liners.

$650,000* a year for VLCC's.

$700,000* a year for high speed container ships.

And you can look for these savings to go up right along with the cost of fuel. (By 1985 the cost of fuel is expected to double.)

Here's how the system works.

Intersmooth SPC is an anti-fouling coating system that chemically releases a biocide - it wears away slowly and actually smoothes the bottom of the ship while keeping it fouling free between drydockings.

This smoothing action, plus the efficient anti-fouling qualities of Intersmooth SPC means less drag on the hull.

Less drag means less fuel.

12-15% less fuel.

You're on solid ground with Intersmooth SPC.

There have been over 400 applications of Intersmooth SPC. Many ships for the second and third time.

Fuel savings reports have been received on virtually all of these ships.

12%.

15%.

Even as much as 22% depending on the type of ship.

Intersmooth SPC produces more revenue days.

A clean hull can mean longer periods between drydockings.

There's even an increased ability to maintain speed. And because of the smoothing action on the hull there have been many reports of speed actually increasing.

Less maintenance and repair.

Reduced drag means less wear and tear on the entire drive train of the ship.

Subsequent drydockings are less expensive. Intersmooth SPC leaves the hull smooth and fouling free so there's far less surface preparation required.

Get in touch with your International Paint Representative now.

He has all the technical data. Case history studies. Brochures. Cost benefit analyses. Even a slide show to help you learn more about Intersmooth SPC. So call now before somebody else does.

Remember, a lot of other guys in your company are reading this ad too.

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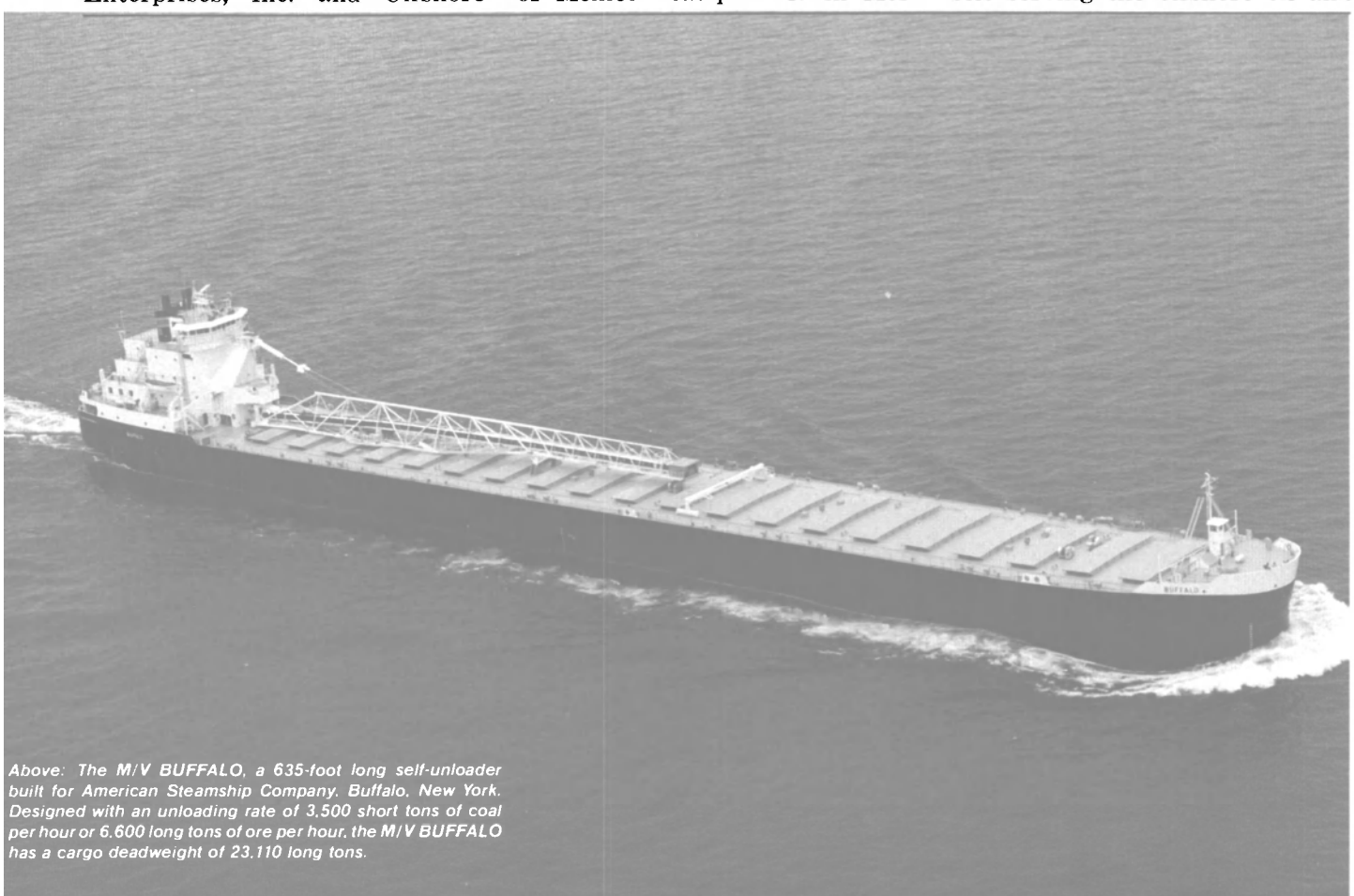
Corporate Headquarters
UNION, N.J.: P.O. Box 386 (201) 686-1300

NICOR Expands Offshore Fleet With Acquisition Of Two Additional Companies

NICOR Inc., Naperville, Ill., chairman and president **C.J. Gauthier** recently announced acquisition with NICOR common stock of two marine transportation companies — Arthur Levy Enterprises, Inc. and Offshore Island Boats, Inc. These two companies along with Acadian Marine Service Inc. will operate as NICOR's offshore marine group. This acquisition will place the offshore marine group among the top 10 offshore service fleets in the world.

Both Levy Enterprises and Offshore Island Boats will operate 16 supply vessels from their Gulf of Mexico headquarters in Morgan City, La., providing logistical support to offshore oil and gas drilling rigs located in the U.S. Gulf of Mexico. **Arthur I. Levy Sr., John Alcina,** and **Tim McKeand** will remain as executives of the company. The current management will stay intact.

With this acquisition, NICOR subsidiary companies will operate a fleet of 30 special-purpose vessels serving the offshore oil and gas industry. Their activities include: oceanographic and seismographic research, freight and container transportation, vessel chartering and ocean towing in the U.S. and Mexican Gulf, Caribbean, and offshore West Africa.



Above: The M/V BUFFALO, a 635-foot long self-unloader built for American Steamship Company, Buffalo, New York. Designed with an unloading rate of 3,500 short tons of coal per hour or 6,600 long tons of ore per hour, the M/V BUFFALO has a cargo deadweight of 23,110 long tons.

Grant Hagen Joins Designers & Planners

Grant R. Hagen has joined Designers & Planners, Inc. as principal naval architect. The announcement was made recently by **Ferd Serim,** president of the company. Designers & Planners, Inc. is a firm of naval architects and marine engineers with offices in New York, Washington, Texas and Philadelphia.

In his new capacity, Mr. **Hagen's** responsibilities will be primarily in the area of ship hydrodynamics and ship motions. He reports to **Carlos Tomassoni,** director, ship design and marine economics.

Mr. **Hagen** is a graduate of the University of Michigan, where he earned BSE degrees in naval architecture and marine engineering, and in civil engineering. He has 38 years of experience as a naval architect, the last 36 at the David W. Taylor Naval Ship Research and Development Center where he reached the position of head, Ship Dynamics Division.

Krupp Atlas Appoints Walter J. Finney Houston Service Manager

Krupp Atlas recently announced that **Walter Finney** has taken over as service manager of Atlas's Houston, Texas, facility. Mr. **Finney** reports to **Doug Blue,** Krupp Atlas's sales manager for the Gulf.

Walter Finney

Mr. **Finney's** duties will include coordinating service activities for Atlas dealers and customers in the Gulf region. He will maintain his own technical staff in Houston.

Mr. **Finney** brings to Krupp over 25 years of extensive marine electronics experience with expertise in radar, loran, communications, RDF, and echosounders. He was most recently the senior sales engineer with Jackson Marine in Fort Lauderdale, Fla. During his career, Mr. **Finney** has held many service and technically oriented positions with ITT Decca, NSI, Airborne Systems, and IBM.

ASNE Delaware Valley Chapter Holds Meeting At Philadelphia Naval Base

The Delaware Valley Chapter of The American Society of Naval Engineers met recently at the Philadelphia Naval Base Officers Club. Following a social hour and dinner, chairman **Eugene Weinert** called the meeting to order. After a brief business meeting Mr. **Weinert** introduced the coordinator, **Harry Gladfelter** of J.J. Henry's Moorestown, N.J., office. Mr. **Gladfelter** in turn introduced **H.O. Bullock**, manager of the J.J. Henry Washington office, and **John Christian**, also of the Washington office, the evening's featured speaker.

Mr. **Christian** has conducted extensive research on wooden ship construction in Europe and the U.S. His paper, "Unique Challenges in the Design of Wooden Hull Warships," provoked lively interest as evidenced by the question-and-answer session that followed his presentation.

The author pointed out that both old and new techniques are employed in wooden hull construction although, unfortunately, much of the old expertise was lost during the period when wooden hulls were not in vogue. Measures are now being taken to revitalize this dying art, he said.

Old problems are being approached and solved with modern techniques, Mr. **Christian** reported. New adhesives are playing a major part by substituting laminated sections where one-piece material had been the rule — as exemplified by reduction of the stem from a 5½-foot section to 3 or 4 feet. The adhesives presently in use are fast-acting, with set time of about 5 minutes.

Frank Hodgson Joins Tracor Marine As Ship Repair Sales Manager

Frank Hodgson

Frank Hodgson has joined Tracor Marine, Inc., Fort Lauderdale (Port Everglades), Fla., as manager, ship repair sales. For the past 11 years, he was with Atlantic Marine in Jacksonville, and was involved in both design and sales for new construction commercial and fishing vessels. Mr. **Hodgson's** knowledge of the marine industry will greatly assist Tracor Marine in marketing its ship repair capabilities to shipowners worldwide.

Admiral D.G. Iselin Joins Raymond Unit

Rear Adm. **Donald G. Iselin**, USN (ret.), has been elected group vice president of Kaiser Engineers, Inc., Houston, Texas, a subsidiary of Raymond International Inc., according to **Henry F. LeMieux**, chairman and chief executive officer of the parent firm.

Admiral **Iselin** joined Kaiser Engineers on April 1 and will be located at the subsidiary's Oakland, Calif., headquarters, Mr. **LeMieux** said.

When Admiral **Iselin** retired from the U.S. Navy in January 1981 he was Commander, Naval Facilities Engineering Command (NAVFAC), and Chief of Civil Engineers. NAVFAC is responsible for all engineering and construction work done for the U.S. Navy and a substantial portion of the U.S. Air Force requirement. The command also maintains America's naval bases throughout the world.

Admiral **Iselin** will be responsible for operation of the engineering, construction and procurement divisions as well as the labor relations, safety, finance, administration and personnel support groups.

Ed Miske, Barry Hall, [illegible]nding: Fred West, Dick Steiner, Duane Cozard, Bernie Logan, Fred Ramsden

"We're the guys who build 'em your way"

Building top quality into any design a customer demands, requires a special type of experienced craftsman. Fred Ramsden, 43 Year Employee:

"We custom design and build every barge to the customer's specifications and requirements. We don't limit them to preset standard designs and limited options.

"Knowing how to meet these different customer demands and their cargo handling needs, requires versatile experience, plus up-to-date construction knowledge and capabilities. You don't learn all that overnight.

"We know our trade, the latest developments in it, and take pride in our work. We know what makes a quality barge, and are always looking for better ways of giving the customers what they want.

"Our design experience and construction flexibility lets us build barges the customers' way that are competitively priced with barges built someone else's only way."

Experience, quality, value. HBC Barge builds barges in any size and configuration you need, for chemicals and other liquids, coal, grain and other commodities.

Go beyond options and get what you want.

For more information on getting your next barge fleet built to your specs, built to deliver years of service, contact:

HBC Barge

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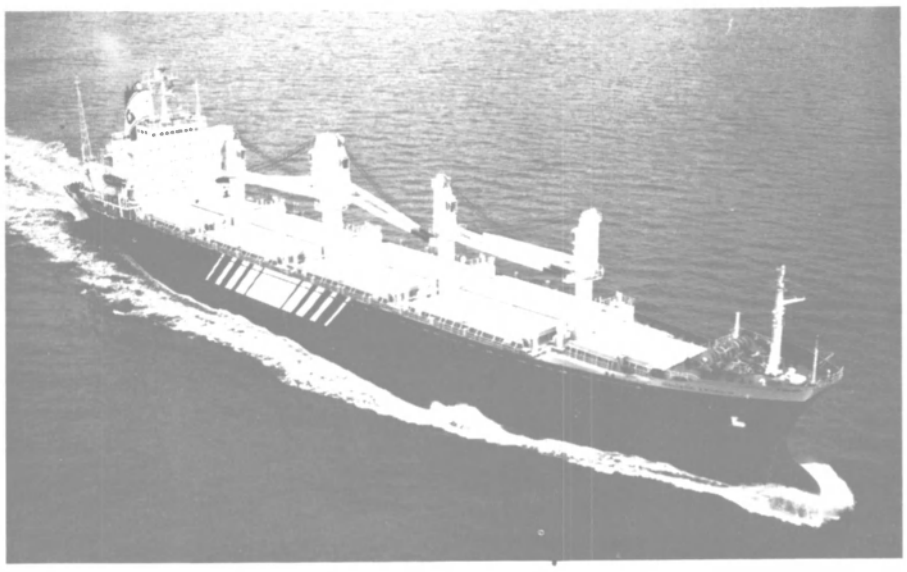


Hitachi Completes Combination Cargo Carrier For Galleon Shipping

The 19,403-dwt cargo ship Galleon Emerald (shown above) was delivered recently to her owner, Galleon Shipping Corporation, the Philippines. Constructed at Hitachi Zosen's Hiroshima Works (Innoshima), she is the last of three sister ships delivered to Galleon Shipping by Hitachi. The first in the series, Galleon Diamond, was completed in December 1980, also at the Hiroshima Works. The second ship, Galleon Agate, was delivered in January this year by the Setoda Shipyard of Naikai Zosen, an affiliate of Hitachi Zosen.

The Galleon Emerald is designed to carry general cargo, containers, lumber, and bulk cargo between the Philippines and North America. As the vessel will be used to carry tobacco, coconut products, and hemp, all cargo holds are fitted with dehumidifiers. Three 16-ton cranes are provided for handling general cargo; one 50-ton, twin-type crane will handle heavy lifts such as construction vehicles.

Her Hitachi / B&W main engine, type 6L67GFC, is a constant pressure turbocharged, long-stroke diesel, newly developed by Hitachi to lessen fuel consumption. It has a maximum continuous output of 11,200 bhp at 145 rpm; trial speed was 19.703 knots.

The 13,886-gt ship has a length between perpendiculars of about 498.7 feet, beam of 75.8 feet, depth of 46.26 feet, and full load design draft of 34.48 feet. Cargo hold capacity is 28,727 cubic meters. She is classed by the American Bureau of Shipping.

USCG Guidelines For Integrated Tug-Barge Combinations Published

The Coast Guard has published inspection guidelines for integrated tug-barge combinations.

Titled "Navigation and Vessel Inspection Circular No. 2-81, Coast Guard Inspection Guidance Regarding Integrated Tug Barge Combinations," dated February 25, 1981, the guidelines are intended to provide uniform guidance concerning the application of statutes and Coast Guard regulations to tug-barge combinations that use specially designed connection systems.

Free copies may be obtained by requesting NVC 2-81. Write: Commandant (G-MP-4/14), U.S. Coast Guard, Washington, D.C. 20593.

Coast Tug Seeks Title XI For $6.2-Million Oceangoing Tug

Coast Tug No. 1 Limited Partnership, a subsidiary of Coastal Barge Corp., 2121 San Felipe Street, Houston, Texas 77109, has applied for Title XI financing to aid in construction of an 8,000-horsepower oceangoing tug.

The twin-diesel vessel is to be built by Mangone Shipbuilding, Houston, Texas, and is expected to operate in the coastwise trade.

If approved, Title XI financing would cover $5,432,000 or approximately 87½ percent of the estimated actual cost of $6,208,000. Delivery date has not been scheduled.

Penco To Market Showa's Fuel Mixing System

The Penco Division of Hudson Engineering Company, Nissho-Iwai American Corporation and Showa Marine Kogyo Ltd. of Tokyo, Japan, have announced the appointment of Penco as the exclusive marketing, service and distributor of Blender Ace.

Showa has been manufacturing the Blender Ace system for a number of years with dozens of successful installations on a worldwide basis. Blender Ace is a fuel mixing system which provides a blend of marine diesel oil and heavy fuel oil designed to maximize fuel cost savings. It is easy to install and has virtually no moving parts.

Blender Ace uses a static mixing unit which develops a perfect blend over a wide range of viscosities. The system provides a direct fuel feed to the engine and the only moving part is the heavy fuel oil booster pump.

The Blender Ace system features an adjustable diesel oil-heavy oil mixing ratio. Extensive tests aboard ships have proven that fouling of pistons and valves proceed at a normal rate with mixtures of 60 percent marine diesel and 40 percent heavy fuel oil. Also no significant changes were found in the exhaust gas temperatures.

For further information on Blender Ace and other supplies and services provided by Penco,

Write 22 on Reader Service Card

Global And Japanese Firm Jointly Offer Offshore Production Systems

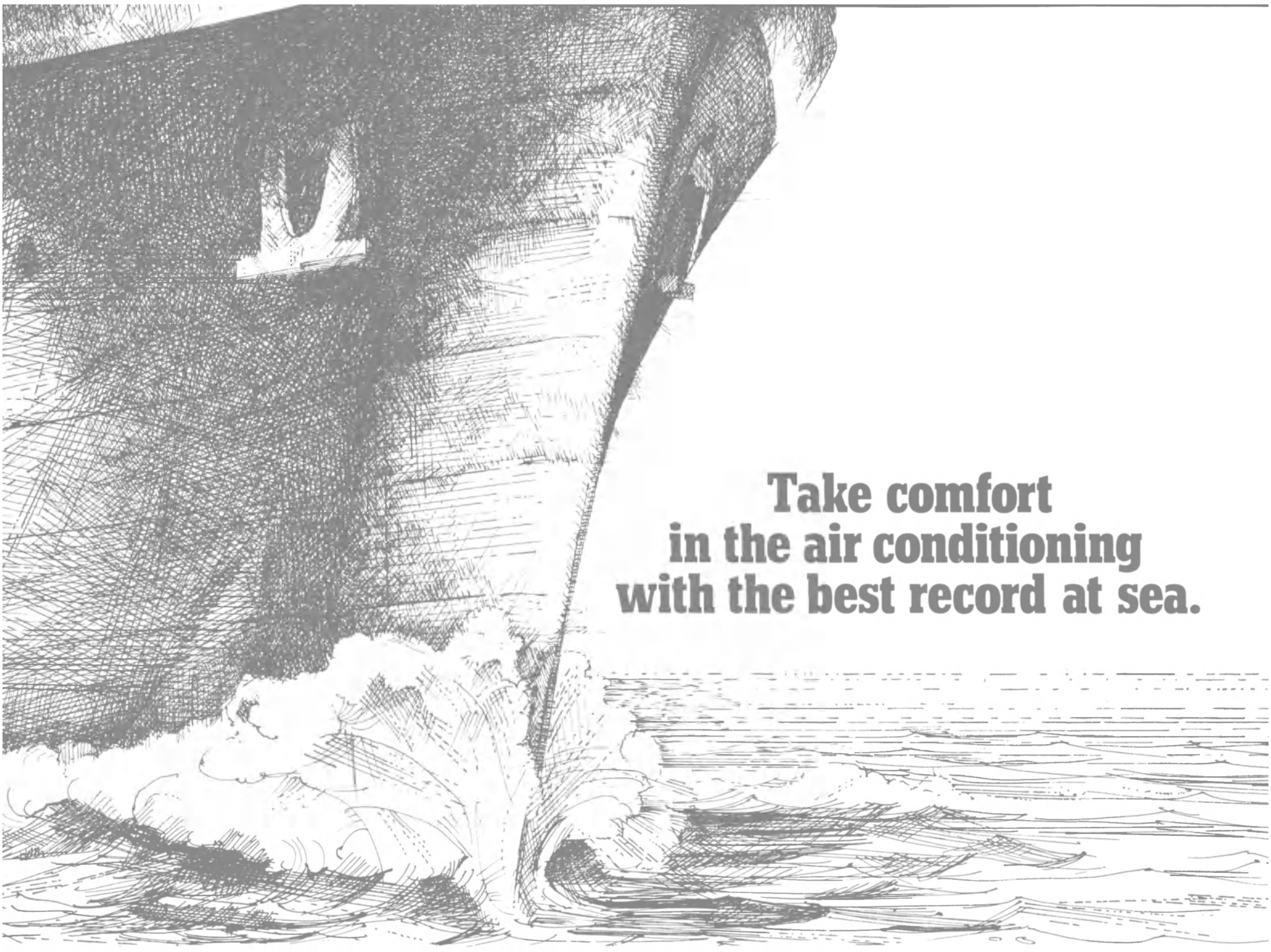
Global Marine Development Inc. of Irvine, Calif., and Nippon Kokan K.K. of Tokyo, Japan, have announced an agreement to jointly develop and market offshore oil and gas production systems. NKK will fabricate the structures in its shipyards on the basis of engineering provided by GMDI.

Global Marine Development Inc. is a wholly owned subsidiary of Global Marine Inc. of Los Angeles.

The BID (Base and Independent Deck) platform significantly reduces time for construction and cost of on-site installation for both short and long-life fields. For short-life fields, the BID concept offers even more savings since the deck can be independently removed for re-use and the base can be recovered for use in another location.

The concept is simple. The base structure and the deck are constructed separately. Outfitting of the deck is accomplished in the yard. The base structure is then towed to the site in its upright position and set on the sea floor using its own ballasting system. The outfitting deck is brought to the site on a barge and positioned over the base. The barge is then ballasted down and the deck is transferred to the base columns. The deck is then raised to the design elevation by means of removable jacks. Once in place, the deck is welded to the columns.

Construction time is saved through the totally independent construction of the base and the deck, permitting concurrent fabrication and outfitting. Installation time is also saved since heavy-lift equipment is not required. In addition, the deck arrives at the site completely outfitted, which eliminates extensive at-sea installation time.

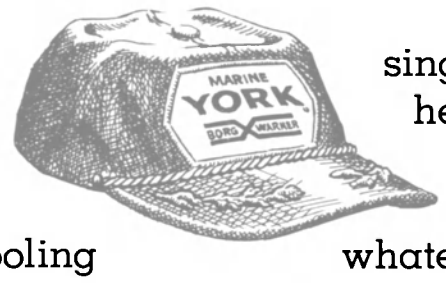


Take comfort in the air conditioning with the best record at sea.

You can't afford a crew sweltering in the engine room. That's why most of the ships around the free world are air conditioned with York marine air-cooled single package cooling units. Or water-cooled single package cooling units. Or air-cooled split system cooling units.

Because, like any other York system, they're all known for their reliability.

They're also all designed for shipboard. Easy to install. Simple to service. Available in a range of capacities that give you ideal cooling in the least amount of space. (We have heating, too, if you need it. Electric heat units, single and split-system heat pumps.)



And you can take comfort in the fact that whatever port you make, a York serviceman can be on board within hours. Every major port in the free world has a York specialist and York parts for our refrigeration as well as air conditioning systems.

See your York Marine representative for the air conditioning that's ruled the seas for over 50 years. Or contact us. York Marine Department, York Division of Borg-Warner Corporation, P.O. Box 1592, York, PA 17405.

YORK DIVISION OF BORG-WARNER CORPORATION BORG WARNER®

Great Alaska Boat Asks Title XI On $3.58-Million Inland Cruise Vessel

Great Alaska Boat Company, Seattle, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of a 150-foot cruise vessel for operation on the inland waters of the West Coast of North America. Nichols Brothers Boat Builders, Inc., Freeland, Wash., was listed as the proposed builder, with delivery scheduled for November 1981.

The requested guarantee is for $2,685,000, which is 75 percent of the vessel's estimated cost of $3,580,000.

IHI Delivers Japan's Biggest Helicopter Destroyer

The Kurama (shown above), a 5,200-ton (displacement) helicopter destroyer for Japan's Defense Agency, was delivered recently at the Tokyo Shipyard of Ishikawajima-Harima Heavy Industries Company, Ltd. (IHI). The new ship, built as part of the Fourth Defense Buildup Program, is the largest destroyer in Japan's Maritime Self Defense Force, and is able to accommodate three helicopters.

The Kurama is equipped with the Sea Sparrow sea/air missile (SAM) system to improve her antiaircraft, self-defense capability; Bear Trap, a special landing system for helicopters; and a fin stabilization system to minimize the rolling motion of the ship in rough sea conditions, enabling helicopters to land safely.

The ship has an overall length of 521.6 feet, beam of 57.4 feet, depth of 36 feet, and draft of 17.4 feet. She is powered by two IHI steam turbines producing a total of 70,000 shp and a service speed of 32 knots. Total complement is 350.

The Kurama's armament includes two 54-caliber, 5-inch, rapid-fire guns; an ASROC launcher; and two 3-barrel torpedo tubes.

Sail Systems For Commercial Ships Could Cut Fuel Costs 30% —Literature Available

Ratsey and Lapthorn Inc., sailmakers since 1790, and Syner-Tech Inc., suppliers of rigging and control mechanisms, have announced the availability of sails and their related controls and rigging for commercial vessels of various sizes and uses. Both **David Vietor**, president of Ratsey and Lapthorn, and **William L. Banks Jr.**, president of Syner-Tech, said that their systems can be used on existing vessels on a retrofit basis as well as vessels for new construction. **Colin E. Ratsey**, chairman of the board of Ratsey and Lapthorn, and Mr. **Banks** had recently been involved with the installation and use of Ratsey's large sail (over 6,500 square feet, the world's largest) of the Rowans Company's jackup oil rig, which showed a significant fuel savings during a tow from the U.S. Gulf Coast to Halifax, Canada. Preliminary studies show that vessels could realize as much as a 30 percent fuel savings with a sail system used in conjunction with the existing main propulsion. Both companies have indicated that systems can be prepared for vessels from under 100 feet long to medium-size vessels (approximately 70,000 dwt).

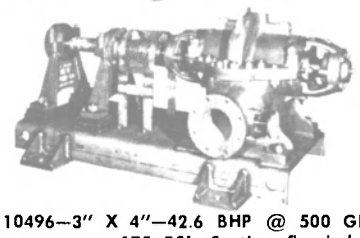
For further information,

Write 20 on Reader Service Card

TRACOR ADDS TWO DOCKS—Tracor Marine has put two additional floating drydocks into service at its Fort Lauderdale (Port Everglades), Fla., shipyard. The drydocks—one 220 feet, 2,100-ton capacity; the other 250 feet 3,300-ton capacity — both measure 87 feet between wingwalls and complement Tracor Marine's existing 350-foot, 4,200-ton Syncrolift marine elevator and transfer system. The addition of the new drydocks more than doubles Tracor Marine's capability to offer shipowners operating in the Caribbean and Southeastern U.S. waters timely haul-out and repair service.

FOUR PORTAINERS DELIVERED—Long Beach (Calif.) Harbor Facilities Corporation recently accepted delivery of four Paceco Modified A-Frame MACH (modular automated container handling) Portainer® cranes (two shown above). Paceco, Inc., is a subsidiary of Fruehauf Corporation. Two of the 40 Long Ton lifting capacity cranes will be used at Pier C, site of California United Terminal, Inc., while two are located at Long Beach Container Terminal, Pier J. The four Portainer cranes have identical characteristics such as boom outreach of 115 feet and backreach of 50 feet. Each is equipped with telescopic spreaders to handle 20/40-foot containers. All four units were fabricated at Paceco's Gulfport (Miss.) plant and shipped by rail to the Long Beach port. Bickerton Iron Works, Inc. erected the cranes under supervision of Paceco field representatives.

WEIL ALL BRONZE CENTRIFUGAL FIRE PUMP 500 GPM @ 100 PSI HEAD



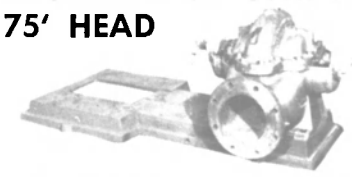
Model 10496—3" X 4"—42.6 BHP @ 500 GPM. 3000 RPM—test pressure 175 PSI. Suction flooded. Requires 50 HP 3000 RPM motor. Offer includes Pump, stainless steel base, coupling & extra pedestal for belt drive if desired.

$3750

WORTHINGTON 300 GPM 150 LB HEAD CENTRIFUGAL FIRE PUMP

#1223620—3550 RPM—5½" suction—4½" discharge—Imp. diam. 10¾"—test pressure 225 lbs. MOTOR: G.E. model 5K1405Y—60 HP—400/60/3—Frame 405—type K—72 amps—3550 RPM.

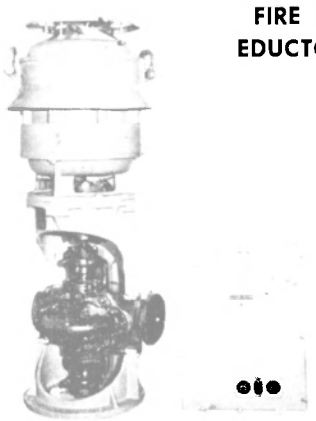
BRONZE 2000 GPM PUMP 75' HEAD



75' Head — 1750 RPM — mfg by American Well Works. Horizontally split case size 8X8. (50 HP motor required for pump capacity.) Frame 445. Supplied with 5'8"X 2'5" base.

$1775 EACH

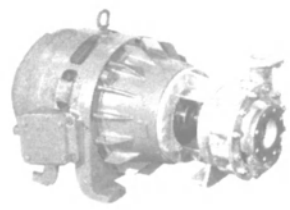
250 GPM — 150 LBS WARREN CENTRIFUGAL FIRE & BILGE EDUCTOR PUMP



All Naval bronze. 365 BHP—3500 RPM—3" discharge—4" suction. Test pressure 300 lbs. Discharge pressure 150 lbs. Electro Dynamics—Frame FRAC-405—type XNX —#90398—45 HP—3500 RPM 57/5 amps—45° rise—440/3/60.

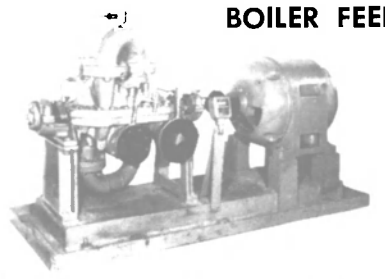
PUMPS

FAIRBANKS-MORSE BRONZE FIRE & FLUSHING PUMPS 250 GPM @ 100 LBS.



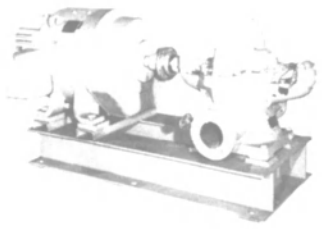
3500RPM—2½" Suction. Test pressure 250 lbs. MOTOR: 25 HP—440/3/60—3500 RPM—34.9 amps—frame 404NC —temp rise 50°C. Ex-DD 445 Class & Fram 695 Class.

BUFFALO 100 GPM — 980' HEAD BOILER FEED PUMP



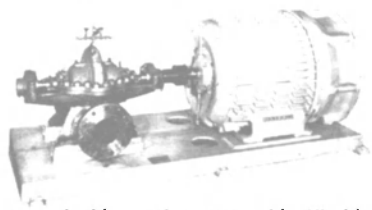
Size 2-RR—2-stage. 3" Suction—2" discharge. MOTOR: 50 HP—220/440/3/60—3500 RPM.

FAIRBANKS-MORSE 750 GPM STAINLESS STEEL CENTRIFUGAL SEA WATER FIRE & FLUSHING PUMP



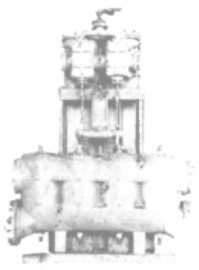
125 PSI (281 Ft.) total head. Suction lift none (flooded) 1750 RPM. With Folk #8F coupling—flexible, all metal, enclosed. MOTOR: Reliance type T—100 HP—1750 RPM —343 amps—230 volts DC—Frame 503AS. Pump has 5" suction—4" discharge. Pump & Motor mounted on base 37¾" wide X 6' 2¾" long X 3' 0½" high. Total weight 3348 lbs.

NEW 5" ALL BRONZE BALDWIN-LIMA 1000 GPM 150 PSI TOTAL HEAD CENTRIFUGAL FIRE PUMP



Single stage double suction type with 6" side suction & 5" side discharge. 3600 RPM—test pressure 250 PSIG. MOTOR: Reliance 125 HP 440/3/60—totally enclosed—fan cooled—Frame D-5003-S—50°C.

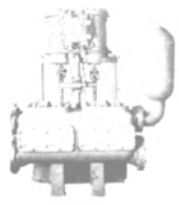
WORTHINGTON 16" X 14" X 18" VERTICAL DUPLEX STRIPPING PUMP



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

RECONDITIONED 1980 READY TO GO

STEAM DRIVEN VERTICAL DUPLEX FIRE & GENERAL SERVICE PUMPS

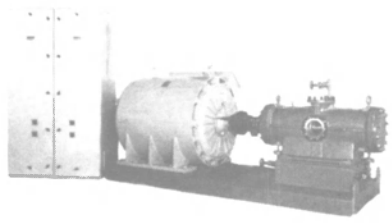


10 X 11 X 12 — Worthington — 560 GPM @ 125# G. 8" Suction — 6" discharge pumps bronze fitted.

700 G.P.M. @ 150 P.S.I. NEW — UNUSED

MOTOR DRIVEN ROTARY HORIZONTAL PUMPS

WITH 4-SPEED 440/3/60 MOTOR

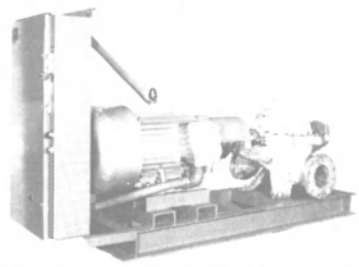


Inlet 8" — outlet 6". Powered by 4-Speed 440/3/60 motor. Motor is 100/75/50/37.5 HP — 1200/900/600/450 R.P.M. Motor has Cutler-Hammer control. Weight 10,000. Inquire for complete details.

FIRE PROTECTION FOR SHIPYARDS !

(Several installed in yards doing Navy work)

BRONZE FIRE PUMPS 1000 GPM @ 150' HEAD

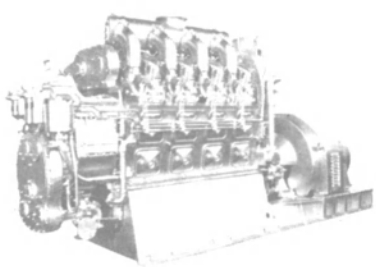


6" Suction—5" Discharge. 1750 RPM—motor driven—150 HP—440/3/60/1750. Motor control & pump on prefab base for portability. New motor, base and coupling. Gardner-Denver reconditioned pump.

4-BLADE LST BRONZE PROPELLERS

Starboard — 7' diameter — pitch constant 4.699: Bore tapers from 6⅛" to 4$\frac{53}{64}$". 14½" taper equal to 1"/foot on diameter. U.S. Navy reconditioned. Average weight 1760 lbs.

GM 8-278A 350KW 440/3/60 DIESEL GENERATOR SET



GM 8-cyl. engine—8½X10—2-cycle—Vee type driving 350 KW G.E. generator—440/3/60—600 RPM—430 KW 2 hours. 3 Units available. Your inspection invited.

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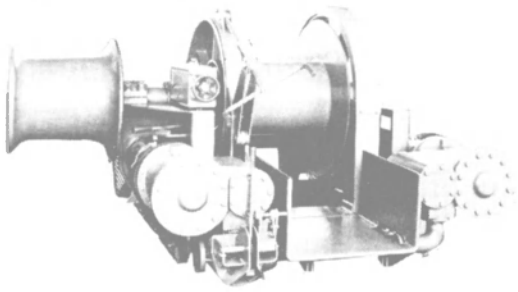
STEAM MOORING WINCHES

12" x 14" — STEAM OR AIR DRIVEN
with foot brake & declutchable gypsy head
20,000 LBS @ 100 FPM—FIRST LAYER



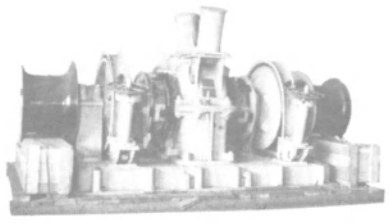
ALSO HANDLES 16,000 LBS @ 150 FPM
OR 50,000 LBS @ 8 FPM

Drum will show 1500 ft of 1½" wire in 9 layers. Steam inlet 3½" — 4" exhaust — 171 PSI working pressure. BASE DIMENSIONS: 6' x 6' 3½" — overall 8' 4½" wide x 9' long. Mfg by Friedrich Kocks — Bremen, Germany. Recently removed from ARCO "Challenger".

ALSO IN STOCK
12" x 14" Double Gypsy Unit

ALL UNITS CAN BE DEMONSTRATED RUNNING

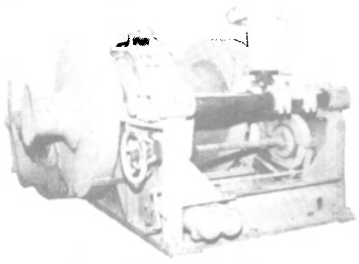
NEW — UNUSED
LINK BELT WINDLASS



Handles 7000 lb anchors — 1⅜" windlass — 56" centers — 50 HP — 230 VDC — with controls and spares.

$8750 EACH

100,000 LB. ALMON JOHNSON
Constant Tension Mooring Winches



In very good condition. Series 232 mooring & anchoring winches. Automatic self-tensioning. Wide range from 100,000 lb. line pull @ 10 FPM to 26,000 lbs. @ 400 FPM. Gypsy line pull @ 12,000 lbs. @ 25 FPM. Drum declutchable through spiral jaw clutch for free spooling. Driven by 50 HP 230 VDC motors — Westinghouse CK — 575 RPM — ½ hour — 75°C rise — stab shunt — 181 amps. Max. RPM 1900 — Cutler-Hammer brake — 18" — type NM. Complete with magnetic control panel, resistor banks & remote control pedestal and mounted master switch.

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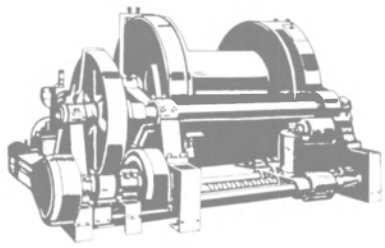
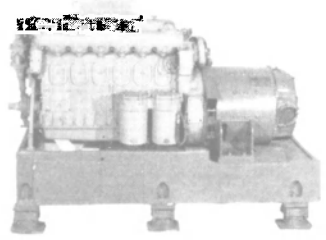
TOWING ENGINE
9 X 10 TWIN ENGINE DRIVE
Air or Steam — 125/250 PSI



Heavy-duty Clyde with 36" diameter X 51" Face single drum. Flanges 68". CAPACITY: Up to 2800' of 2" wire rope. Normal line pull 40,000 lbs@ 50 FPM. Steam or air pressure required 125 to 250 PSI. Can be adapted to electric drive or increased steam or air pressure to a capacity of 82,000 lbs @ 20 FPM. Pawl holds 270,000 lb. pull from any layer. Equipped with level wind device. Approximate weight 30,000. DIMENSIONS: 12'6" wide—6'6" high. Write for details.

ALSO AVAILABLE
Large towing ring — 36" I.D.

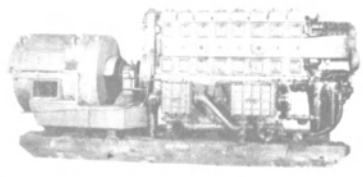
60KW DIESEL GEN. SET
DELCO GEN. — GM 6-71 DIESEL



Delco 120 volt DC 500 amp stab. shunt 1200 RPM generator. Engine is GM 6-71 — heat exchanger cooled. Radiator shown is not included.

Reconditioned — Ready To Go.

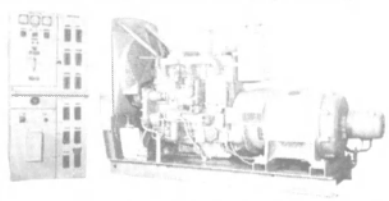
300KW GM 8-268A 120/240 DC
DIESEL GEN. SET



ENGINE: GM 8-268A — 6½ X 7 — 1200 RPM. Heat exchanger cooled. GENERATOR: Westinghouse 300 KW — 120/240 DC — shunt wound.

PRICED RIGHT

STANDBY GENERATOR
CUMMINS 75KW 93.8 KVA
DIESEL GENERATOR SET



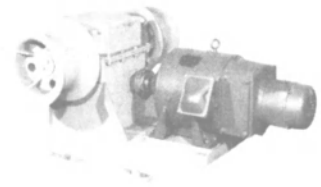
440/3/60 Generator—1200 RPM—driven by 6-cylinder Cummins diesel with electric starting. Free standing switchgear.

$9750

40KW EMERGENCY GEN. PANEL

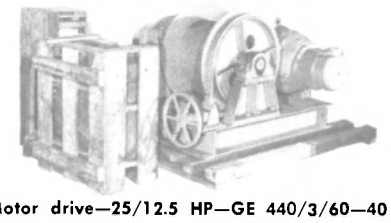
Provides necessary device for automatic startup, control & protection of emergency generator. Provides power for essential circuits in case of failure of primary source. Also automatic shutdown of generator on restoration of primary source of power.

UNUSED — IN ORIGINAL CRATE
BOAT HANDLING AND
GENERAL PURPOSE WINCH



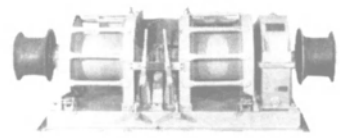
2500 LBs @ 125 FPM on one gypsy head or 1250 lbs @ 125 FPM simultaneously on each gypsy. MOTOR: 15 HP—230 volts DC—55 amps—GE. AVAILABLE: 1 Set mfg by Lakeshore with Reliance motor—1 set mfg by Ideal with GE motor. Complete with controls and disc brake.

GENERAL PURPOSE WINCH
3500 LBS AT 200 FPM



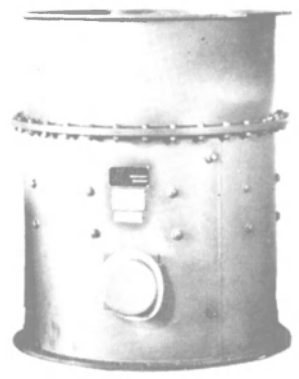
A.C. Motor drive—25/12.5 HP—GE 440/3/60—40°C AB —1750 RPM—type KR—full load amps 32. Motor drives winch through Falk reduction gear. Has compressor hand brake.

CARGO WINCH — UNUSED
2-DRUM 2-GYPSY DECLUTCHABLE



DUTY: 7400 LBS @ 220 FPM. Mfg by Western Gear Works. With repair parts. Model CWE50. Capacity of each drum 600 ft. of ¾" wire rope. MOTOR: 50 HP—230 VDC with control. 14" Cutler-Hammer brake control — 1 master switch — enclosed contactor panel & resistors.

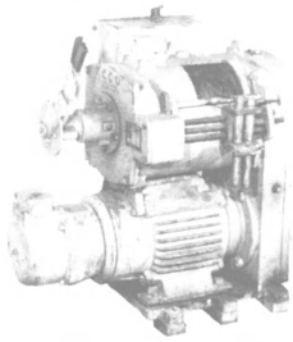
NAVY AXIAL FLOW FANS



10,000 CFM—A10A4-W5. 20" ID. MOTOR: 7.5/3.3 HP—440/3/60 — 10.5/5.2 amps — 1750/1150 RPM. Reconditioned — 9 available.

ALSO 1 20,000 CFM FAN AVAILABLE

BATHYTHERMOGRAPH WINCH



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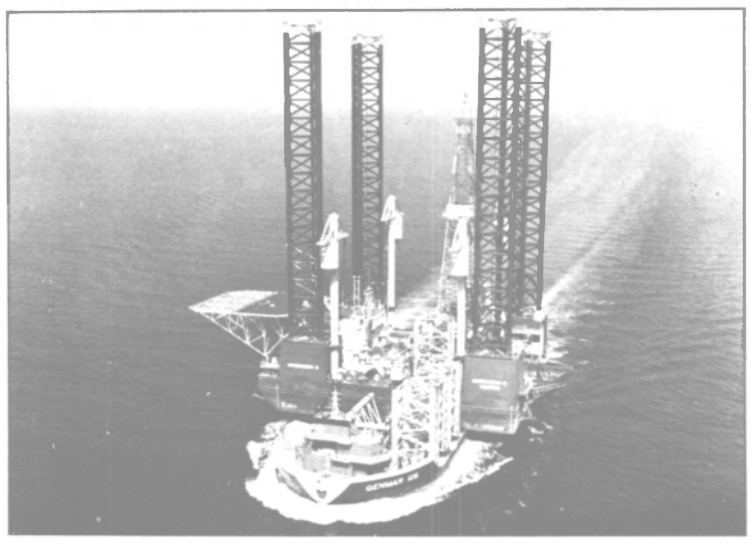
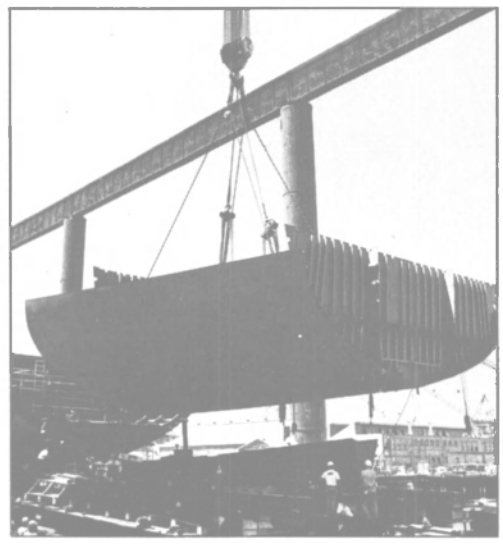


GREAT LAKES

SHIPYARDS



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SHIPBUILDING, BOATBUILDING, DRILL RIG BUILDING, AND REPAIR COMPANIES
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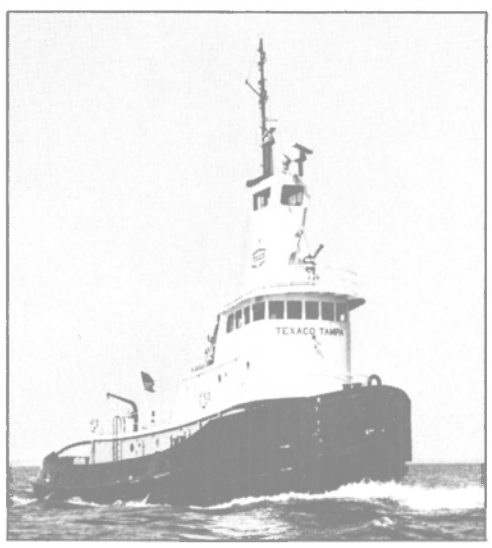
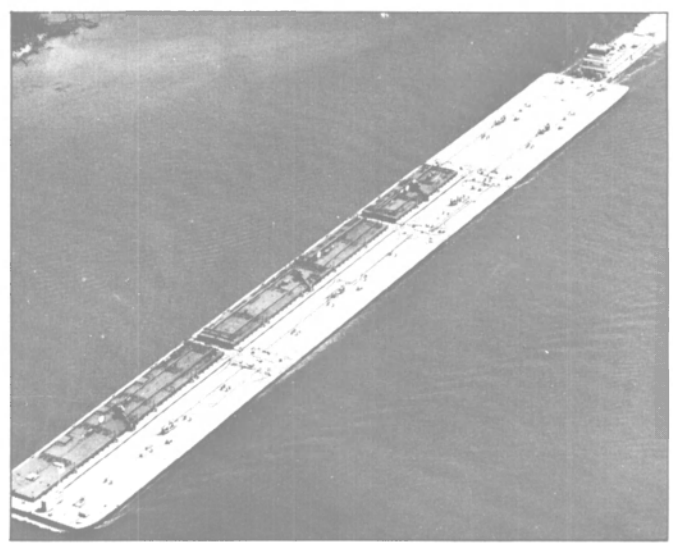


INLAND WATERWAYS



Other marine publications are now missing thousands of marine buyers who are regular readers of MARITIME REPORTER (Titles opposite). Your marine advertising can reach its full potential only in MARITIME REPORTER...where it has thousands more chances to be seen and read by marine buyers...thousands more opportunities to help you increase your marine sales in 1981.

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Send for more details or write 100 on Reader Service Card

MARITIME REPORTER AND ENGINEERING NEWS

10TH OF THE CLASS — The Navy guided-missile frigate Stephen W. Groves was launched recently from Maine's Bath Iron Works before one of the largest crowds ever to attend such a ceremony in that state. The Groves was the 10th ship of the new guided-missile frigate class to be launched by BIW and, like the other FFGs delivered to the Navy by the Maine yard, is projected to be delivered ahead of schedule and under budget. The new ship was named in memory of Ensign **Stephen W. Groves** of East Millinocket, Maine, a Navy flyer who died protecting U.S. carriers at the Battle of Midway during World War II. The Feeney-Groves American Legion Post of East Millinocket provided the color guard for the launching ceremony. The post was named in memory of the late ensign.

New Brochure On Hoists, Winches And Mooring Systems Offered By Skagit

A complete overview of its capabilities in providing the offshore oil industry with needed winch/windlass power is contained in a new brochure now available from Skagit Division of Continental Emsco.

The 16-page, full-color booklet describes the Sedro-Woolley, Wash., firm's wide variety of offshore hoists, winches and mooring systems. Also presented is a listing of drillships, semisubmersibles and pipelay barges on which this equipment is used. Actual in-use photographs of some of these vessels are included.

In addition, the brochure details the Skagit service organization, whose function is to ensure customer satisfaction through installation, operator training and trouble-shooting, all part of the total Skagit package.

Completing the literature's overview is a look at some behind-the-scenes activities, such as the engineering and manufacturing departments, as well as the firm's foundry operations.

For a free copy of the capabilities brochure, titled "Pulling for you . . . with everything we've got,"

Write 21 on Reader Service Card

Nuclear-Powered Sub 'Houston' Launched At Newport News Yard

Vice President **George Bush** (shown above) and his wife **Barbara** were the featured guests at the recent launching of the nuclear-powered submarine Houston (SSN-713) at Newport News Shipbuilding. Vice President **Bush** was the principal speaker, and **Mrs. Bush** christened the Houston by breaking the traditional bottle of champagne against the ship's bow. The **Bushes** are Houstonians.

Secretary of the Navy **John F. Lehman Jr.** also spoke. **Mrs. Mary Ann Bertles Stewart,** wife of Supreme Court Justice **Potter Stewart,** was the matron of honor.

The keel for the Houston was laid on January 29, 1979, and the submarine is scheduled for delivery in mid-1982. The ship is the 32nd nuclear-powered submarine launched by Newport News.

The Houston is the eighth Los Angeles class submarine built by Newport News. She has an overall length of 360 feet, a beam of 33 feet, a submerged displacement of 6,900 tons, and accommodations for 12 officers and 115 enlisted men. A total of 37 Los Angeles class ships are currently authorized by Congress; 33 contracts have been awarded, and 11 ships have been delivered.

$4-Million Contract For Refrigerated Cargo Equipment Awarded

Stal-Laval, Inc., Elmsford, N.Y., in conjunction with Stal Refrigeration of Norrkoping, Sweden, recently announced a contract signing with Flota Mercante Grancolombiana, S.A., to supply refrigerated cargo equipment aboard four 13,500-dwt multipurpose, semi-container ships scheduled for construction in Gdansk, Poland.

Designed by U.S. consultants J.J. Henry Co., Inc., each ship will have a carrying capacity of 500 twenty-foot containers, along with 167,000 cubic feet of refrigerated cargo space. Stal Refrigeration is supplying a system which includes screw compressors (SVK-51) operating on R22 as the primary refrigerant, with brine as the secondary agent. The plant is designed for cooling of six insulated cargo holds, having a net volume of approximately 4,890 cubic meters.

Main Iron Works Delivers Alco-Powered 'Karen Ann' To Corpus Christi Marine Services

The M/V Karen Ann (shown above), largest towboat in the fleet of the Corpus Christi Marine Services Company, was christened recently by **Karen Ann McCarthy,** daughter of CCMS board chairman **Dennis W. McCarthy**.

The towboat, which will be one of the largest operating in intracoastal waterways, was constructed by Main Iron Works in Houma, La. Equipped with two Alco engines with a combined output of 2,400 bhp at 1,000 rpm, she will work with three new barges totaling 80,000 barrels in capacity and will transport petroleum products on the Gulf Coast Intracoastal Waterway.

The Karen Ann is 85.5 feet long and 32 feet wide, with a depth of 14 feet. It is three and a half decks high, sleeps eight, and operates with a crew of six. The towboat is equipped with a Lufkin reverse reduction gear that offers a 4.5:1 gear ratio, with Airflex clutches; three 10-hp Quincy air compressors; two 75-kw GM Detroit Diesel 6-71 generator sets; and two Nabrico electrohydraulic deck winches.

Karen Ann **McCarthy,** daughter of Corpus Christi Marine Services Company board chairman **Dennis W. McCarthy,** christens towboat that bears her name. Holding microphone is **Arnold Olsen,** project engineer for the Karen Ann.

The Karen Ann, whose home port will be Corpus Christi, is on long-term charter to Saber Energy, Inc. Mr. **McCarthy,** who formed both companies, is also chairman of the board of Saber Energy.

Designers & Planners Completes Replacement Study On Alaska Ferry

Designers & Planners, Inc. (D&P) of Arlington, Va., one of three firms awarded a replacement study contract by the State of Alaska, recently delivered its conceptual design study for the replacement of the aging Tustumena. This work represents an expansion of D&P involvement in ferryboat work for the State of Alaska. Prior to this conceptual design study, D&P had provided the production drawings for the 408-foot passenger/car ferry Matanuska.

The recent replacement study, directed by **Carlos Tomassoni**, director of ship design and marine economics at D&P, was completed in the required 63 days, and involved a fleet transportation analysis leading to a conceptual design of the optimum replacement vessel.

Concept designs, incorporating the results of the hydrodynamic trade-off with payloads and schedules for completing solution fleets, were prepared and costed on the basis of similar vessels built in U.S. yards. Operating costs for competitive systems were determined, and implementation schemes for future acquisitions for the fleet taken as a whole were developed for total system comparisons.

Todd Pacific Now Authorized Repair Shop For B&W Diesel Engines

Todd Pacific Shipyards, Seattle Division, signed an agreement with B&W Diesel A/A of Copenhagen, Denmark, to be "the authorized repair shop for B&W Diesel Engines" in the Pacific Northwest area. This agreement will complement Todd Seattle's existing Sulzer engine agreement and will provide motorship operators with competent technical support of large, slow-speed engines in the Pacific Northwest. Todd Seattle can now provide repair crews to all Northwest ports as well as riding crews when required. The B&W agreement was finalized in Seattle by **Carsten Skriver**, B&W Technical Service manager, and **John Gilbride Jr.**, vice president and general manager of Todd Pacific Shipyards, Seattle Division. Todd Seattle signed their agreement with Sulzer Brothers, Inc. in January of this year.

Griffin-Alexander Subsidiary Asks Title XI On $25-Million Jackup

G & A Ltd. III, a subsidiary of Griffin-Alexander Drilling Company, Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of one jackup drilling rig intended for operation in the U.S. Gulf of Mexico. Bethlehem Steel Corporation, Sparrows Point, Md., is the proposed builder, with delivery estimated for March 1982.

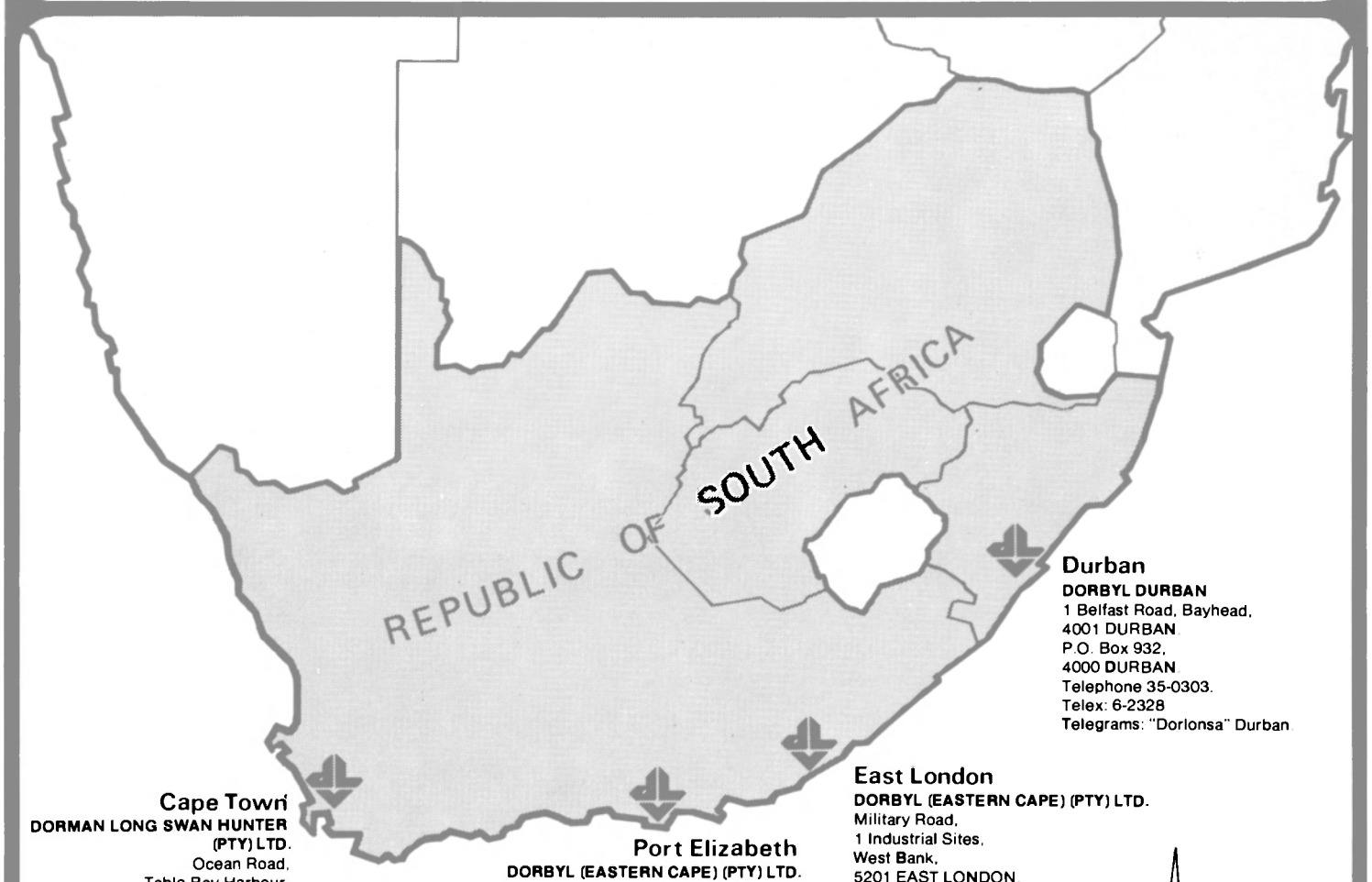
The requested guarantee is for $18,576,000, which is 75 percent of the estimated cost of $24,769,000 for the drilling rig.

Richard Parks Named Senior VP-Operations For Farrell Lines

James P. Horn, president of Farrell Lines Incorporated, has announced the appointment of **Richard V. Parks** as senior vice president-operations. He began his career in the shipping industry in 1958 as an employee of Sea-Land Service Inc. He spent 17 years with Sea-Land in various management positions, both in the United States and Europe.

In 1975, Mr. **Parks** joined Seatrain Lines as vice president of that company's North Atlantic Services, and in 1976 was promoted to president-Seatrain Europa. He joined Farrell Lines in March 1979 as vice president-North Europe. When Farrell Lines canceled its North Europe Services in November 1980, he was appointed senior vice president and assistant to the chairman of the board, the position he held at the time of his appointment.

The DORBYL GROUP and SHIP REPAIR in SOUTH AFRICA



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Telegrams: "Trivco — Port Elizabeth".

DURBAN.
2 Belfast Road,
Maydon Wharf,
Bayhead, 4001 DURBAN.
P.O. Box 29026, 4057 MAYDON WHARF.
Telephone 35-5331.
Telex: 6-2874.
Telegrams: "Trivco — Durban".

DORBYL LIMITED

Jonsson S. 3153.

GM-Powered Towboat 'Jeanie-K' Delivered By Riverway Shipyard

Riverway Shipyard Company, Grafton, Ill., recently completed construction of the 1,200-bhp towboat Jeanie-K (shown above) for Riverway Harbor Service, New Orleans. The new vessel will be used as a fleet boat and a shuttle boat in the New Orleans area.

The Jeanie-K is 65 feet long, 24 feet wide, and 10 feet deep. She has an operating draft of 8 feet. The bow rake headlog and corners were built of ¾-inch plate with ¾-inch rub bars welded over the corners for added protection. The towknees, headlog, and rigging deck were outfitted with rubber bumpers from B-J Marine Products. The rigging deck is also outfitted with a Class C-3 LO-HED car puller.

The boat was built with a fully equipped galley, internal stairs, two bathrooms, quarters for six crew members, an electronics room, and a 9-foot by 10-foot pilothouse with a 26-foot eye level. The main stack is removable for easy access to the engine room.

The two General Motors Detroit Diesel Allison main engines were furnished by Western Diesel Services. They are model 16V92, each rated at 600 bhp at 1,800 rpm. They are air operated from the pilothouse by AMOT air controls.

The Twin Disc reverse-reduction gears turn the shafts at 7:1 ratio, and were also supplied by Western Diesel. The stainless-steel, four-blade propellers are 72-inch diameter by 64-inch pitch. They were fitted to two 6-inch tailshafts with three chrome sleeves each.

The two steering rudders and four flanking rudders have 6-inch stocks with upper and lower mild steel sleeves. The sleeves turn in brass bearings lubricated by grease. The steering and flanking rudders are individually controlled by double-acting hydraulic cylinders. Power and control to the cylinders is supplied by a two pump/motor combination of variable volume furnished by Skipper Hydraulics, Inc. Complete control of the motor operation is handled from the pilothouse.

Electric power is derived from two Detroit 3-71 diesels operating at 1,800 rpm driving 3-phase, 30-kw International Electric generators. One generator is air start; the other battery start. Voltage is reduced to proper operating levels by transformers through a Simplex modular control system. Compressed air for engine starting, engine controls and whistle is supplied by two Quincy air compressors with 5-hp, 1,800 rpm motors.

A Pan American Systems Corporation's 18-point monitoring and alarm system maintains a constant check on main and auxiliary engines and miscellaneous, associated equipment in the engine room. A pilothouse information panel provides auxiliary monitoring signals.

Deck machinery includes two NABRICO hydroelectric 40-ton winches. Fire protection on the boat is provided by the standard remotely operated fire pump hooked directly to two hose stations on the exterior of the vessel. The interior is fully protected by manually operated portable CO_2 fire extinguishers.

The pilothouse, crew quarters, galley, and two bathrooms are fully insulated for heat, air-conditioning, and sound. The boat is air-conditioned for comfort. A St. Louis Ship FAST System LS-1 was installed for treatment of sewage.

A Carlisle & Finch 500-watt xenon searchlight and two Carlisle & Finch 14-inch, 1,000-watt incandescent searchlights are located on the pilothouse roof. Directional spotlights are located on all four corners of the vessel at the second deck level. The pilothouse is fitted with a Kahlenberg airhorn and radar manufactured by Furuno.

Seabarge Asks Title XI On Three Ocean Barges To Cost $5 Million Total

Seabarge, Ltd., Dallas, has applied for a Title XI guarantee to aid in financing the construction of three 250-foot, oceangoing deck barges. The applicant indicated that the barges will be used in offshore drilling, construction and supply activities in the Gulf of Mexico.

Misener Industries, Inc., St. Petersburg Beach, Fla., was listed as the proposed builder, with deliveries scheduled for the fourth quarter of 1981. The requested guarantee is for $4,580,000, which is 87½ percent of the estimated $5,235,000 cost of the three barges.

Fireboat Design Contract To Nickum & Spaulding

Design work is beginning at Nickum & Spaulding Associates, Inc., the Seattle-based naval architecture/marine engineering firm, on the Seattle Fire Department's two new 1.6-million-dollar multipurpose harbor service crafts. The recent award culminated a five-month design competition and evaluation by Fire Department personnel.

The 93-foot aluminum-hull vessels were described by Seattle Fire Chief **Bob Swartout** in the department's award announcement as ". . . a model for the entire industry. Their (N&SA's) progressive and innovative design will provide the city with years of dependable, up-to-date service."

Each vessel will feature three diesel engines, a maximum speed of 28 knots, and a 7,500 gpm (at 150 psi) pumping capacity. The wheelhouses will be fully automated and each vessel will have an emergency medical treatment room.

In addition to three manually operated deck monitors (one forward and two aft), the vessels will have a remote operated telescoping monitor with a maximum elevation of about 40 feet, and under-dock monitors located in the bow at the waterline, port and starboard.

"The under-dock monitors are remote controlled both for water flow, from a mist to a powerful stream, and for direction. This will allow them to double as bow thrusters for station keeping," said **Paul A. Gow**, N&SA naval architect heading the design team.

Penco Appointed U.S. Agent For Bremer Vulcan

The Penco Division of Hudson Engineering Company (Hoboken, N.J.) and Bremer Vulcan Schiffbau und Maschinenfabrik of West Germany recently announced the appointment of Penco as the United States agent for Bremer Vulcan shipyard in Bremen, Germany.

Bremer Vulcan's facilities and services include: graving dock for vessels up to ULCC-size; floating docks for smaller vessels; performance of all steel and deck repairs as well as preservation work; a wide range of engine repairs and machining of engine parts; and world wide repair service coverage.

In addition, Bremer Vulcan is licensee for MAN diesel engines, Stal-Laval turbines, Foster Wheeler and Babcock & Wilcox boilers, and La-Mont exhaust gas boilers.

Bremer Vulcan will provide foreign yard facilities for Penco's "Turn-Key" approach as regards IGS/COW IMCO requirements.

For further information on the Bremer Vulcan Shipyard,

Write 23 on Reader Service Card

NABRICO Delivers Two Barges To Higman Towing

Nashville Bridge Company (NABRICO), Nashville, Tenn., has delivered two specially designed 264-foot single-skin petroleum barges to Higman Towing Company, Orange, Texas.

The barges, which have a combined capacity of 42,700 barrels or 1,793,000 gallons, incorporate special NABRICO design features that upgrade the company's long-established standards for single-skin petroleum barges.

Each barge is constructed with a special shaped bow for speed and maneuverability on the intracoastal waterways. The cargo pumping system provides for a discharge rate of 2,800 gallons per minute for a total discharge of each barge in slightly more than five hours.

The barges are certified by the U.S. Coast Guard for carriage of Grade "A" or lower petroleum products and classed by the American Bureau of Shipping for A-1 oil barge.

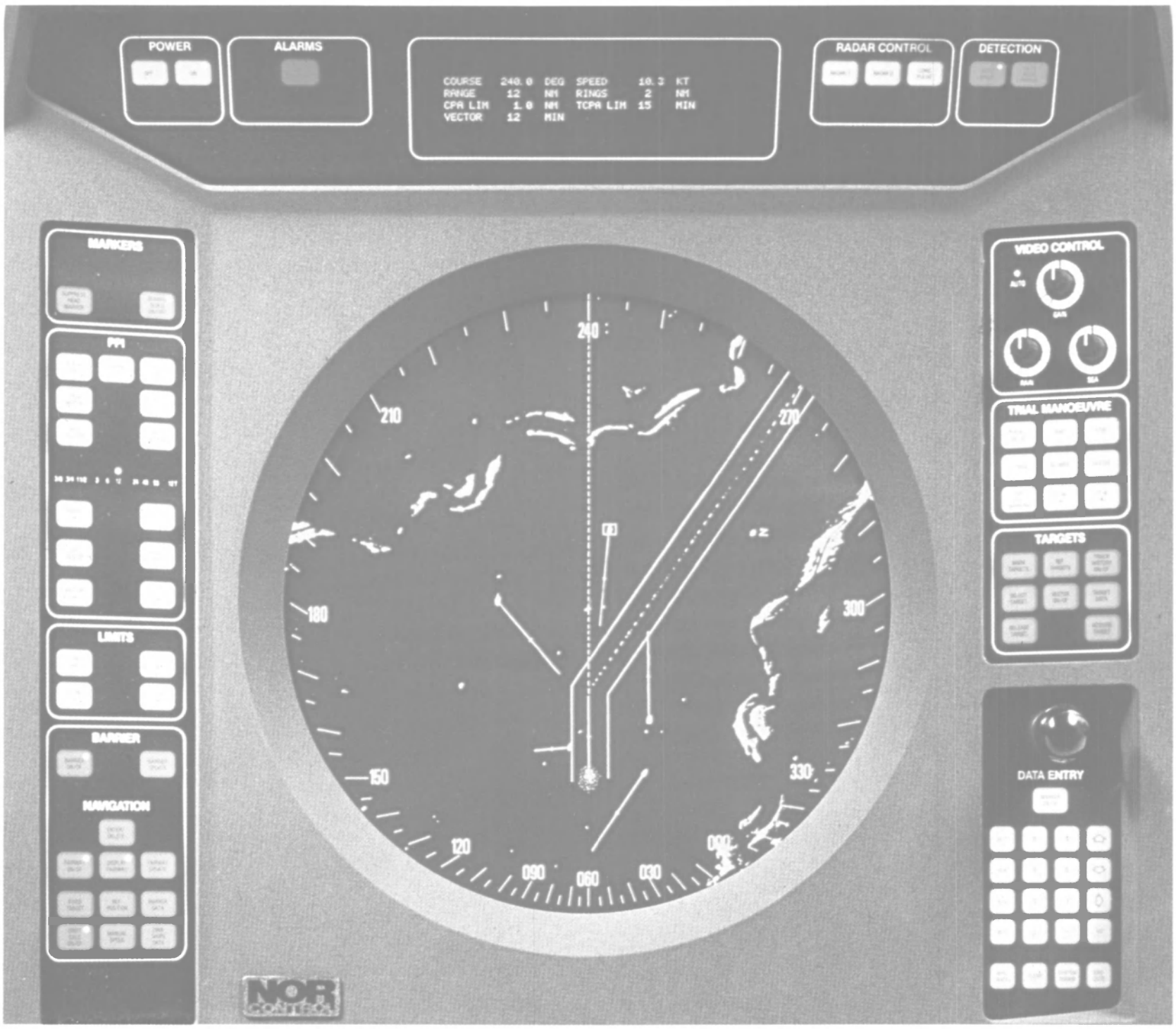
Gary Bartman Named Marketing Manager For Hydranautics Hydraulic

Gary Bartman has been promoted to manager of marketing for Hydranautics Hydraulic Systems (Goleta, Calif.), according to **Ed Krabacher**, executive vice president and general manager.

In his new position, Mr. **Bartman** will direct the marketing and sales offorts for all Hydranautics systems for shipyard and offshore-related industries worldwide.

Previously, as manager of offshore sales, he was responsible for the firm's sales and hydraulic systems to customers with offshore oil-related applications.

DATABRIDGE 7
THE ULTIMATE ARPA



DataBridge 7 is a third-generation Automatic Radar Plotting Aid that acquires and tracks up to 50 radar targets and continuously displays collision avoidance data on the most threatening 20. It will sound a collision warning alarm whenever any of these target tracks exceed user specified values for closest point of approach and time to closest point of approach. As a collision-avoidance system, it meets or exceeds all IMCO recommendations and U.S. Maritime Administration (USCG) Standards, soon to be mandatory for all vessels over 10,000 gross tons.

The DB-7 acquires targets throughout the operator-designated search area—not just when a target penetrates a guard ring. The system displays anti-collision data in the form of vectors superimposed over a daylight viewable 16" radar presentation. Operator selection of true or relative vectors, and vector length provide the utmost in system flexibility. Full trial maneuver facilities, including operator selection of time-to-maneuver, quickly and clearly show the results of maneuver alternatives. The DB-7 warns the operator when the proposed maneuver does not satisfy his CPA and TCPA criteria or when it will bring him into conflict with a previously non-threatening target.

And DataBridge 7 is much more than a simple ARPA. Channels and fairways, radar locked to fixed geographical references, can also be displayed. In addition to warning the operator if the vessel strays from its intended track, this display provides the information that is vital to assure that a maneuver to avoid a collision with another ship does not result in a collision with the bottom.

And Norcontrol hasn't forgotten the operator. In addition to a control panel layout designed to simplify operation and reduce fatigue, the DB-7 includes a built-in training simulator. Preprogrammed training exercises are presented to the officer to develop his ability to operate the system and effectively use all of the information it provides. Operational problems related to new crew members or crew turnover are virtually eliminated.

Finally, Norcontrol's unquestioned reputation for reliability and service are your best assurance that the DB-7 will operate perfectly and keep on working for years to come.

NOR CONTROL

Norcontrol Division of Kongsberg AS, P.O. Box 145, Horten, Norway 3191 • (47-33) 41-436
Maritime Division, Kongsberg North America, Inc., 135 Fort Lee Rd., Leonia, NJ 07605 • (201) 947-6788

Write **472** on Reader Service Card

DeJong & Associates To Design New Tug Series For Corps Of Engineers

The Corps of Engineers Marine Design Center in Philadelphia has contracted with the Jacksonville, Fla., naval architectural firm of Norman N. DeJong & Associates, Inc. for the design of a new series of twin-screw tugs. DeJong specializes in tugboat designs. The firm has designed tugs with a variety of propulsion systems, including rotating and cycloidal propellers.

The Superior-class tugs (named after Lake Superior) will be 105 feet by 34 feet. They will feature an operating draft ranging from 11 feet to 13 feet 6 inches, one-compartment subdivision, and meet damage stability criteria not normally associated with tugs.

The vessels will be ABS-classed for unlimited ocean service, ice strengthened, be loadlined, and constructed in accordance with USCG Subchapter I. Gross tonnage will be less than 200 tons. Design emphasis has been placed on noise abatement, maneuverability, fuel efficiency, low-speed handling characteristics, and crew safety and comfort.

An extensive model testing program, including flow and resistance tests with several different nozzle configurations, will be conducted. The model will be constructed by DeJong & Associates in its model shop in Jacksonville.

Major equipment will be selected within the next few months. It is anticipated that the tugs' twin engines with ducted propellers will develop approximately 80,000 pounds of bollard pull. Slip clutches will allow propeller control down to approximately 15 rpm for maneuvering around floating equipment, docks, and tending in tight quarters.

Bailey Reorganizes Miami Operations—Paul Gausted Appointed Vice President

According to **Sigurd Nilsen,** president of Bailey Refrigeration, the firm's highly successful Miami branch has been reorganized as a separate company within the Bailey group of companies. "The growth of cruise activity out of south Florida has been phenomenal," says Mr. **Nilsen,** explaining the move. "We felt a fully independent operation was needed to give it the service it deserves."

Operating under the name Bailey Refrigeration and Supply Company, the new company will offer a wide variety of refrigerators and freezers, ice cubers, water coolers, and air-conditioners specially engineered for marine use. An experienced service and engineering staff will be supported by the South's largest inventory of repair and maintenance parts.

Among the parts lines carried by Bailey in Miami are Carrier, York, Tecumseh, Copeland, and Trane, as well as Kold-Draft ice cuber parts and Danfoss controls. The company will also function as an authorized North American parts and service center for Electrolux of Sweden.

Paul Gausted

Mr. **Nilsen** announced that the newly appointed vice president, **Paul Gausted,** would head the day-to-day operation of Bailey Refrigeration and Supply. "Mr. **Gausted** has been doing the job since Bailey first opened in Miami as a branch six years ago." He has more than 30 years experience in marine refrigeration and air-conditioning, with special expertise in cruise ship operations.

Bailey Refrigeration and Supply is located midway between Port Everglades and downtown Miami at 524 N.E. 190th Street, North Miami, Fla. 33179; telephone (305) 651-4160.

Mardrill Requests Title XI For Two Drilling Barges To Cost $20.5 Million

Mardrill, Inc., Lafayette, La., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of two 190-foot, inland waterway drilling barges. Intended for operation on the inland waters of Louisiana and Texas, the vessels are being built by Par Industries, Inc., New Iberia, La. They are scheduled to be delivered in July and August.

The requested guarantee is for $15,375,000, which is 75 percent of the $20,500,000 estimated cost of the two barges.

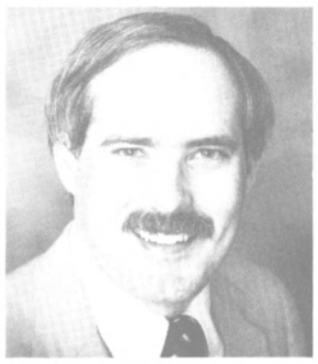
New Worldwide Service Company Formed By Racal-Decca Group

The formation of a new company, Racal-Decca Service Limited, was announced recently. The Croyden, England-based company will coordinate and expand the worldwide marine electronics service operations of the Racal-Decca group of companies.

The existing network of service centers at 531 ports in 68 countries will form the basis of the new operation. For the first time, Racal-Decca will service facilities in the United Kingdom for any type of marine electronics equipment, in addition to Racal-Decca products. The new company will operate on a 24-hour-a-day basis, supplying spares and service support facilities as well as coordinating the world service organizations.

Racal-Decca Service Limited will have facilities for servicing all types of navaids, radar, echosounders, communications and marine control systems. It will also undertake the refurbishing and modification of existing equipment.

Van Dawark Appointed President Of Dillingham Maritime Division



Thomas V. Van Dawark

Thomas V. Van Dawark, vice president and general manager of Foss Alaska Line, Seattle, Wash., has been named president, Dillingham Maritime-Ocean Transportation Services Division.

The announcement was made by **David B. Ballash,** Dillingham group vice president-maritime.

The Ocean Transportation Services Division, headed by Mr. **Van Dawark,** is part of Honolulu-based Dillingham Corporation's maritime group and comprises Ocean Transportation Services, Inc. of Houston, Texas, and the Dillingham Maritime ocean marketing services group, based in Seattle, Wash.

Ocean Transportation Services, Inc. is active in coastal and ocean towing, barging, and related maritime services within the Gulf Coast area. The company, formed in July 1980, offers worldwide shipping operations with special emphasis on handling of cargoes bound to and from Mexico, as well as Central and South American countries.

Mr. **Van Dawark** is also responsible for the Dillingham Maritime ocean marketing services group with offices in Seattle; Anchorage, Alaska; San Francisco, Calif.; Houston; and New York City. The group handles the marketing of all Dillingham Maritime's offshore towing and transportation services.

Mr. **Van Dawark** joined Foss Alaska Line, part of Dillingham's maritime group, in 1976, and held a variety of positions with the company prior to being named vice president and general manager in November 1979. Before joining Foss Alaska Line, he was with Matson Navigation Co. and American President Lines.

Avondale Gets $300-Million Contract From Exxon For Three Products Carriers

Avondale Shipyards, Inc., a unit of Ogden Corporation, has received a $300-million contract from Exxon Company U.S.A. of Houston for construction of three 43,000-dwt products carriers. The ships will be powered by fuel-efficient, five-cylinder diesels of Sulzer design, to be manufactured in Japan under license and shipped to Avondale for final assembly. The 17,000-bhp, slow-speed engines will be capable of operating on heavy fuel oil.

Cargo pumping will be accomplished through vertical deepwell motor-driven centrifugal cargo pumps with nitrogen stripper system with suction from a pump in the double bottom to maximize removal of cargo.

A complete cargo control room including remote operation of cargo and ballast pumps, valve actuation, inert gas systems and remote tank gauging display and alarms is provided. The ships incorporate the latest U.S. Coast Guard pollution prevention requirements, complete double bottoms, protectively located segregated ballast, inert gas system, improved steering and collision avoidance radar systems.

Exxon will use the new ships to transport lube oil, solvents, chemicals, and other products from its Gulf Coast refineries to distribution terminals on the U.S. East Coast.

Avondale already has a comfortable backlog of orders; construction of the Exxon ships will begin in 1982, with deliveries scheduled from October 1983 to April 1984.

Brochure And Technical Data Sheets Describe ZF Marine Gears

An eight-page color brochure and various technical data sheets on ZF marine gears are now available from Zahnradfabrik Friedrichshafen AG of West Germany.

Superior quality, high efficiency, low weight as well as small dimensions and high reliability of ZF marine gears are due to many individual components working together, the manufacturer states. Due to its close contact with engine manufacturers and shipyards, the ZF engineering department is familiar with the clients' requirements and wishes.

ZF marine gears are designed and constructed according to the specifications of the various acceptance authorities. Full test or test bench acceptance by the authority designated by the customer can be carried out on request. ZF produces a full range of marine gears for workboats and high-speed craft.

For a free copy of the ZF brochure and data sheets,

Write 26 on Reader Service Card

Admiral Fugaro Named Senior Vice President Of Great Lakes Towing

Rear Adm. **Anthony F. Fugaro** has been appointed senior vice president of The Great Lakes Towing Company in Cleveland, Ohio, it was announced by **Charles R. Khoury,** chairman and chief executive officer of The Great Lakes Towing Company. Admiral **Fugaro** will also serve as president of Admiral Towing & Barge Company, an ocean subsidiary based in Florida.

After 32 years of Coast Guard service, Admiral **Fugaro** recently retired in Cleveland, where he supervised all Coast Guard activities on the Great Lakes. In his prior assignment at Coast Guard Headquarters he was director for Coast Guard programs in port safety, aids to navigation, deepwater ports, and marine environmental protection. He also served as U.S. delegate to the IMCO Marine Environment Protection Committee.

Earlier assignments on the Great Lakes included commanding an icebreaking buoy tender. He later served at Sault Ste. Marie where he supervised Great Lakes season extension activities for the Coast Guard.

◄ **Write 282 on Reader Service Card**

Two Power Plant Barges For The Philippines Completed By Hitachi

Built by Hitachi Zosen for the National Power Corporation (NPC) of the Philippines, two power plant barges — Napocor Power Barge 1 and 2 (shown above)—were completed recently at the Osaka Works (Sakai), and are the first such facilities to be constructed by Hitachi.

Upon arrival at Naga on the island of Cebu, the power plants will be subjected to tests by Hitachi to confirm performance. NPC is scheduled to take delivery in June. Thereafter, the two barges will be moored together at one of three locations: Naga, Bacolod on Negros Island, or Isabel on Leyte Island. They will be moved on a fixed schedule to supply the power needs of these islands.

Planned by NPC as part of its program to meet the nation's growing electricity needs, both barges are complete self-contained power plants with power generators, switchboards, substations, and transmission facilities. They are to be moored near shore and connected with land transmission lines that will carry power to homes and factories.

Each barge is equipped with four Siemens 8,000-kw generators driven by four 11,600-bhp Hitachi / Sulzer ZV40 / 48 diesel engines, and can deliver a maximum power output of 32 megawatts.

This project was planned in conjunction with special credit agreements between the Japanese Government and ASEAN Countries. The contract was concluded in 1979 on a turnkey basis, with Hitachi Zosen handling all aspects of the project — from design and manufacture of the plant barges and related facilities to transportation, installation, and testing.

The barges measure about 213 by 100 by 30 feet, and displace approximately 5,400 tons when fully loaded.

Waegner Named President And GM Of Bay And River Navigation Company

Robert E. Waegner, previously executive vice president, has been named president and general manager of Bay and River Navigation Company. He succeeds **John W. Siemer**, who was elected chairman of the board.

Prior to joining Bay and River Navigation Company in October 1979, Mr. **Waegner** held various executive positions with Seatrain and Matson Navigation Company.

Acadiana Shipbuilding Completes Yard Expansion

Acadiana Shipbuilding Corporation's president **Glenn Guidry** has announced the recent expansion of the New Iberia, La.-based shipyard. The company, with the addition of a fourth construction pad, crane, and associated welding equipment, can now deliver their standard 120-foot by 30-foot by 7-foot deck barges at the rate of three each month. Three 120-foot deck barges at various stages of construction and three 65-foot, ABS-classed oil pollution cleanup barges can be seen.

Acadiana Shipbuilding began construction of its first barge in October 1977, and has since delivered more than 55 barges. While the company's main product line has been their standard 120-foot deck barge, they have also built several pushboats, quarter barges, spud barges and oil pollution cleanup equipment. The three 65-foot oil pollution barges now are equipped with oil/water separators, transfer pumping and piping systems, and steam coil heating system. Seven of these barges are being constructed by Acadiana and will be shipped to Saudi Arabia for operation by the port authority.

The company has also just completed preliminary design details for a 60-foot by 24-foot by 9.5-foot pushboat. This vessel is designed to accommodate a variety of main engines up to a total of 1,000 shp.

For more information on Acadiana Shipbuilding Corporation and its barges or pushboats,

Write 24 on Reader Service Card

MarAd Approves Title XI On Five Beker Vessels

The Maritime Administration has approved in principle applications from subsidiaries of Beker Industries Corporation, Greenwich, Conn., for Title XI guarantees to aid in financing the construction of two dredges and the reconstruction of three sulfur barges. The builder of the dredges is Ellicott Machine Corp., Baltimore, with deliveries scheduled for May and August 1981. One will be a 275-foot overburden dredge, the other a 230-foot matrix dredge. Both are to be owned by Beker Maritime Company and used in connection with the affiliated Beker Phosphate Corporation operation in Manatee, Fla.

Geosource, Inc., Harvey, La., is reconstructing the three sulfur barges with new midbodies for Beker Transportation Company. Two will be 260 feet in length, and one 240 feet. One was delivered in January and the other two are scheduled for delivery in April and May. They will be engaged in the dedicated carriage of liquid sulfur between Beker facilities at Marseilles, Ill., and Taft, La.

The approved guarantee is for $10,768,000, which represents 75 percent of the actual cost of the dredges and 87½ percent of the actual cost of the barges.

Racker And Vincent Named Assistant Vice Presidents At Lykes Bros. Steamship

Two new officers of Lykes Bros. Steamship Co., Inc., a subsidiary of The LTV Corporation, were announced by Lykes chairman **Joseph T. Lykes. Merritt E. Racker** has been named assistant vice president, operating division, and **Elizabeth Wetzel Vincent** has been named assistant vice president, marketing.

Mr. **Racker** joined Lykes in 1956 as part of the company's management training program. In 1959 he was transferred to Lykes Lines Agency, a wholly owned subsidiary, and served as operations assistant in Bremen, Germany, and Genoa, Italy. He returned to the parent company in 1963 as service supervisor in the operations division, and in 1972 was named to his most recent post, manager, operating division, operations group.

Mrs. **Vincent** joined the company in 1978 as administrative assistant, planning. In 1979 she was named manager, planning, finance group.

Builders and owners at recent keel-laying included (L to R): **Joe Barrios,** Levingston; **Russ Teel,** Levingston; **Eddie Uher,** Levingston; **Kyle Cooper,** Levingston; **Merrick Harmon,** Noble Drilling; **Amos Runner,** Noble Drilling; **Woody Gaines,** Levingston; **Max Smith,** Noble Drilling; **Dick Franklin,** Levingston; **George Matetich,** Noble Drilling; **Dick Fugal,** Noble Drilling; **Johnny Hoffman,** Noble Drilling; **Sparky Balla,** Noble Drilling; **Curtis Harrison,** Levingston; **Major Inman,** Levingston; and **George Istre,** Levingston.

Levingston Lays Keel For First Jackup Rig For Noble Drilling

Levingston Shipbuilding Company of Orange, Texas, recently laid the keel for the first of two Levingston-designed jackup drilling rigs to be built for Noble Drilling Company of Ardmore, Okla. The first rig will be named the Ed Holt; the second rig has not been named. Noble Drilling, a leading domestic drilling contracting firm formed in 1921, is a wholly owned subsidiary of Noble Affiliates, Inc.

Attending the ceremony and representing Noble were: **George Matetich,** president; **Merrick Harmon,** vice president and manager of operations; **Dick Fugal,** vice president of marketing; **Johnny Hoffman,** division manager, New Orleans; **Max Smith,** assistant divisional manager, New Orleans; **Amos Runner,** assistant general manager, Mid Continent Division; and **A.D. (Sparky) Balla,** owner's representative. Representing Levingston were: **Joe Barrios,** vice president of operations; **Russ Teel,** director of steel trades; **Eddie Uher,** project engineer; **Kyle Cooper,** program manager; **Woody Gaines,** director of industrial engineering; **Dick Franklin,** steel superintendent; **Curtis Harrison,** director of outfitting; **Major Inman,** director of contracts; and **George Istre,** program manager.

Overall dimensions of the triangular shaped rig are 200 feet by 186 feet by 23 feet. The three 414-foot-long legs will enable the rig to drill in 300 feet of water to a depth of 25,000 feet. Designed to withstand winds of 109 knots and seas of 50 feet, the rig will provide accommodations for 54 people.

W.R. Laws Elected To Executive VP At Geosource

Geosource Inc., Houston, Texas, recently announced its board of directors has elected **William R. Laws** to the position of executive vice president. He will have corporate operating responsibility for the company's operations which serve the petroleum exploration, petroleum development and electronics markets.

Mr. **Laws** joined Geosource in 1976 as vice president-Operations and became president and general manager of the Exploration Services Division in 1976. He was named senior vice president-Operations in August 1979.

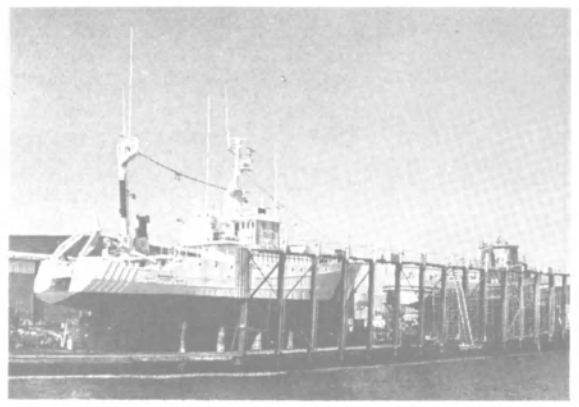
Prior to joining Geosource, Mr. **Laws** held senior management and operating positions with Dresser Industries for more than 13 years and with Schlumberger for eight years. He has extensive worldwide experience in geophysical, wireline and well servicing businesses. He served with the U.S. Air Force and is a graduate of West Texas State University.

Parker Requests Title XI On Four Towboats And 50 Barges To Cost $24.2 Million

Parker Towing Company, Inc., Tuscaloosa, Ala., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of four 80-foot towboats, forty-eight 195-foot hopper barges and two 297-foot tank barges. All are intended for operation on inland rivers.

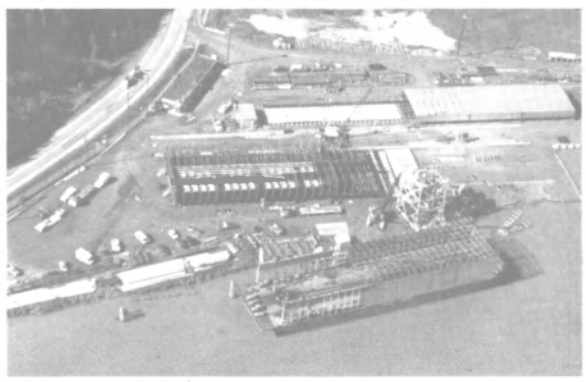
The application did not name proposed builders of the vessels or scheduled delivery dates.

The requested guarantee is for $20,000,000 of the total estimated cost of $24,200,000 for all vessels.



TWO AT A TIME — Newport Ship Yard, Inc. in Newport, R.I., recently made a double lift with its 3,000-ton drydock when the Raytheon research vessel Sub Sig II (white hull) and the U.S. Navy tug Keokuk (YTB-771) were in the yard for maintenance and repair work. Vessels displace 280 and 350 tons, respectively. Sub Sig II is based at Newport, the Keokuk at Portsmouth, N.H. Newport Ship's railway drydock has side transfer capability up to 500 tons.

Sause Bros. Barge-Building Facility In Coos Bay Nearing Completion



The economy will experience a boost in the Coos Bay/North Bend, Ore., area soon. **John Sweet**, director of marketing and sales for Sause Bros., Coos Bay's ocean towing company, says that its new barge-building facility (shown above) is expected to be finished by mid-year. The first oceangoing barge, designed to haul lumber with a petroleum backhaul, is already under construction on the ways. It is scheduled to be finished by late summer.

Building its own barges is a new venture for Sause Bros. They have previously been built in Portland and at a yard on the Gulf Coast. According to Mr. **Sweet**: "We feel that we will have a better control of construction quality as well as overall cost, in addition to adding substantially to the economy of this area." The company expects to provide steady employment for 40 people.

The drydock's cost will be in excess of a million dollars, and will accommodate two barges at a time — one under construction and maintenance on another. The barges are built on shore over two parallel sets of maine railway tracks. When completed, the barge is raised off the foundation blocks and rolled into the water on railcar wheels. The procedure is reversed when bringing a barge in for maintenance. The 7,000-dwt barge presently under construction is 286 feet by 76 feet by 22 feet. When empty, it will draw 3 feet of water; 18 feet when loaded to capacity.

Sause Bros. now operates a fleet of 12 tugboats and 17 barges that are primarily engaged in lumber transportation to southern California from ports in Oregon, Wash-

Navy Awards Tracor $7.6-Million Contract

phases of sonar technology programs, and sonar and fire control systems for the Navy's nuclear

neering evaluations and technical engineering in support of these systems.

will provide assistance to Navy personnel in solving general problems associated with procurement an[illegible]ins[illegible]a[illegible]ion of sonar and fire

Builders and owners at recent keel-laying included (L to R): **Joe Barrios,** Levingston; **Russ Teel,** Levingston; **Eddie Uher,** Levingston; **Kyle Cooper,** Levingston; **Merrick Harmon,** Noble Drilling; **Amos Runner,** Noble Drilling; **Woody Gaines,** Levingston; **Max Smith,** Noble Drilling; **Dick Franklin,** Levingston; **George Matetich,** Noble Drilling; **Dick Fugal,** Noble Drilling; **Johnny Hoffman,** Noble Drilling; **Sparky Balla,** Noble Drilling; **Curtis Harrison,** Levingston; **Major Inman,** Levingston; and **George Istre,** Levingston.

Levingston Lays Keel For First Jackup Rig For Noble Drilling

Levingston Shipbuilding Company of Orange, Texas, recently laid the keel for the first of two Levingston-designed jackup drilling rigs to be built for Noble Drilling Company of Ardmore, Okla. The first rig will be named the Ed Holt; the second rig has not been named. Noble Drilling, a leading domestic drilling contracting firm formed in 1921, is a wholly owned subsidiary of Noble Affiliates, Inc.

Attending the ceremony and representing Noble were: **George Matetich,** president; **Merrick Harmon,** vice president and manager of operations; **Dick Fugal,** vice president of marketing; **Johnny Hoffman,** division manager, New Orleans; **Max Smith,** assistant divisional manager, New Orleans; **Amos Runner,** assistant general manager, Mid Continent Division; and **A.D. (Sparky) Balla,** owner's representative. Representing Levingston were: **Joe Barrios,** vice president of operations; **Russ Teel,** director of steel trades; **Eddie Uher,** project engineer; **Kyle Cooper,** program manager; **Woody Gaines,** director of industrial engineering; **Dick Franklin,** steel superintendent; **Curtis Harrison,** director of outfitting; **Major Inman,** director of contracts; and **George Istre,** program manager.

Overall dimensions of the triangular shaped rig are 200 feet by 186 feet by 23 feet. The three 414-foot-long legs will enable the rig to drill in 300 feet of water to a depth of 25,000 feet. Designed to withstand winds of 109 knots and seas of 50 feet, the rig will provide accommodations for 54 people.

W.R. Laws Elected To Executive VP At Geosource

Geosource Inc., Houston, Texas, recently announced its board of directors has elected **William R. Laws** to the position of executive vice president. He will have corporate operating responsibility for the company's operations which serve the petroleum exploration, petroleum development and electronics markets.

Mr. Laws joined Geosource in 1976 as vice president-Operations and became president and general manager of the Exploration Services Division in 1976. He was named senior vice president-Operations in August 1979.

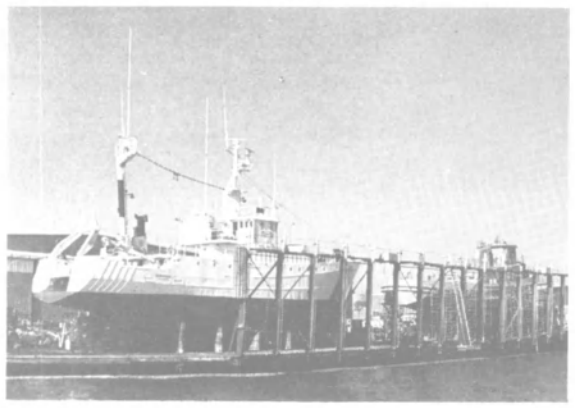
Prior to joining Geosource, Mr. Laws held senior management and operating positions with Dresser Industries for more than 13 years and with Schlumberger for eight years. He has extensive worldwide experience in geophysical, wireline and well servicing businesses. He served with the U.S. Air Force and is a graduate of West Texas State University.

Parker Requests Title XI On Four Towboats And 50 Barges To Cost $24.2 Million

Parker Towing Company, Inc., Tuscaloosa, Ala., has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of four 80-foot towboats, forty-eight 195-foot hopper barges and two 297-foot tank barges. All are intended for operation on inland rivers.

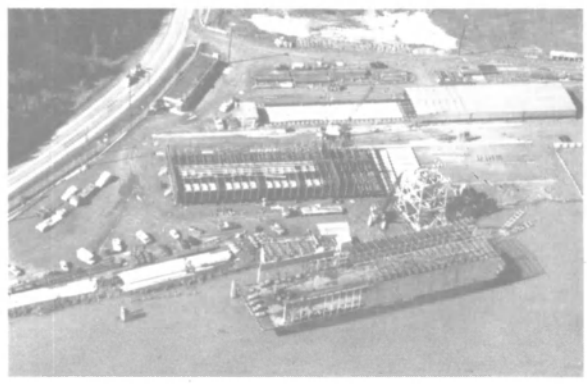
The application did not name proposed builders of the vessels or scheduled delivery dates.

The requested guarantee is for $20,000,000 of the total estimated cost of $24,200,000 for all vessels.



TWO AT A TIME — Newport Ship Yard, Inc. in Newport, R.I., recently made a double lift with its 3,000-ton drydock when the Raytheon research vessel Sub Sig II (white hull) and the U.S. Navy tug Keokuk (YTB-771) were in the yard for maintenance and repair work. Vessels displace 280 and 350 tons, respectively. Sub Sig II is based at Newport, the Keokuk at Portsmouth, N.H. Newport Ship's railway drydock has side transfer capability up to 500 tons.

Sause Bros. Barge-Building Facility In Coos Bay Nearing Completion



The economy will experience a boost in the Coos Bay/North Bend, Ore., area soon. **John Sweet**, director of marketing and sales for Sause Bros., Coos Bay's ocean towing company, says that its new barge-building facility (shown above) is expected to be finished by mid-year. The first oceangoing barge, designed to haul lumber with a petroleum backhaul, is already under construction on the ways. It is scheduled to be finished by late summer.

Building its own barges is a new venture for Sause Bros. They have previously been built in Portland and at a yard on the Gulf Coast. According to Mr. Sweet: "We feel that we will have a better control of construction quality as well as overall cost, in addition to adding substantially to the economy of this area." The company expects to provide steady employment for 40 people.

The drydock's cost will be in excess of a million dollars, and will accommodate two barges at a time — one under construction and maintenance on another. The barges are built on shore over two parallel sets of maine railway tracks. When completed, the barge is raised off the foundation blocks and rolled into the water on railcar wheels. The procedure is reversed when bringing a barge in for maintenance. The 7,000-dwt barge presently under construction is 286 feet by 76 feet by 22 feet. When empty, it will draw 3 feet of water; 18 feet when loaded to capacity.

Sause Bros. now operates a fleet of 12 tugboats and 17 barges that are primarily engaged in lumber transportation to southern California from ports in Oregon, Washington, and British Columbia.

Biggest Stuelckenmast Floating Crane Delivered By Blohm + Voss

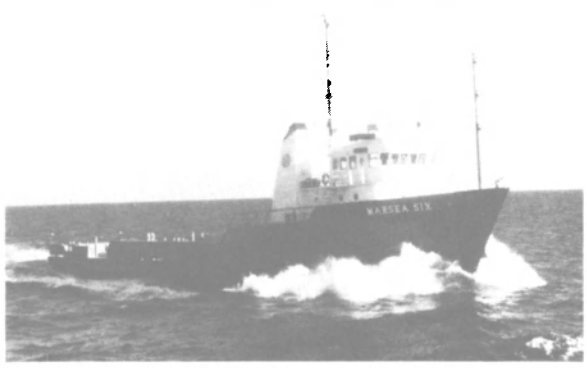
The 900-ton, heavy-duty floating derrick Tog Mor (shown above) was delivered recently by Blohm + Voss AG, Hamburg. Built for Howard Doris Ltd. of Edinburgh, the derrick's hull is 101.4 meters long and 27.4 meters wide (about 332.7 by 89.9 feet). It has been towed to Loch Kishorn yard in Scotland.

The Tog Mor, with its two gigantic inclined Stuelckenmasts, was designed for the transport and lifting of heavy objects in the building of offshore projects. It will be used especially for the assembly of large sections and modules for offshore drilling rigs and production platforms.

At the maximum capacity of 900 tons at a 50-meter (164-foot) outreach, the main hook can reach a height of 80 meters (262.5 feet) above water level. At the maximum outreach of 72 meters (236.2 feet), the crane has a capacity of 400 tons.

All loading operations can be controlled by one man in a control cabin located 10 meters (32.8 feet) above the platform deck. Additionally, a remote control system permits operation from main or platform decks, as well as from the top of one mast. All operations can be performed safely even at a list of eight degrees.

Sixth Supply Boat Delivered To Marsea Marine By Halter



Halter Marine, Inc. recently completed contracts for a series of vessels with the Marsea Marine Companies, New Orleans, with the delivery of the supply boat Marsea Six (shown above). The companies have also signed contracts for 14 additional similar vessels.

The 180-foot by 40-foot Marsea Six is powered by two GM Detroit Diesel 16V-149TI diesel engines developing 1,280 bhp each at 1,800 rpm. They turn two stainless-steel, 82-inch-diameter propellers through Philadelphia reduction gears with a 6:1 ratio. A Schottel bow thruster powered by a Detroit Diesel 8V71 engine provides improved station keeping.

Her eight tanks can carry a total of 1,750 barrels of liquid mud and 3,500 cubic feet of dry mud. She has a cargo capacity of 500 long tons and has 4,000 square feet of cargo deck space on her aft deck, which is fitted with an HBL anchor windlass.

Two 125-kw generators driven by two Detroit 18V71 diesel engines provide electric service, while two Quincy D325 compressors supply air service. Ballast, bilge, and fuel transfer pumps were provided by Aurora. A partial list of communications and navigation equipment aboard includes Drake SSB and VHF radios, Epsco radar, and a Ritchie magnetic compass.

The Marsea Six is American Bureau of Shipping classed +A-1, Full Ocean Towing, E, AMS, USCG NVC 1-78, USCG Subchapter I, and is U.S. Public Health approved. She was built at Halter Marine's Moss Point, Miss., division. Halter is the world's largest builder of supply boats for the offshore oil and gas industry.

Hitachi Gets Contracts For Five Bulk Carriers

Hitachi Zosen recently received orders for two 60,000-deadweight-ton Panamax-type bulk carriers. One each is to be constructed for Dove Maritime Corporation and Sotiras Maritime Corporation. Both companies are registered in Liberia and belong to the Xylas Group of the U.S. Also, three more bulk carrier orders were received: two Panamax-type carriers, one from Metroship Corporation and the other from Metro Freighting Corporation; and one 132,000-dwt conventional-type carrier from Metrosea Transport Corporation. All three companies are Liberian corporations belonging to the National Shipping & Trading Corp. Group, also of the U.S. The total number of Panamax-type carriers ordered from Hitachi Zosen is now 57, ten of which were ordered during fiscal 1980.

Navy Awards Tracor $7.6-Million Contract

The Naval Sea Systems Command, Department of the Navy, Washington, D.C., has awarded Tracor, Inc., Rockville, Md., a new contract of $7.6 million to continue supporting development, system engineering, design, production, installation maintenance, testing, logistics, and operational phases of sonar technology programs, and sonar and fire control systems for the Navy's nuclear submarines and surface ships.

William C. Moyer, Ph.D, group vice president of Tracor Applied Sciences, said that approximately 117 Tracor sonar scientists, engineers, and managers located in Maryland, Virginia, Connecticut, California, and Texas are involved in the program, providing engineering evaluations and technical engineering in support of these systems.

Contract work includes continuous monitoring of sonar performance, equipment installation and checkout procedures, field engineering and configuration management activities, reliability and logistics management support, and technical documentation review. Additionally, Tracor will provide assistance to Navy personnel in solving general problems associated with procurement and installation of sonar and fire control systems.

Headquarters for the contract work is Tracor's facility in Rockville, under the general management of **William F. Thompson,** division vice president and manager of Systems Technology Division. Reporting to Mr. **Thompson** on the program are **William M. Pugh,** director, Ship Systems Division, and **Edgar V. Davis,** director, Tactical Systems Department.

Kilgore Marine Asks Title XI On Four Boats To Cost $17 Million Total

Kilgore Marine, Ltd. I, a subsidiary of Kilgore Marine, Inc., Spring, Texas, has applied to the Maritime Administration for a Title XI guarantee to aid in financing the construction of four 192-foot tug/supply vessels to be operated in the Gulf of Mexico.

The vessels, being built by McDermott, Inc., New Iberia, La., are scheduled to be delivered later this year.

The requested guarantee is for $12,888,000, approximately 75 percent of the total estimated cost of $17,184,303 for the four vessels.

The Offshore Company Announces Major Changes In Management Structure

The Offshore Company, a Houston-based international oil and gas drilling contractor, announced that major changes in its management structure were instituted effective April 15, 1981. **F.T. Pease** and **G.D. Smith** were promoted to senior vice presidents and given responsibility for the company's operations and sales functions. Each will assume control of one-half of the company's worldwide drilling fleet.

The company has also promoted **J.T. Shelton** to senior vice president with responsibility for all operations support and control functions including technical services, engineering, training and safety. All the company's financial and administrative staff will be managed by **J.G. Johnson,** also promoted to senior vice president. **H.L. Ogden,** a vice president of the company, was named general counsel.

Other management promotions include **J.O. Sharon,** a vice president of Offshore, who was elected president and chief operating officer of Southland Drilling Company, Offshore's newly acquired domestic land drilling subsidiary; **R.L. Guidry,** who was elected assistant treasurer; and **P.J. Williamson,** who was elected assistant general counsel. **J.R. Browning** has been appointed manager of contracts and sales with overall responsibility for the company's sales effort with respect to new equipment and ventures.

N&SA Names Stumbo And Hagemann Vice Presidents

Donald M. Surgenor, executive vice president/general manager of Nickum & Spaulding Associates, Inc., Seattle-based naval architecture/marine engineering firm, announced the appointment of two vice presidents: **Stan C. Stumbo** as vice president, operations and **E.C. Hagemann** as vice president, engineering.

Mr. **Stumbo,** also named assistant general manager, will be responsible for office and project operations as well as other related activities. Mr. **Hagemann,** who was with W.C. Nickum & Sons, Inc., when the firm merged in 1971 with Philip F. Spaulding and Associates, Inc., will oversee and coordinate the company's engineering, computer applications, and research and development.

The appointments come at a time when N&SA's workload level is increasing. The firm was recently awarded contracts to design a 370-foot bulk-cement barge, Seattle's new multipurpose harbor service crafts, and the first commercial berthing tug in the United States using the Voith-Schneider propeller system, internationally known for its great maneuvering abilities.

Mr. **Surgenor** noted that along with the appointments of Messrs. **Stumbo** and **Hagemann,** other supervisory appointments were also made to further consolidate N&SA's internal organization. **Gordon C. Snyder** will head N&SA's consulting services while **Paul A. Gow** will direct N&SA's preliminary design unit. **J. Steve Cleary, Frank C. Vibrans Jr.,** and **Gary B. Parker** will head hull engineering, marine engineering and electrical engineering respectively. **L.P. Menne** will direct project management.

Braden Offers New Series Of Improved Winches— Literature Available

Free literature is now available describing the CH150 series, the second of a new generation of planetary winches, incorporating several changes to improve performance, from Braden Winch Co. of Broken Arrow, Okla. The CH150, when compared with earlier Braden winch designs has the following improvements: the anti-friction bearings throughout the winch increase the starting efficiency by 15 percent and increase duty cycle of the unit; the large drum flange meets ANSI specifications for ½-inch of exposed flange with six layers of ¾-inch cable.

The improved cable pocket design permits easier cable installation and smoother cable spooling and will hold ½-inch to ¾-inch wire rope with standard wedge and ¾-inch to 1-inch wire rope with optional wedge. Larger cross section 0-rings with backup rings permit brake release pressures up to 2,500 psi, longer service life, and simpler installation. Also, the number of 0-rings has been reduced to minimize the number of oil leak paths.

The brake plate and overriding clutch are more accessible for easier service. The CH150 is powered by a high efficiency gear motor that can be internally or externally drained without affecting the braking operation. The motor mounting flange permits easier installation and service.

The CH150 uses a Braden brake valve which is designed to insure smooth operation of the winch while lowering a load. The planetary gear system is located inside the winch drum along with the static brake. The static brake is spring engaged and hydraulically released. If the engine dies, or a hydraulic line breaks, the load is held firmly in place until power is restored.

The drain and fill plugs are located on the end of the winch, opposite the motor, eliminating the need to remove the cable from the drum when checking the oil level.

Over 56 years of engineering and manufacturing experience have resulted in the production of this high performance planetary winch system.

For free literature on the new CH150,

Write 29 on Reader Service Card

Calendar Of Coming Events

Telecommunications in Shipping **May 26-28**
Seminar organized by Seatrade Academy.
American Bureau of Shipping Auditorium, 65 Broadway, New York City. Contact Seatrade, 17 Battery Place, New York, N.Y. 10004; (212) 422-6470.

Portex '81: International Port Exhibition and Conference **May 26-30**
Organized by Hamburg Messe und Congress GmbH, and sponsored by the Senate of the Free and Hanseatic City of Hamburg.
Exhibition Grounds, Hamburg, West Germany. Contact **Hans J. Rathje**, The Hamburg Group, 545 Madison Avenue, New York, N.Y. 10022; (212) 758-4651. (Preview in May 1 issue of MR/EN)

MARSIM '81: Second International Conference on Marine Simulation **June 1-5**
Cosponsored by the National Maritime Research Center, and others.
U.S. Merchant Marine Academy, Kings Point, N.Y. Contact MARSIM '81, National Maritime Research Center, Kings Point, N.Y. 11024; (516) 482-8200.

8th Ocean Energy Conference **June 7-11**
Sponsored by the U.S. Department of Energy, and organized by The Marine Technology Society.
Capital Hilton Hotel, Washington, D.C. Contact MTS, 1730 M Street N.W., Washington, D.C. 20036; (202) 659-3251.

XV Biennial Conference **June 7-12**
Sponsored by the International Cargo Handling Coordination Association.
Edmonton Plaza Hotel, Edmonton, Alberta, Canada. Contact **Peter J. Elias**, conference administrator, 418 Legislative Building, Edmonton, Alberta, Canada; (403) 427-2080.

Dynamics of World Coal Trade **June 10-11**
Symposium sponsored by the Maritime Association of the Port of New York, the National Coal Association, and the N.Y. Journal of Commerce.
Biltmore Hotel, New York City. Contact **C.S. Truog**, Maritime Association, 80 Broad Street, New York, N.Y. 10004; (212) 425-5704.

ICE TECH '81: SNAME Spring Meeting/STAR Symposium **June 16-19**
Sponsored by The Society of Naval Architects and Marine Engineers, and hosted by the Eastern Canadian Section.
Chateau Laurier Hotel, Ottawa, Ontario, Canada. Contact SNAME, One World Trade Center, Suite 1369, New York, N.Y. 10048; (212) 432-0310. (Preview in May 1 issue of MR/EN)

Ro-Ro 81: 5th International Conference and Exhibition on Marine Transport using Roll-on/Roll-off Methods. **June 30-July 2**
Organized by Business Meetings Limited.
Congress Centrum, Hamburg, Federal Republic of Germany. Contact Ro-Ro Secretariat, 2 Station Road, Rickmansworth, Herts WD3 1QP, England; (09237) 76363, telex 924312. (Preview in June 15 issue of MR/EN)

6th Annual Meeting **Aug. 18-20**
Sponsored by the International Omega Association.
Montreal, Canada. Contact IOA at P.O. Box 2324, Arlington, Va. 22202.

Offshore Goteborg **Aug. 19-21**
International offshore exhibition and conference organized by the National Swedish Board for Technical Development, the Swedish Maritime Research Centre, Lloyd's Register of Shipping, and others.
Swedish Trade Fair Foundation exhibition halls, Gothenburg. Contact STFF, Box 5222, S-402 24 Gothenburg, Sweden; 031 20 00 00, telex 20600.

8th Annual Research and Engineering for Automation and Productivity in Shipbuilding (REAPS) Symposium **Sept. 15-17**
Sponsored by various U.S. shipyards and the Maritime Administration, and conducted by IIT Research Institute.
Baltimore Hilton Hotel, Baltimore, Md. Contact **Marge Hernandez**. REAPS Program Librarian, IITRI, 10 West 35th Street, Chicago, Ill. 60616; (312) 567-4623.

16th Annual Marine Insurance Seminar **Sept. 20-22**
Sponsored by Houston Mariners Club.
Houston Oaks Hotel. Contact Capt. **Jack Roberts**. 2918 Green Tee Drive, Pearland, Texas 77581; (713) 485-2464.

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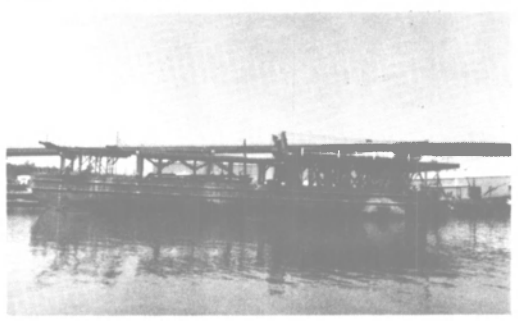

Inland Barge For Sale

New Inland Drilling Barge 144' x 44' x 14' with 10' x 60' slot available for immediate sale. Barge is equipped with a 15 ton hydraulic crane, pipe rack, drilling equipment substructure, quarters substructure, 8' breakwater (not installed), and all necessary piping for ballast and deballasting operations.
Barge has never been rigged up or placed in service. Hull was built by Todd Shipyards, Houston In May 1979.

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Manager of Construction
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AMERICAN 55, 2 Drum Water Fall, Diesel, Winch S/N S-22265
AMERICAN 55B, 3 Drum, Water Fall, Gas, Winch S/N 36082
MUNDY, 3 Drum Water Fall, 20,000# Line Pull, Diesel Winch
CLYDE, 2 Drum Water Fall, Frame 7, Diesel, Winch S/N 26577
INGERSOLL-RAND, 35 UWC 441, Air, Winch S/N V369820
GARDNER DENVER, HKL, Air Hoist S/N 698773
GARDNER DENVER, HK, Air Hoist S/N 719632

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102 — ELLICOTT 14" DREDGE, Portable 70' x 25' x 6' w/50' Ladder Powered by 1275 HP CAT 398
P-18 — ELLICOTT 14" SERIES 1000 S/N 32550 Booster Pump Powered by 1275 HP CAT D398 Diesel Engine, Skid Mounted

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1,000 cu. yd. (145' x 37' x 11') Special Purpose Dump Scow. Scow has 6 watertight compartments, originally designed for dumping chemicals, molasses, etc.

Dump Scow — 450 cu. yd (120' x 33' x 10') with 6 mud compartments.

Spud Barge — (90' x 60' x 9'3") — fully rigged for large crane. 100' spuds, spud wells, 2-3 drum air/steam deck winches and 4 anchors.

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Tug Delivered in November 1980

68' X 22' X 9' Tug 900 H.P.
Two (2) 12 V-71 G.M. Diesel Engines
6:1 ratio, Twin Disc-514 gears
20 KW, 2-71 G.M. Generators

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One (1) Digital depth recorder
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27 point Alarm System
Central Heat and Air-5 tons
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3 DERRICK BARGES

Complete with: American R-20 Steam Whirley, 130' Boom, 50 Tons at 45' Rated Capacity, 120' X 50' X 10' Barge, Deck Winches.

Now Working and Available for Inspection at Baltimore, Maryland.

$350,000 each

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TWO DECK SPUD BARGES

144' X 40' X 8'6" under construction & scheduled for delivery May & June 1981. Other Barges & Boats Built to order.

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One (1) Complete Mooring System with Controls for the above.

One (1) Skagit – RB-90W 2 drum.

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Waukesha 5792 D marine diesel engine 1000HP at 1400 and 832HP 1200. Fire Tube Boilers 4 each, 350 HP oil fired, 150 PSI. Atlas Copco compressors 2 each, 1200 CFM. 2 each air receivers 1200 CF capacity — 4'8" diameter x 90' for 300 PSI working pressure. 4 drum 250 American Hoist. 1 Skagit Model 150 double drum Cat. eng., SLP, 400,000 lbs.—spool 3,300 ft. 2" each drum. 1 RB-90 Skagit 2 drum hoist.

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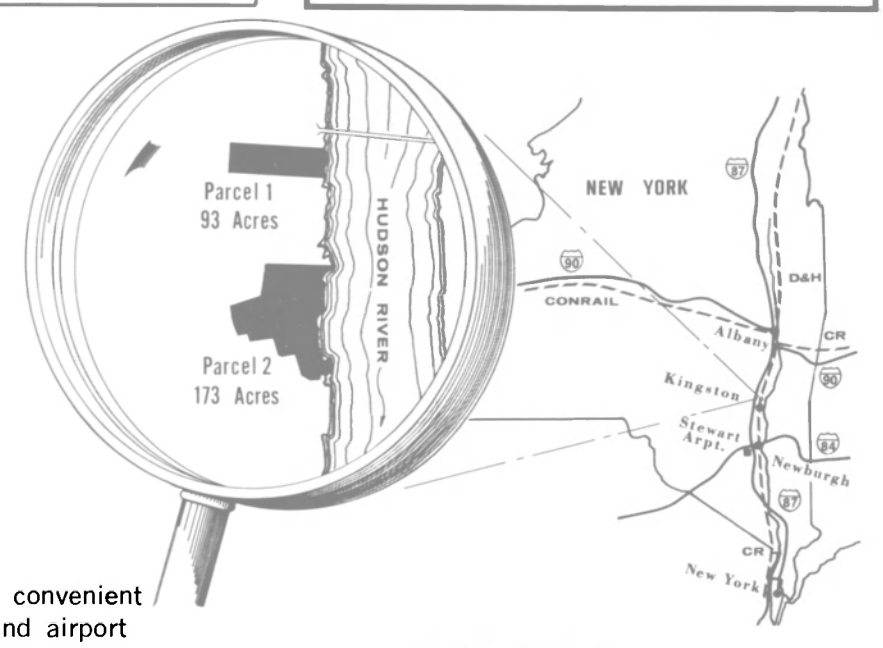
Deep Water Site on the Hudson River near Kingston, NY

Suitable for Coal Export



Rail access available, convenient to major highways and airport

Parcel 1 - 93 acres - $1.4 million
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One T-2 Propeller, 4-Blade Solid, Right Hand Rotation, Dia. 19'-6", Effective Pitch at .65 Radius = 17'-6" ABS Certificate.

One T-2 Tailshaft with good liner and nut, ABS Certificate with 4-year Draw Status.

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9 x 12 American Hoist & Derrick Winches, reconditioned equal to new

Spare parts for all steam winches

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(60/100 TON)

GANTRY MOUNTED

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EXCELLENT CONDITION

Clyde — 32' track gage, New Gantry installed 1974. Crane can be seen in operation. Presently rated 60 Ton can be converted to 75 Ton or 100 Ton. Also to self contained. Complete specifications available.

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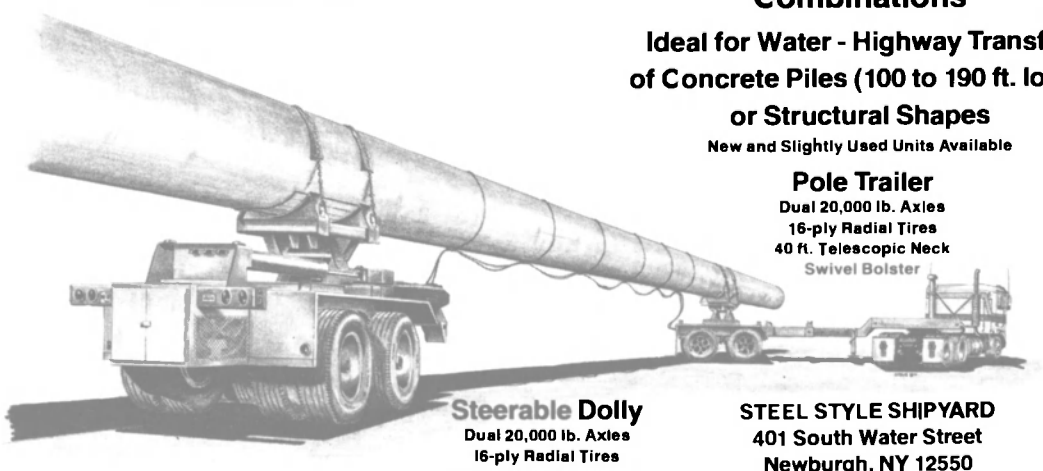
Pole Trailer and Steerable Dolly Combinations

Ideal for Water - Highway Transfer of Concrete Piles (100 to 190 ft. long) or Structural Shapes

New and Slightly Used Units Available



Pole Trailer
Dual 20,000 lb. Axles
16-ply Radial Tires
40 ft. Telescopic Neck
Swivel Bolster

Steerable Dolly
Dual 20,000 lb. Axles
16-ply Radial Tires
10 hp. Pony Engine and Hydraulic Booster

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NEW — UNUSED

4—**BUTTERWORTH HEATERS** 850 Sq. Ft.
90/10 cuni tubes 180psi steam
75/210° sea water

3—**FW/SW HEAT EXCHANGER** 1686 Sq. Ft.
90/10 cuni tubes 113/90° fresh water

8—**FUEL OIL HEATERS** 90 Sq. Ft.
125psi steam 400psi design pressure

8—**CONTAMINATED DRAIN COOLERS**
83 Sq. Ft. 150 psi design 250/95° out

All above ABS and Coast Guard approved manufactured by American Standard 1974 for San Clemente T8-S-100B Class Tankers. Complete specifications & drawings available.

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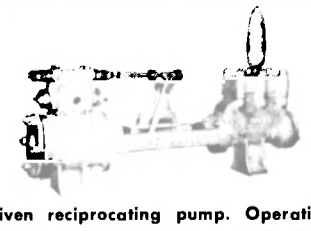
WILSON-SNYDER
Horizontal Auxiliary
PORT BOILER FEED PUMP



Steam driven reciprocating pump. Operating pressure 100 lbs. 10 GPM @ 100 LBS. Suitable for boilers to 150 HP. 1½" Suction — 1" discharge.

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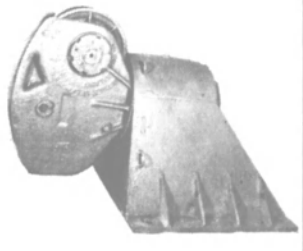
SURPLUS
BERGER FAIRLEADS



2 Model 620 — for 1⅝" wire — 20" sheave. Located San Francisco, Ca.

$3959 Each

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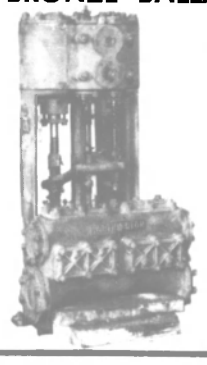
BRONZE BALLAST & FIRE PUMP



300 GPM—100 LBS

Ex-T2 Tanker. 150 Lbs steam—10 in exhaust—100 lb discharge. 6" suction — 4" discharge — 1½" steam — 2" exhaust. Overall ht 4'7½" — OAW 3' — Depth 2' 9".

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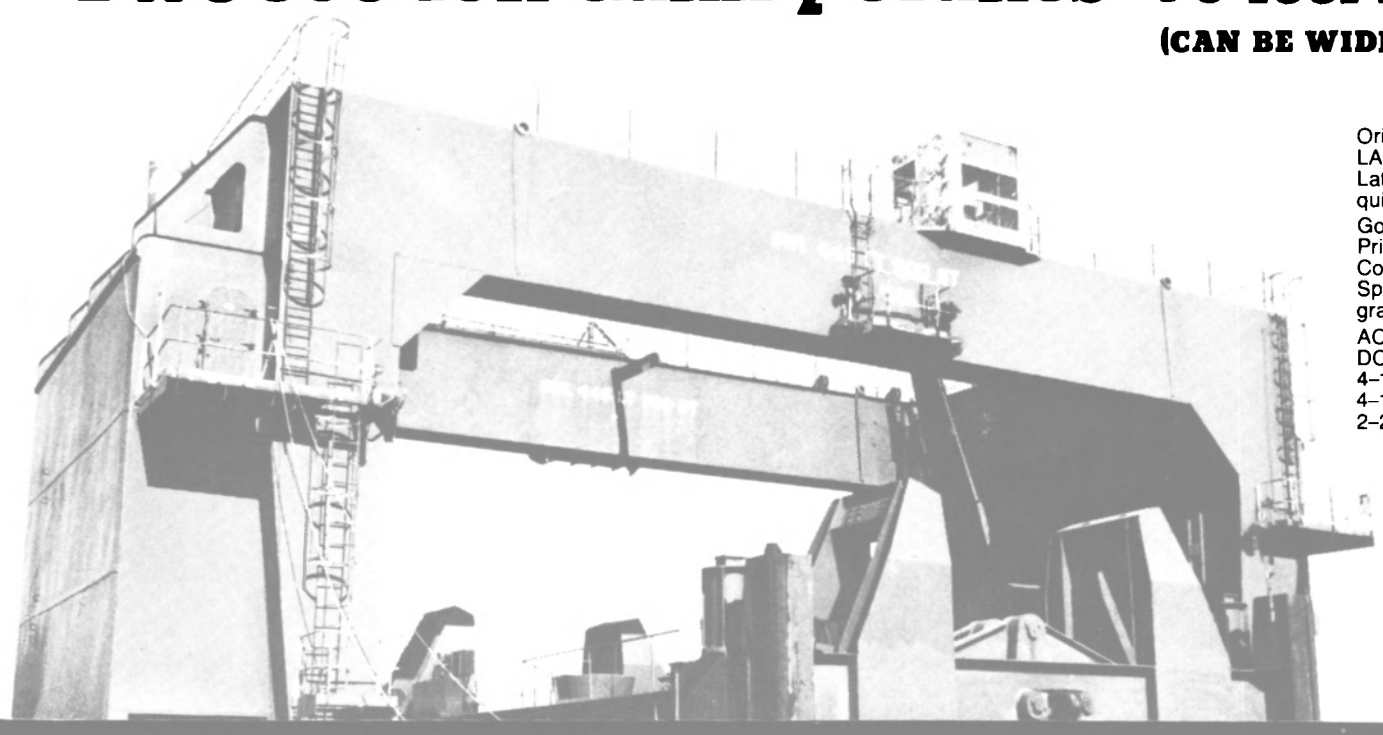
AVAILABLE NOW FOR IMMEDIATE SHIPMENT

Two 500-ton Gantry Cranes — 70-foot Track Span

(CAN BE WIDENED TO 100 FEET)



Originally Barge Handling. As used on LASH Ships. Manufactured by Alliance. Late Model built to ABS and MARAD requirements.

Good Condition. Immediately Available. Priced at a fraction of New Replacement Cost. Complete with Lifting Beams and Spreader Beams (not shown in photograph)

AC Power Input Through Cable Reel
DC Hoist & Gantry Motors & Controls
4–150 HP–240 Volt DC Hoist Motors
4–150 HP–240 Volt DC Gantry Motors
2–265 KW–500 Volt DC M-G Sets

Units Can Be Modified

Possible other uses:
1) Moving heavy equipment
2) Dam Sites
3) Concrete Prefab plants
4) Railroad yards
5) Steel plants

Geared Track is also available at extra cost

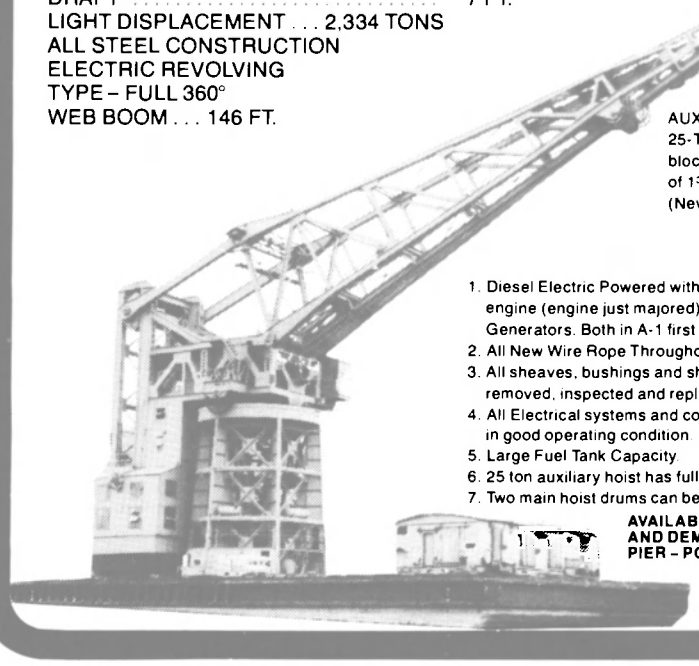
200 TON/DIESEL ELECTRIC
Floating Crane

FOR SALE – RENT– CHARTER

LENGTH OVERALL ..... 140 FT.
BEAM ..... 84 FT.
DRAFT ..... 7 FT.
LIGHT DISPLACEMENT . . . 2,334 TONS
ALL STEEL CONSTRUCTION
ELECTRIC REVOLVING
TYPE – FULL 360°
WEB BOOM . . . 146 FT.

MAIN HOIST:
200-Ton – By 2 only, 8 part blocks. Each block carries 2,050 ft. of 1½". 6 x 37 I.P.S. wire rope (New)

AUX. HOIST
25-Ton – By 1 only 4 part block. Block carries 1,110 ft. of 1⅜". 6 x 37 I.P.S. wire rope (New).



1. Diesel Electric Powered with G.M. 8-278A diesel engine (engine just majored) and 300 KW, 230 volt Generators. Both in A-1 first class condition.
2. All New Wire Rope Throughout
3. All sheaves, bushings and sheave pins have been removed, inspected and replaced in Good Condition.
4. All Electrical systems and controls have been placed in good operating condition
5. Large Fuel Tank Capacity
6. 25 ton auxiliary hoist has full 140 ft. of boom travel.
7. Two main hoist drums can be operated independently.

AVAILABLE FOR INSPECTION AND DEMONSTRATION AT OUR PIER – PORTLAND, OREGON

FOUR 30-TON
Container Cranes
70-foot Track Span

NEW 1970-72

Priced at a fraction of today's new replacement cost. Good Condition. Immediately Available. From LASH Ships. Late Model. Manufactured by PACEO. Suitable for Ship, Barge or Land Use. Manufactured to ABS and MARAD requirements.

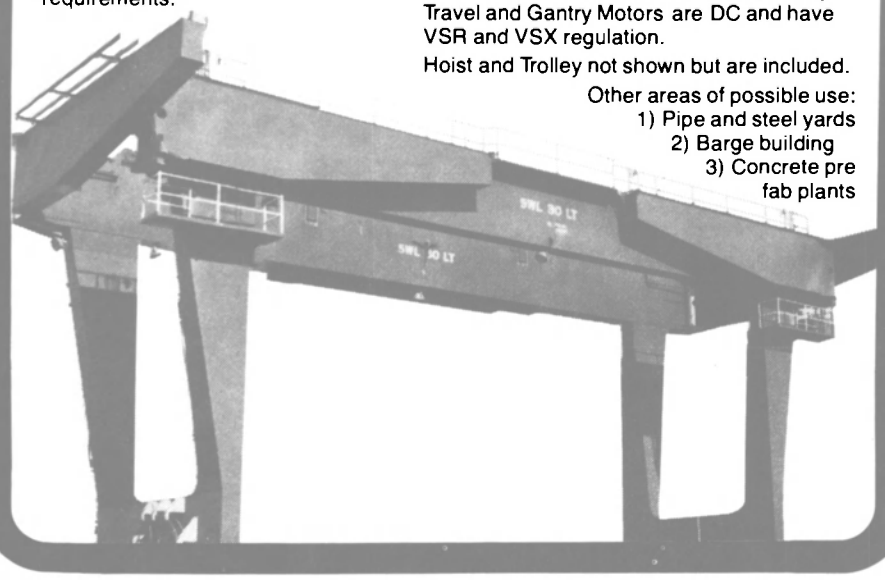
AC Power Input with Cable Reel and 350 feet of 500 MCM Cable.

MG set: 250 HP-AC-170 KW 230 DC.

• 200 HP DC Hoist Motor • 100 HP DC Trolley Motor • 2-40 HP DC Gantry Travel Motors • Trolley Travel 275 F.P.M. • Gantry Travel 100 F.P.M. • Hoist Speed: 30 LT @ 85 F.P.M.; 20 LT @ 100 F.P.M.; Empty Spreader 200 F.P.M. • 32'0" Maximum Outstretch • Hoist, Trolley Travel and Gantry Motors are DC and have VSR and VSX regulation.

Hoist and Trolley not shown but are included.

Other areas of possible use:
1) Pipe and steel yards
2) Barge building
3) Concrete pre fab plants



For additional information, brochures or inspection, contact: Hugh Sturdivant, Sales Manager, or A.D. Canulette, Jr.

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Phone: (503) 228-8691 • Telex 36-0503 • Cable "Zidell"

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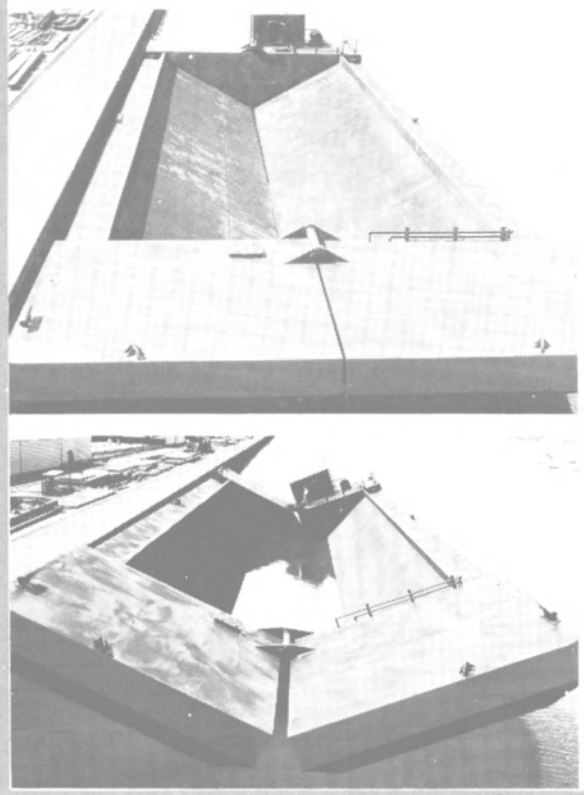
AVAILABLE FOR IMMEDIATE DELIVERY

Split Type Self Dumping Scows

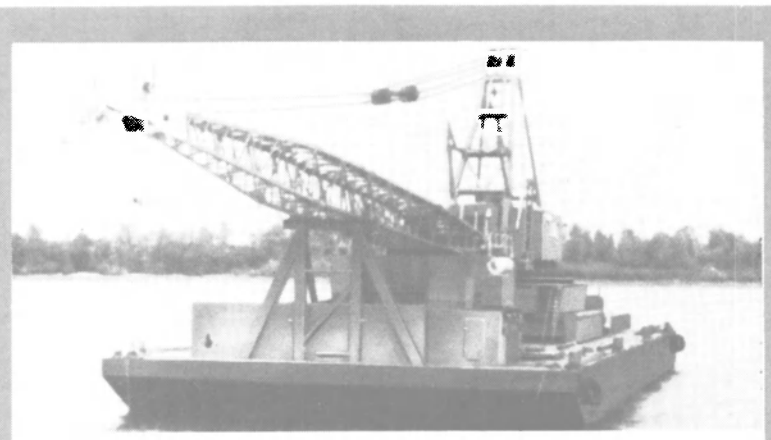


Built 1979. For sale, long or short term charters

SPECIFICATIONS

ABS loadlined for USCG-approved offport dumping

Length (ML'D)	180'- 0"
Beam (ML'D)	50'- 0"
Depth of Mid-Body (ML'D)	14'- 0"
Hopper Length (ML'D)	128'- 0"
Level Hopper Volume	1421 cu. yd.
DWT @ d = 10.22 ft.	1615 L.T.
Rake Lengths F. & A.	26'- 0"
Twin Skegs	
Stern & Fwd. Rake Decks Stepped Up	2'- 0"
Engine GM 671	
Hydraulic Pumps (2) 12 GPM & 75 GPM	
Time To Open (Fully Closed to Fully Open)	6 Min. 5 Sec.
Time To Close	4 Min. 34 Sec.
Hopper Angle Fully Open	53.78°
Fuel Tank Capacity	445 Gal.
Hydraulic Cylinders (2 Fwd. & 2 Aft)	18" Diam. 120" Stroke
Plating	
Side	9/16"
Bottom	5/8"
Hopper	5/8"



American Crane Barge

BARGE DATA

Displacement Light	1,200T.
Gross Tonnage	911
Net Tonnage	911
Length	151 - 6'
Beam	60'- 0"
Hull Depth	12'- 0"
Flush Deck Area	6,000 Sq. Ft.
Engine Room Area	412 Sq. Ft.
Office & Eating Area	136 Sq. Ft.
Diesel Fuel Tanks	36,000 Gal.
Fresh Water Tanks	36,000 Gal.
Bunker "C" Fuel Tanks	12,000 Gal.
Ballast System	None

CRANE DATA

Manufacturer	American Hoist & Derrick Co.
Model & Type	305 Revolver
Capacity	125 T.
Boom (Certified rating with 140' length, 160' available)	
20 part rigging	2,200 ft., 7/8"ç – 6 x 36 I.P.S.
4 part standing standing bail	2-186 ft., 1¾"ç – 6 x 36 I.P.S.
Main Hoist (Certified rating: 58.5 T. @ 50' to 100', 8 part rigg.)	
20 part rigging	3,250 ft., 1"ç – 6 x 36 I.P.S.
Aux. Hoist (Certified rating: 10.0 T. @ 100') 15 T. Capacity	
2 part rigging	635 ft., 7/8"ç – 6 x 66 I.P.S.

Self Unloading Aggregate Barge

ZAG-501

Length (O.A.)	248'- 0'
Beam	63'- 0"
Depth	16 - 0"
Displacement Light	1010 S.T.
Draft Light (F.W.)	2'- 7½"
Draft Loaded (F.W.)	11'- 8"
DWT	4000 S.T.
Diesel Electric Set	100 KV
Hopper Volume	2667 cu. yd.

Hopper Unloading Gates: 27-36"x 36" Horiz. sliding gates w/individual hydr. controls.

Main Unloading Conveyer: 48" wide belt, 30 H.P. elect. motor, 250 ft./min. Max. disch. rate – 667 cu. yd./hr.

Transfer Conveyer: 42" wide belt, 10 H.P. elect. motor, 350 ft./min. off loading location – Stbd. side fwd. at 9 ft. above deck

Hull Plating: Deck, side shell & bott. 9/16"

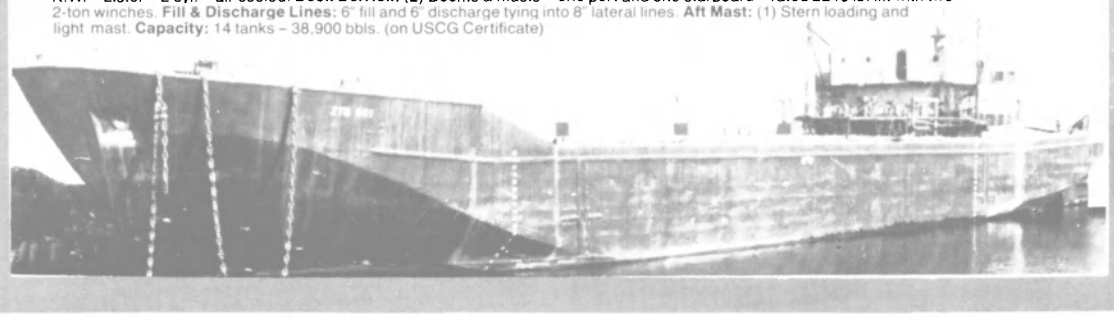
Bulk Petroleum Barge

ZTB-601

Type: • Ocean unmanned service • Grade "B" bulk cargo

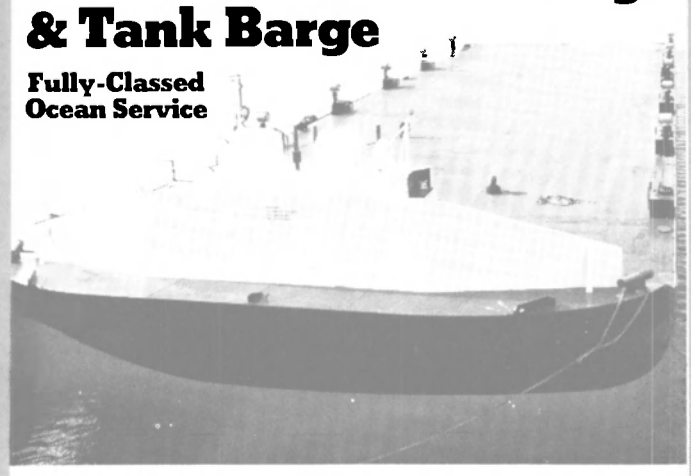
USCG: • Documented with "Consolidated Certificate of Enrollment and License" • Operating – "oceans" • Official No.: 280356 • Net: 2286 • Gross: 2286 • Length: 257.5' • Breadth: 55.1' • Depth: 20.3'

ABS: International Load Line (valid until 6 December 1984) Cert. No. 61-24, 479-2. **Aux. Machinery & Pumps:** (4) Bingham pumps – 8 x 14 VTX – 5 stage – cap. 600-1500 GPM – Type #F – 150 – driven by 4 GMC 6-71 diesels. (1) Diesel generator set – 5 K.W. – Lister – 2 cyl. – air cooled. **Deck Derrick:** (2) Booms & masts – one port and one starboard – rated 2240 lb. lift with two 2-ton winches. **Fill & Discharge Lines:** 6" fill and 6" discharge tying into 8" lateral lines. **Aft Mast:** (1) Stern loading and light mast. **Capacity:** 14 tanks – 38,900 bbls. (on USCG Certificate)



Combination Deck Cargo & Tank Barge

Fully-Classed Ocean Service



ZPC-402 230' x 60' x 15' Comb. Deck Cargo & Grade 'D' Tank Barge

Length O.A.	230'- 0"
Beam	60'- 0"
Depth	15'- 6"
Deadrise	6"
Number of Tanks	10
Total Tank Volume @ 95%	24,000 BBL
Cargo Pumps	Two Twin Screw, Deleval IMO GTS-268-066-CBEM
Rating	1500 GPM, 1150 RPM, 100 PSIG Disch. Press., 5000 SSU
Location	Below Deck Pumproom in Fwd. Rake
Diesel Engines	Two Detroit Model 8V-71, 230 HP @ 1800 RPM
Location	Above Deck in Fwd. Deckhouse
Fuel Capacity	1400 Gal.
Fill & Disch. Connections	8" ANS[150# FLG P/S
Heating Coils	2" Sch. 80 Pipe For Shore Steam
Hull Plating	Deck ½", Side Shell ⅜", Bott. ⅜", Shear Strake ½"
Deck Cargo Dwt. at Loadline	3900 S.T.

For additional information or to make an appointment to inspect, call or write:

Thomas A. Sherwood or
Andy Canulette, Jr.

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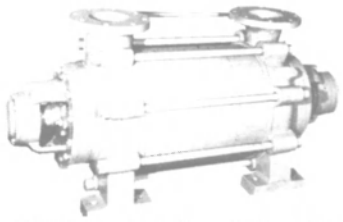
NEW — UNUSED NIJUIS FIRE PUMP



550 GPM @ 323′ head @ 1800 RPM

$1975

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WORTHINGTON HIGH PRESSURE AIR COMPRESSORS

10 CFM — 600 lbs. 7½ HP
440/3/60 A.C. Motors

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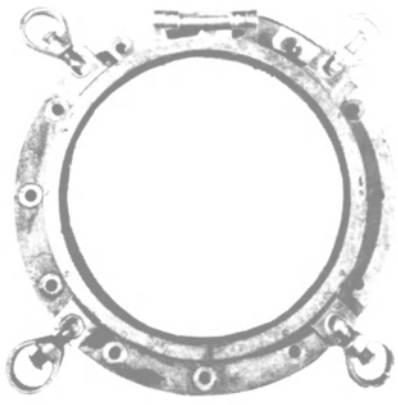
15½″ & 16″ CLEAN BRASS 4-DOG MARINE PORTLIGHTS

15½″ CLEAR OPENING
16″ CLEAR OPENING



Recently carefully hand removed from ocean vessels. Suitable for re-use on shipyard conversions or for marine ornamental use. Heavy marine standard glass . . . clear or can be furnished frosted for use in special locations.

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

WALZ & KRENZER USCG APPROVED HEAVY SLIDING DOORS WITH FRAMES

All Doors Bolted In And Easily Removed

- 1 36″x66″ Horizontal hand mech. steel sliding door—complete with mechanical local & remote gear boxes
- 1 60″x78″ Steel watertight sliding door. Complete with mechanical local and remote boxes.

THE BOSTON METALS COMPANY

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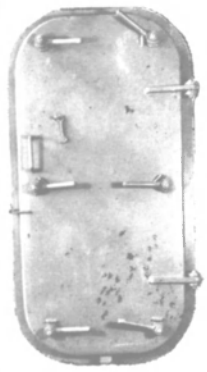
TWX: 710-234-1637

FOR SALE

NEW WATERTIGHT DOORS



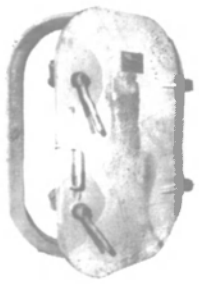
Steel Dogs

6-Dog right and left hand hinged doors with frames. Constructed of 1/4″ steel plate and meet Coast Guard regulations for above deck as well as below deck use. All dogs are bronze bushed. Also available with 8″ bronze portlights.

SIZE
26″x48″ 26″x66″
26″x60″ 30″x60″
EACH DOOR

IMMEDIATE DELIVERY

NEW SMALL STEEL WATERTIGHT DOORS



24″ X 36″
2-DOGS
5 Right Hand
2 Left Hand
IMMEDIATE DELIVERY

NEW 7″ RADIUS PANAMA CHOCKS

(MEET PANAMA REGULATIONS)
14″ X 10″ CLEAR OPENING

With extended legs for welding to deck. 14″ Wide on base — length 28″ — height 27¼″. IMMEDIATE DELIVERY FROM STOCK.

NEW UNUSED 12″ X 6½″ PANAMA CHOCKS FOR SMALL VESSELS

Closed chocks — 12″ X 6½″ inside opening — 23″ overall outside — 8″ high — 15″ high — 7″ radius — weight 110 lbs. IN STOCK.

THE BOSTON METALS COMPANY

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TWX: 710-234-1637

LOUIS-ALLIS M.G. SETS

2.5 KW 120 Volt Single Phase 60 Cycle Output
120 Volt D.C. Input — 1800 RPM

2½ KW—115 volts single phase A.C. output. GENERATOR: Type GNA—class 1G— Frame 28A—Form A—1800 RPM—5 KVA—2.5 KW 115 volts AC— 60 cycle —50% PF—43.4 amps. MOTOR: Louis Allis—Type GNA—Class E—Frame 25A—Form A—1800 RPM—115 volts DC—32 amps—shunt wound (with attached Ward-Leonard frequency regulator). Some control panels available.

CAN FURNISH WITH 230 VOLT DC INPUT

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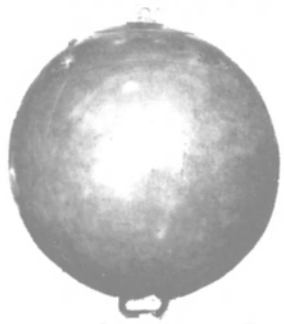

NEW — UNUSED SPHERICAL MOORING BUOYS

About 58″ diam. With tieplates top & bottom. Est. wt 680 lbs each. 120 lbs submergence

CYLINDRICAL BUOYS

3 Available — 5 ft X 9 ft — with wood bumpers

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
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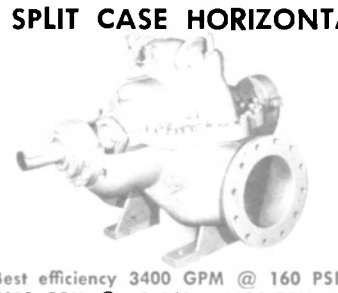
FACTORY NEW NIJUIS 10″ X 8″ SPLIT CASE HORIZONTAL PUMPS

$2950 EACH



Best efficiency 3400 GPM @ 160 PSI — 1500 RPM or 5220 GPM @ 30 PSI — 1500 RPM maximum capacity. 4500 GPM @ 125 PSI — 1800 RPM. Requires 500 HP. 2000 GPM @ 110 PSI — 1450 RPM (using 6-V-71 engine reducing 8″ to 6″ suction).

THE BOSTON METALS COMPANY

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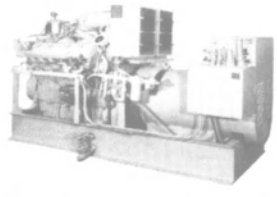
Marine Warehouse (301) 752-1077
TWX: 710-234-1637

250KW GM 12-V-71 DIESEL GENERATOR SETS AIR START



440/3/60/1800 — with free-standing switchgear. Generators manufactured by Electric Machinery Co. — E.M. Bemac — brushless — synchronized — keel cooled.

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
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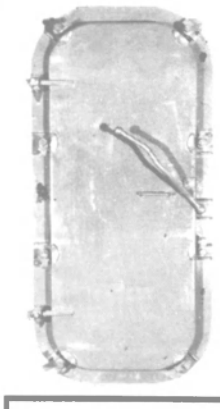


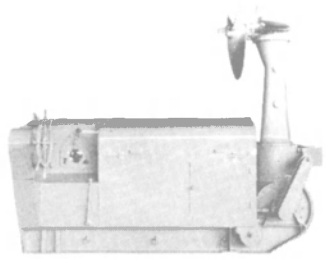
QUICK-ACTING LEVER OPERATED WATERTITE DOORS

26″ X 66″
8-DOG
Rights & Lefts

THE BOSTON METALS COMPANY

313 E. Baltimore St. Baltimore, Md. 21202
Marine Warehouse (301) 752-1077
TWX: 710-234-1637

M&T Model O-2D Marine Outboard Diesel Driven Propulsion Units



Equal-to-new-condition. Driven by GM 6-71 diesel—165 HP @ 1800 RPM—2-cycle—6 cylinders. Weight 9300 lbs—48" X 24" propeller. Unit shown with outboard shaft in elevated position. Distance from deck to bottom of skeg 89". 4 Units immediately available.

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

HATCHES

NEW UNUSED FLUSH HATCHES

54' X 77"

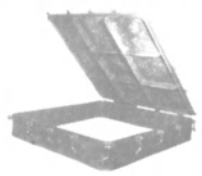
14-Dog — operated from top side by T-key, with dogs marked to show open & closed positions.

24" X 30"

30" X 30"

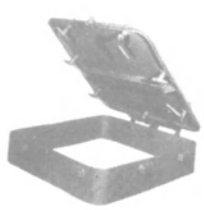
4 Dogs on underside—topside flush, with T-Key openers.

60" X 42" X 12"
10-DOG



72" X 72" X 12"
16-DOG

36" X 26" 7-DOG
TANKER EXPANSION
TRUNK



42" X 42" X 9"
7-DOG
SPRING
LOADED

THE BOSTON METALS COMPANY

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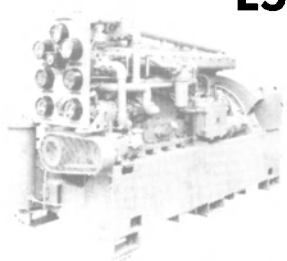
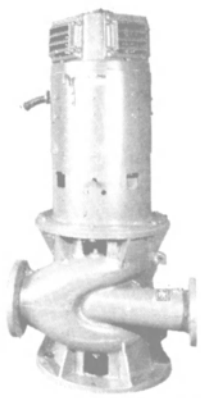
LST MACHINERY



100KW GBD-8 DIESEL GENS.

120/240 VDC—417 amps—stab shunt—1200 RPM—Delco generator—Self-excited. ENGINE: Superior GBD-8—8-cyl—5½X7—150 HP—30 volt electric starting. Reconditioned to ABS. Dry wt. 10,000 lbs—DAL 124"—65 11/16" high—42" wide. Hgt necessary to pull piston 68". Fuel consumption 0.620 lbs/hr.

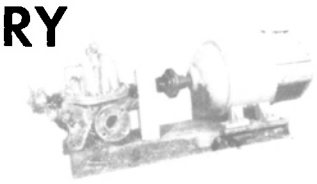


GARDNER-DENVER BALLAST PUMP

Bronze — 1500 GPM — 56' head or 25 bs — 8" suction — 6" discharge. MOTOR: Century 30 HP 230 VDC 110 amps 1750 RPM. 40°T rise — stab. shunt — ballbearing — dripproof. Controls available.

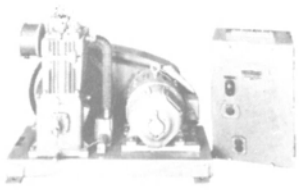
TAILSHAFTS

Diameter: 6 1/8" Length: 21' 2 5/8"



GOULD FIRE & BILGE PUMP

250 GPM & 100 lbs—4" suction—3" discharge—2200 RPM—bronze—manufactured by Gould. Direct connected to 30 HP 230 volt DC Louis-Allis motor.



CLUTCH TIRE AIR COMPRESSOR

Model 320—4 X 2½ X 3"—10/15 CFM—100/150 PSI—700 RPM. MOTOR: 3 HP—230 volts DC—1750 RPM.

COMBINATION LUBE OIL & SALT WATER COOLING PUMPS

Model 3630—mfg by Goulds—1150 RPM. Rotary lube oil pump one end (35 GPM @ 15 PSI—1½"X1½")—salt water circulating pump other end (35 GPM @ 15 PSI—2" X 1½") G.E. Motor model 5B254A1988—type B—Frame 254—3 HP—230 VDC—11.9 amps—1150 RPM compound—Cont. 40°C temp rise. Ball bearing.

THE BOSTON METALS COMPANY

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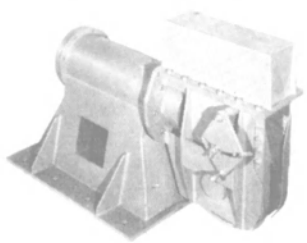
NEW STEEL FABRICATED FAIRLEADS



1¼" $2775 — 1½" $3350

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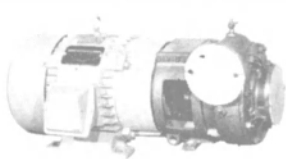
NEW—UNUSED DAVIDSON CHILLED WATER CIRCULATING PUMPS



65 GPM @ 145' head. End suction—topside discharge. Bronze pump—2" suction—1½" discharge. Bolt circles: Suction 4¾"—discharge 3 15/16"—flanged. MOTOR: 7½ HP—440/3/60/3500 RPM—mfg by Reliance—frame 215 CN. OA length 25"—OA width 13½'—wt. 232 lbs. Drawing on request. Made for U.S. Navy. Built 1972—FSN-1H-4320-852-7147.

THE BOSTON METALS COMPANY

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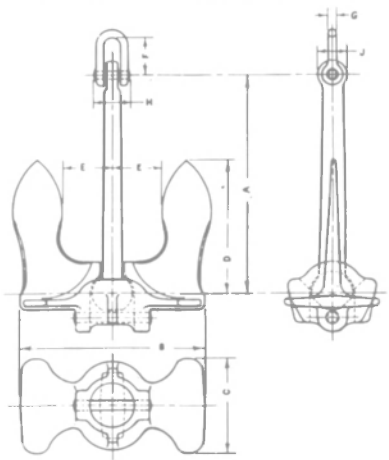
TWX: 710-234-1637

ANCHORS -- CHAIN

DETACHABLE LINKS
PEAR-SHAPED DETACHABLE LINKS



LARGE BALDT-TYPE ANCHORS
NEW — UNUSED LLOYD'S OR ABS CERTIF.
12000 LBS & 8000 LBS

IN STOCK—FOR MOORING—NO CERTIF.

- 3000 LB DANFORTH
- 5300 LB BALDT
- 4300 LB BALDT
- 14750 LB BALDT
- 10750 LB BALDT

ANCHOR CHAIN

- 2 9/16" — New — Grade 3 — Certif.
- 3" — New — Grade 3 — Certif.
- 3¼" — New — Grade 3 — Certif.
- 3⅜" — Grade 3 — Certif.
- 1⅛" — Dilok

THE BOSTON METALS COMPANY

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Marine Warehouse (301) 752-1077
TWX: 710-234-1637

BUYERS DIRECTORY

AIR CONDITIONING AND REFRIGERATION—REPAIR & INSTALLATION
Adrick Cooling Corporation, 30 B. Remington Blvd., Ronkonkoma, NY 11779
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
James D. Nall Co., Inc., 3195 NW 20th Street, Miami, FL 33142
York Division (Borg-Warner Corp.), P.O. Box 1592, York, PA 17405

ANODES—Cathodic Protection
Kaiser Aluminum & Chemical Corp., 300 Lakeside Dr., (Rm 2039KB), Oakland, CA 94643
Wilson Walton International Inc., 66 Hudson Street, Hoboken, NJ 07030

BEARINGS—Rubber, Metallic, Non-Metallic
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Lucian Q. Moffitt, Inc., P.O. Box 1415, Akron, Ohio 44309
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186

BLASTING—Cleaning—Equipment
Butterworth Systems Inc., 224 Park Ave., Florham Park, NJ 07932
GMMC/Porta-Shotblast, 1112 Davidson Road, Nashville, Tenn. 37205
Goff Corporation, One Pleasent Grove Rd., Seminole, OK 74868

BOILERS—Tube Cleaning
Clayton Manufacturing Company, 486 No. Temple City Blvd., El Monte, CA 91731
Combustion Engineering, Inc., Windsor, Connecticut 06095
A.B. Murray Company, Inc., P.O. Box 476, Elizabeth, NJ 07207

BROKERS
B.R.I. Coverage Corporation, 156 Williams Street, New York, NY 10038
Capt. Astad Company, Inc., P.O. Box 53434, New Orleans, La. 70153
Crown Assets Disposal Corp., 300 Notre Dame St., Ville St.-Pierre, Quebec, Canada H8R 3Z6
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

BUNKERING SERVICE
Belcher Company of New York, Inc., 48-02 54th Avenue, Maspeth, NY 11378
Gulf Oil Trading Co., 1290 Ave. of the Americas, N.Y., N.Y. 10019

CARGO TRANSFER & ACCESS EQUIPMENT
MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016

CHAINS
Neptunia, Via Giovanni da Verrazzano, 12 16 165 Genova, Italy

CHOCKING SYSTEMS
Philadelphia Resins Corp., 20 Commerce Drive, Montgomeryville, Pa. 18936

CONTAINERS—Cargo Container Handling
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

CONTROL SYSTEMS—Monitoring
Arnessen Marine Systems, Inc., One Battery Plaza, New York, NY 10004
Henschel Corporation, 14 Cedar St., Amesbury, Mass. 01913
Megasystems, Inc., 5909 West 130th Street, Cleveland, OH 44130
Pan American Systems Corporation, P.O. Drawer 400, Belle Chasse, LA 70037
Sperry Marine Systems Div., Charlottesville, Va., 22901, Division of Sperry Rand Corp.
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062

COUPLINGS
Bird-Johnson Co., 110 Norfolk St., Walpole, MA 02081

CRANES—HOISTS—DERRICKS—WHIRLEYS
Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027
M. P. Howlett, Inc., 410 32nd St., Union City, N.J. 07087
J. D. Neuhaus, Witten-Heven, Hebezeuge, D 5810 Witten-Heven, West Germany
Paceco, Div. Fruehauf Corp., 2350 Blanding Ave., Alameda, Calif. 94501

DECK MACHINERY—Cargo Handling Equipment
Appleton Machine Co., Marine Division, 618 S. Oneida St., Appleton, WI 54911
Markey Machinery Co., Inc., 79 S. Horton St., Seattle, Wash. 98134
Navire Cargo Gear (SEA) Pte. Ltd., 9th Floor Orchard Towers, Orchard Road, Singapore 0923

DIESEL ACCESSORIES—CYLINDER LINERS
B & W Marine Service, One State Street Plaza, New York, N.Y. 10004
General Thermodynamics Corporation, 210 South Meadow Road, P.O. Box 1105, Plymouth, Massachusetts 02360
Golten Marine Company, Inc., 162 Van Brunt Street, Brooklyn, NY 11231
Twin Disc, Incorporated, Racine, Wis. 53403

ELECTRICAL EQUIPMENT
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Federal Pacific Electric Company, P.O. Box 1800, Somerville, NJ 08876
Marine Safe Electronics of Canada Ltd., 101 Jardin Dr., Suite 24, Concord, Ontario, Canada L4K 1B6
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

EMULSIFICATION SYSTEMS
Hoffert Manufacturing Company, Inc., 1700 East Church Street, Jacksonville, FL 32202

EQUIPMENT—Marine
ATCO Marine Corp., 603 Dean Street, Brooklyn, NY 11238
Argo Marine, Div. of Argo Intl., 140 Franklin St., New York, N.Y. 10013
Comet Marine Supply Corp., 157 Perry St., New York, N.Y. 10014
Conhagen/USMP Company, Inc., 4475 South Clinton Ave., South Plainfield, NJ 07080
Consafe Inc., P.O. Box 40339, Houston, TX 77040
Kearfott Marine Products, 550 South Fulton Ave., Mount Vernon, N.Y. 10550
J. H. Menge & Company, Inc., P. O. Box 23602, New Orleans, La.
John P. Nissen, Jr. Company, Glenside, PA 19038
Rockwell International, Power Tool Division, 400 N. Lexington Ave., Pittsburgh, PA 15208
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco CA 94080
Schwepper Beschlag GmbH, Postfach 101110, 5620 Velbert 1, West Germany
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Unitor Ships Service A/S, Mastemyr, 1410 Kolbotn, Norway
Waukesha Bearings Corp., P.O. Box 798, Waukesha, Wisc. 53186
Xorbox, Division of Greene & Kellogg, Inc., 290 Creekside Dr., Tonawanda, NY 14150

EVAPORATORS
Aqua-Chem Inc., P.O. Box 421, Milwaukee, WI 53201
Riley-Beaird, Inc., P.O. Box 1115, Shreveport, La. 71130

EXPANDED METALS — METALS
Fibergrate Corporation, P.O. Box 344610, Dallas, TX 75234
Lukens Steel Company, Coatesville, PA 19320
Millard Controlled Metals, 5 Louise Drive, Ivyland, PA 18974

FANS—VENTILATORS—BLOWERS—HEATEXCHANGERS
Coolmar Heatexchangers B.V., P.O. Box 54156 3008 JD Rotterdam, (The Netherlands) Waalhaven Z.Z. 52
Hartzell Propeller Fan Company, 901 S. Downing Street, Piqua, OH 45356
Joy Manufacturing Co., 338 So. Broadway, New Philadelphia, Ohio 44663
Zidell Explorations, 3121 S.W. Moody St., Portland, Ore. 97201

FENDERING SYSTEMS—Dock & Vessel
Hughes Bros., Inc., 17 Battery Place, New York, N.Y. 10004
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062
Seaward International, Inc., 6269 Leesburg Ave., Falls Church, Va. 22044

FINANCING—Leasing
Continental Illinois National Bank, 231 S. LaSalle, Chicago, IL 60693
Greyhound Leasing & Financial Co., Greyhound Tower, Phoenix, AZ 85077
Kidder, Peabody & Co., Inc., 10 Hanover Square, New York, N.Y. 10005
Warburg Paribas Becker, Inc., 2 First National Plaza, Chicago, Ill. 60670

FUEL OIL ADDITIVES—Analysis & Combustion Testing
Rolfite Products Inc., 300 Broad Street, Stamford, CT 06901

FURNITURE
Bailey Joiner Co., Inc., 74 Sullivan Street, Brooklyn, N.Y. 11231
Comfort-Mate, Inc., 7988 NW 56th Street, Miami, FL 33166

GALLEY EQUIPMENT
Kiefer Corporation, 2202 W. Clybourn, Milwaukee, WI 53233

GANGWAYS
Rampmaster Inc., 1226 N.W. 23rd Ave., Fort Lauderdale, Fla. 33311

HATCH & DECK COVERS—Chain Pipe
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Lockstad Company, Inc., R D 2 Burnett Road, Mendham, NJ 07945
MacGregor-Comarain, Inc., 135 Dermody St., Cranford, N.J. 07016
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Julius Mock & Sons, Inc., 20 Vesey St., New York, NY 10017

HULL CLEANING
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Phosmarin Equipment, 21, Boulevard de Paris, 13002 Marseille, France
Sub Enterprises, Inc., P.O. Box 16531, Irvine, CA 92713

HYDRAULICS
Fluid Technology, Inc., 10626 Phillips Highway, Jacksonville, FL 32224
Hydranautics, 6338 Lindmar Drive, Goleta, CA 93017
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229

INERT GAS—Generators—Systems
ATCO Marine Corporation, 603 Dean St., Brooklyn, NY 11238
Camar Corporation, P.O. Box 460, Worcester, MA 01613
Foster Wheeler Boiler Corp., 110 So. Orange Ave., Livingston, N.J. 07039
Fredriksstad mek. Verksted, N. American Agents, American United Marine Corp., 575 Madison Ave., New York, N.Y. 10022
Peabody Holmes Ltd., 17-27 Garratt Lane, London SW 18 4BY

INSULATION—Cloth, Fiberglas
Bailey Carpenter & Insulation Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231

INSURANCE
Adams & Porter, 1819 St. James Place, Houston, Texas 77027
Adams & Porter, 1 World Trade Center, Suite 8433, New York, N.Y. 10048
Alexander & Alexander, Inc., 1185 Ave. of the Americas, New York, N.Y. 10036
B.R.I. Coverage Corporation, 156 Williams St., New York, NY 10038
Midland Insurance Co., 160 Water St., New York, N.Y. 10038

JOINER—Watertight Doors—Paneling
Masonite Commercial Division, Dover, OH 44622
Walz & Krenzer, Inc., 400 Trabold Road, Rochester, NY 14624

KEEL COOLERS
R.W. Fernstrum & Co., 1716 Eleventh Ave., Menominee, MI 49858
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

LIFEBOATS & DAVITS
Schat Davit Corporation, 226 West Park Place, Newark, DE 19711

LIGHTING EQUIPMENT—Lamps, Fixtures, Searchlights
Browning Marine, Inc., (Aqua Signal), P.O. Box 806G, St. Charles, IL 60174
Oceanic Electrical Mfg. Co., 157 Perry Street, New York, N.Y. 10014
Oreck Corp., 100 Plantation Rd., New Orleans, LA 70123
Perko Inc., P.O. Box 6400D, Miami, Florida 33164
Phoenix Products Company, 4785 North 27th Street, Milwaukee, WI 53209
Port Electric Supply Corp., 157 Perry Street, New York, N.Y. 10014

LNG CONTAINMENT
McDonnell Douglas Astronautics Co., 5301 Bolsa Ave., Huntington Beach, CA 92647

MACHINE TOOLS
Republic-Lagun Machine Tool Co., 1000 E. Carson St., Carson, CA 90749

MACHINERY MAINTENANCE, REPAIR, OVERHAUL, AND TESTING
General Electric Company — Bldg. 2, Rm 216, Schenectady, N.Y. 12345
Schnitzer-Levin Marine Co., 445 Littlefield Ave., So. San Francisco, CA 94080

MOORING SYSTEMS
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110

NAVAL ARCHITECTS, MARINE ENGINEERS, SURVEYORS
Advanced Marine Enterprises, Inc., Suite 500, 2341 Jefferson Davis Highway, Arlinaton, Va. 22202
Agemar, Ave. 17 No. 108-129, P.O. Box 1465, Maracaibo, Venezuela
American Standards Testing Bureau, Inc., 40 Water Street, New York, N.Y. 10004
Amirikian Engineering Co., Chevy Chase Center Bldg., Suite 505, 35 Wisconsin Circle, Chevy Chase, Md. 20015
J.L. Bludworth, P.O. Box 2441, Corpus Christi, TX 78403
Jacksonville, Florida 32211
Del Breit Inc., 326 Picayune Place (Suite 201), New Orleans, LA 70130
C.D.I. Marine Co., Regency East, Suite 222, 9951 Atlantic Blvd.,
CTS & Associates, 11320 S.W. 108 Court, Miami, Fla. 33176
CADCOM, 107 Ridgely Ave., Annapolis, MD 21401
Childs Engineering Corp., Box 333, Medfield, Mass. 02052
John P. Colletti & Associates, P.O. Box 13378, Pittsburgh, PA 15243
Columbia-Sentinel Engineers Western, Inc., P.O. Box 21542, Seattle, WA 98111
Crandall Dry Dock Engrs., Inc., 21 Pottery Lane, Dedham, Mass. 02026
Crane Consultants Inc., 15301 1st Ave., So. Seattle, Washington 98148
C.R. Cushing & Co., Inc., One World Trade Center, New York, N.Y. 10048
Norman N. DeJong & Associates, Inc., 1734 Emerson St., Jacksonville, Fla. 32207
Design Associates Inc., 14360 Chef Menteur Highway, New Orleans, LA 70129
Designers & Planners, Inc., 82 Beaver Street, New York, NY 10005
Donhaiser Marine, Inc., 11511 Katy Freeway, Houston, TX 77079
Francis C. Ducote, P.E., P.O. Box 644, Kenner, LA 70063
Parker C. Emerson & Associates, 17935 Cardinal Drive, Lake Oswego, Oregon 97034
Christopher J. Foster, Inc., 16 Sintsink Drive East, Port Washington, N.Y. 11050
Friede and Goldman, Ltd., 225 Baronne St., New Orleans, La. 70112
Giannotti & Associates, Inc., 703 Giddings Ave., Suite U-3, Annapolis, MD 21401
Gibbs & Cox, Inc., 40 Rector Street, New York, N.Y. 10006
John W. Gilbert Associates, Inc., 58 Commercial Wharf, Boston, Mass. 02110
The Glosten Associates, Inc., 610 Colman Bldg., 811 First Ave., Seattle, WA 98104
Phillip Gresser Associates, Ltd., 3250 South Ocean Blvd., Palm Beach, FL 33480
Morris Guralnick Associates, Inc., 620 Folsom Street, Suite 300, San Francisco, CA 94107
Hampton Roads Engineering, Inc., 119 E. Little Creek Rd., Norfolk, VA 23505
J.J. Henry Co., Inc., Two World Trade Center—Suite 9528, New York, N.Y. 10048
Hoffman Maritime Consultants Inc., 9 Glen Head Road, Glen Head, NY 11545
Hydronautics, Incorporated, 7210 Pindell School Road, Howard County, Laurel, Maryland 20810
Jantzen Engineering Co., 6655-H Amberton Drive, Baltimore, Md. 21227
James S. Krogen & Co., Inc., 3333 Rice St., Miami, Fla. 33133
Littleton Research and Engrg. Corp., 95 Russell St., Littleton, Mass. 01460
Lucander Designs, P.O. Box 711, San Perlita, TX 78590
Alan C. McClure Associates, Inc., 2600 South Gessner, Houston, TX 77063
John J. McMullen Associates, Inc., 1 World Trade Center, New York, N.Y. 10048
MacLear & Harris, Inc., 28 West 44 Street, New York, N.Y. 10036
Marine Consultants & Designers, Inc., 308 Investment Insurance Bldg., Corner E. 6th St. & Rockwell Ave., Cleveland, Ohio 44114
Marine Design Inc., 401 Broad Hollow Road, Rte. 110, Melville, N.Y. 11746
Marine Technical Associates, Inc., 195 Paterson Avenue, Little Falls, NJ 07424
Maritime Service Company, 1357 Rosecrans St., Suite B, San Diego, CA 92106
Rudolph F. Matzer & Associates, Inc., 13891 Atlantic Blvd., Jacksonville, Fla. 32225
Mechanical Resources Inc., 191 Cambridge Avenue, Jersey City, N.J. 07307
George E. Meese, 194 Acton Rd., Annapolis, Md. 21403
Metritape, Inc., 33 Bradford Street, Concord, MA 01742
NKF Engineering Assoc., Inc., 8150 Leesburg Pike, Vienna, VA 22202
Nelson & Associates, Inc., 1405 N.W. 167th Street, Miami, FL 33169
Nickum & Spaulding Associates, Inc., 911 Western Ave., Seattle, WA 98104
Robert B. Niederberger, P.E., 507 Evergreen Road, Severna Park, MD 21146
Captain Conrad P. Nilsen, 66 Beverly Road, Bloomfield, NJ 07003
Norgaard and Clark, 114 Sansome St., San Francisco, CA 94104
Ocean-Oil International Engineering Corporation, 3019 Mercedes Blvd., New Orleans, La. 70114
Offshore Power Systems, 8000 Arlington Expressway, Jacksonville, FL 32211
Oromar International Enterprises, Inc., P.O. Box 13069, Port Everglades, FL 33316
PRC Guralnick, 5252 Balboa Ave., San Diego, CA 92117
Pacific Industries Inc., 1440 Canal Street, Suite 1915, New Orleans, LA 70112
Pearlson Engineering Co., Inc., 8970 S.W. 87th Ct., Miami, Florida 33156
S.L. Petchul, Inc., 1380 SW 57th Ave., Fort Lauderdale, Fla. 33317
Pilotage Consultants, Inc., P.O. Box 3, Atlantic Highlands, NJ 07716
M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013 and 657 Mission St., San Francisco, Calif.
Sargent & Herkes, Inc., 611 Gravier St., New Orleans, La. 70130
Schmahl and Schmahl, Inc., 1209 S.E. Third Ave., Fort Lauderdale, Florida 33316
Seacor Systems Engineering Associates, Corp., P.O. Box 2030, 19 Cherry Hill Industrial Park, Perina Blvd., Cherry Hill, NJ 08003
Seaworthy Engine Systems, 36 Main Street, Essex, CT 06426
George G. Sharp, Inc., 100 Church St., New York, N.Y. 10007
T. W. Spaetgens, 156 West 8th Ave., Vancouver, Canada V5Y 1N2
R.A. Stearn, Inc., 253 N. 1st Ave., Sturgeon Bay, WI 54235
Richard R. Taubler Inc., 8 Columbia St., Milford, Del. 19963
Thames Engineering Consultants Inc., P.O. Box 589, New Loncon, Ct. 06320
Timsco, 622 Azalea Road, Mobile, AL 36609
Corning Townsend III, 18 Church St., Georgetown, CT 06829
Undersea Systems, 112 W. Main St., Bay Shore, N.Y. 11706
Wesley D. Wheeler Assoc., Ltd., 104 E. 40th St., Suite 206, New York, NY 10016
Thomas B. Wilson, 920 North Avalon Blvd., Wilmington, CA 90744
Wind Ship Development Corporation, 690 Main Street, Norwell, MA 02061
Wink Incorporated, 8020 Mayo Blvd., New Orleans, LA 70126
XPLO Corporation, 229 Fifth Street, Gretna, LA 70053

NAVIGATION & COMMUNICATIONS EQUIPMENT
AAT Communications Corporation, 1854 Hylan Blvd., New York, NY 10305
American Hydromath Co., Buckwheat Bridge Rd., Germantown, N.Y. 12526
Apelco Marine Electronics, Division of Raytheon, 676 Island Pond Rd., Manchester, NH 03103
Communication Associates, Inc., 200 McKay Road, Huntington Station, N.Y. 11746
Comsat General Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024
Dantronics Company, P.O. Box 204, Bocca Raton, FL 33432
DEBEG Marine, Inc., 10 Manor Parkway, Salem, NH 03079
Electro-Nav Inc., 840 Bond Street, Elizabeth, NJ 07201
EPSCO, Inc., 411 Providence Highway, Westwood, Mass. 02090
Furuno U.S.A., 271 Harbor Way, S. San Francisco, CA 94080
Griffith Marine Navigation, Inc., 134 North Avenue, New Rochelle, NY 10801
Harris Communications, RF Communications Division, 1680 University Avenue, Rochester, NY 14610
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Company, Inc., 9 Smith Street, Englewood, NJ 07631
ITT Decca Marine, U.S. Route 1 & St. Joe Rd., P.O. Box G, Palm Coast, FL 32037
ITT Mackay Marine, 2912 Wake Forest Road, Raleigh, N.C. 27611
Intermarine Electronics, Inc., Flowerfield Bldg. #7, St. James, N.Y. 11780
Iotron Corp., 5 Alfred Circle, Bedford, MA 01730
Kongsberg North America Inc., 135 Fort Lee Road, Leonia, NJ 07605
Kongsberg Vapenfabrikk, Norcontrol Division, P.O. Box 145, Horten 3191, Norway
Krupp Atlas-Elektronik, 241 Erie Street, Jersey City, NJ 07302
Maritel, Inc., 139 Old Solomon's Island Road, Annapolis, MD 21401
Nav-Com, Inc., 711 Grand Blvd., Deer Park, NY 11729
Navidyne Corp., 11824 Fishing Point Drive, Newport News, VA 23606
Navigation Communications Systems, Inc., 20100 Plummer Street, Chatsworth, CA 91311
North American Philips Communication Corp., 91 Mckee Road, Mahwah, N.J. 07430
RCA Service Co., Building 204-2, Camden, N.J. 08101
Radar Devices, Inc., 2955 Merced Street, San Leandro, CA 94577
Raytheon Marine Co., 676 Island Pond Road, Manchester, N.H. 03103
Raytheon Ocean Systems Company, Westminster Park, Risho Avenue, East Providence, RI 02914

Raytheon Service Co., 103 Roesler Rd., Glen Burnie, MD 21061
Simrad Inc., 1 Labriola Court, Armonk, N.Y. 10504
Southern Marine Research, Inc., 1401 N.W. 89th Court, Miami, FL 33172
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.
Texas Instruments Inc., P.O. Box 226080, M/S 3107, Dallas, TX 75265
Tracor, Inc., Industrial Products Div., 6500 Tracor Lane, Austin, Texas 78721

OILS—Marine—Additives
B. P. Marine North America Trading, Plaza 9, 900 Route 9, Woodbridge, NJ 07095
Ferraus Corporation, P.O. Box 1764, Bellevue, WA 98009
Gulf Oil Company—U.S. (Domestic Oils), 909 Fannin Street, Houston, TX 77001
Gulf Oil Trading Co., 1290 Ave. of Americas, New York, N.Y. 10019
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002
Mobil Oil Corporation, 150 East 42nd St., New York, N.Y. 10017
Texaco, Inc. (International Marine), 135 East 42nd St., N.Y., N.Y. 10017

OIL/WATER SEPARATORS
Alfa-Laval, Inc., 2115 Linwood Avenue, Ft. Lee, NJ 07024
Butterworth Systems Inc., 224 Park Ave., Florham Park, N.J. 07932
Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

PAINTS—COATINGS—CORROSION CONTROL
American Abrasive Metals, 460 Coit Street, Irvington, NJ 07111
Belzona Molecular Metalife Inc., 224 7th Street, Garden City, NY 11530
"CONSOL" manufactured by Hanline Bros., Inc., 1400 Warner St., Baltimore, MD 21230
Devoe Marine Coatings Co., P.O. Box 7600 Louisville, KY 40207
Eureka Chemical Company, 234 Lawrence Ave., So. San Francisco, CA 94080
International Paint Co., 17 Battery Place North, Suite 1150, New York, N.Y. 10004
Jotun-Baltimore Copper Paint Co., 501 Key Highway, Baltimore, MD 21230
Mobil Chemical Co., Maintenance & Marine Coatings Dept., P.O. Box 250, Edison, N.J. 08817
Palmer Products Inc., P.O. Box 8, Worcester, PA 19490
Woolsey Marine Industries, Inc., 1250 Broadway, New York, NY 10001

PETROLEUM SUPPLIES
Houston Marine Services, Inc., 505 Atrium One, 11811 1-10 East, Houston, TX 77029
Shell Oil Co., 1 Shell Plaza, Houston, Texas 77002

PIPE—HOSE—Cargo Transfer, Clamps, Couplings
Camlock Flange Sales Corp., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
CUNICO Corp., Cooney Pipe & Copper Works Div., 214 N. Hawaiian Ave., Wilmington, CA 90748
Hydro-Craft, Inc., 4223 Edgeland, Royal Oak, Mich. 48073
Kubota Ltd., 2-47, Shikit Suhigashi 1-Chome, Naniwa-Ku, Osaka 556-91, Japan
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Tioga Pipe & Supply Company, 2450 Wheatsheaf Lane, Philadelphia, PA 19137

PLASTICS—Marine Applications
Hubeva Marine Plastics, Inc., 390 Hamilton Ave., Bklyn, N.Y. 11231

PROPULSION EQUIPMENT—Bowthrusters, Diesel Engines, Gears, Propellers, Shafts, Turbines
Alco Power Inc., 100 Orchard St., Auburn, N.Y. 13021
Alsthom-Atlantique, 2 quai de Seine, 93203 Saint-Denis, France
Armco Steel/Advanced Materials Div., 703 Curtis St., Middletown, OH 45043
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bird Johnson Company, 110 Norfolk St., Walpole, Mass. 02081
Burmeister & Wain Alpha Diesel AS, DK-1400 Copenhagen K, Denmark
Burmeister & Wain Diesel, Inc., 50 Broadway, New York, NY 10004
Caterpillar Tractor Company, Engine Division, Peoria, IL 61629
Colt Industries' Fairbanks Morse Engine Division, Beloit, Wisc. 53511
Combustion Engineering, Inc., Windsor, Connecticut 06095
Electro-Motive Division, General Motors Corp., LaGrange, Ill. 60525
Elliott Company, (Div. of Carrier Corp.), Jeanette, PA 15644
General Electric Co., Diesel Power Products, 2901 E. Lake Rd., Erie, PA 16531
Kawasaki Heavy Industries, Ltd., 2-4-1 Homamtsu-cho, Minato-ku, Tokyo, Japan
MTU of North America, Inc., 10450 Corporate Drive, Sugar Land, TX 77478
Maritime Industries, Ltd., 6307 Laurel St., Burnaby, B.C. Canada V5B 3B3
Michigan Wheel, 1501 Buchanan Ave., S.W., Grand Rapids, MI 49507
Omnithruster Inc., 15418 Cornet Ave., Santa Fe Springs, CA 90670
Oosterhuis Industries, Inc. (Marine Engineering, Inc.), P.O. Box 30587, New Orleans, LA 70190
P.J. Plishner Marine, 2 Lake Avenue Ext., Danbury, CT 06810
Port Electric Turbine Div., 155-157 Perry St., New York, N.Y. 10014
Propulsion Systems Inc., 21213 76th Ave., So., Kent, WA 98031
Schottel of America, Inc., 8375 N.W. 56 Street, Miami, Fla. 33166
Skinner Engine Company, P.O. Box 1149, Erie, PA 16512
Steamco Corporation, 364 Stowe Avenue, Orange Park, FL 32073
Tacoma Boat Co./Escher Wyss, 1840 Marine View Dr., Tacoma, WA 98422
Transamerica DeLaval Inc., Engine & Compressor Div., 550 85th Ave., Oakland, CA 94621
Transamerica Delaval, Inc., Turbine & Compressor Div., P.O. Box 8788, Trenton, N.J. 08650
Turbine Specialties, Inc., P. O. Box 207, West State Street Road, Salina, KS 67401
Voith Schneider of America—U.S. Agent: Eli Sharprut, 347 Evelyn St., Paramis, N.J. 07652

PUMPS—Repairs—Drives
Barco Corporation, 16 Bahama Circle, Tampa, FL 36606
Penco Division Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Transamerica Delaval, IMO Pump Division, P.O. Box 447, Monroe, NC 28110
Warren Pumps, Inc., Bridges Ave., Warren, Mass. 01083

REFRIGERATION—Refrigerant Valves
Bailey Refrigeration Co., Inc., 74 Sullivan St., Brooklyn, N.Y. 11231
Port Refrigeration Div., 157 Perry Street, New York, N.Y. 10014

ROPE—Manila—Nylon—Hawsers—Fibers
American Mfg. Co., Inc., Willow Avenue, Honesdale, Pa. 18431
Samson Ocean Systems, Inc., 99 High Street, Boston, Mass. 02110
Tubbs Cordage Company, Orange, CA 92668

RUDDER ANGLE INDICATORS
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Hose McCann Telephone Co., Inc., 524 W. 23rd St., N.Y. 10011
Modular Systems, Division of Warren Pumps Houldallle
Sperry Marine Systems Div., Charlottesville, Va. 22901, Division of Sperry Rand Corp.

SAFETY EQUIPMENT
ACR Electronics, Inc., 3901 North 29th Avenue, Hollywood, FL 33020

SANITATION DEVICES—Pollution Control
Argo Marine Pollution Systems Division, 140 Franklin St., New York, N.Y. 10013
Chapman Engineers (Omnipure Division), 6101 Southwest Freeway, Suite 100, Houston, TX 77057
Envirovac (Division of Dometic Inc.), 1260 Turret Drive, Rockford, IL 61111
Marine Moisture Control Co., Inc., 449 Sheridan Blvd., Inwood, L.I., N.Y. 11696
Marland Environmental Systems, Inc., N. Main Street, Walworth, WI 53184
Microphor, Inc., P.O. Box 490, Willits, CA 95490
Red Fox Industries, P.O. Drawer 640, New Iberia, LA 70560
St. Louis Ship FAST Sewage Systems, 611 East Marceau St., St. Louis, Mo. 63111
Sigma Treatment Systems, 2 Davis Ave., Frazer, PA 19355

SCAFFOLDING EQUIPMENT—Work Platforms
Patent Scaffolding Co., 2125 Center Ave., Fort Lee, N.J. 07024
Trus Joist Corp., P.O. Box 60, Boise, Idaho 83707

SHACKLES
West Footscray Engineering Works P/L, 52 Cross Street, West Footscray, Melbourne, Victoria, 30 12. Australia

SHAFT SEALS, REVOLUTION INDICATOR EQUIPMENT
Bird-Johnson Co., 100 Norfolk St., Walpole, MA 02081
Electric Tachometer Corp., 68th & Upland St., Philadelphia, Pa. 19142
Henschel Corp., 14 Cedar St., Amesbury, Mass. 01913
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030

SHIPBREAKING—Salvage
American Ship Dismantlers, Inc., Division of Schnitzer Industries, 3300 N.W. Yeon Avenue, Portland, Ore. 97210
The Boston Metals Co., 313 E. Baltimore St., Baltimore, Md. 21202
Levin Metals Corporation, 1310 Canal Blvd., Richmond, CA 94807
Zidell Explorations, Inc., 3121 S.W. Moody St., Portland, Ore. 97201

SHIPBUILDING STEEL
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

SHIPBUILDING—Repairs, Maintenance, Drydocking
A.D.M. (Amsterdam Drydock Mfg.), Maatschappij bv, P.O. Box 3006, 1003 AA, Amsterdam, Holland
AMT, Inc., 2400 N.W. 39th Avenue, Miami, FL 33142
Asmar Shipyards Co., Astilleros y Maestranzs de la Armada, Prat 856, Piso 14, Casilla 150-V, Valparisa, Chile, S.A.
Astilleros Espanoles S.A., 17 Padilla, P.O. Box 815, Madrid, Spain
Astilleros Unidos de Veracruz, S.A., San Juan de Ulua S/N, Apdo. Postal 647, Veracruz, Ver., Mexico
Avondale Shipyards, Inc., P.O. Box 52080, New Orleans, La. 70150
Bay Shipbuilding Corporation, 605 North Third Avenue, Sturgeon Bay, WI 54235
Bender Shipbuilding & Repair, P.O. Box 42, Mobile, AL 36601
Bergeron Industries Inc., P.O. Box 38, St. Bernard, La. 70085
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004
Blohm & Voss Company, 55 Morris Avenue, Springfield, NJ 07081
Bludworth Bond Shipyard Inc., P.O. Box 5065, Houston, TX 77012
Boeing Marine Systems, P.O. Box 3707, Mail Stop 14-11, Seattle, WA 98124
Cantieri Navali Riuniti, Via Cipro, 11, 16100 Genova, Italy
Carrington Slipways Pty, Ltd., Old Punt Road, Tomago, N.S.W., Australia 2322
Centromor, One World Trade Center, Suite 3557, New York, N.Y. 10048
China Shipbuilding Corp., c/o Allegro Transportation Supply Co., One Penn Plaza, Room 1606, New York, NY 10119
Conrad Industries, P.O. Box 790, Morgan City, La. 70380
Curacao Drydock Co., Inc., P.O. Box 153, Willemstad, Curacao, Netherlands Antilles
Curacao Drydock, 26 Broadway, Suite 741, New York, N.Y. 10004
Delattre-Levivier, Tour Fiat, Cedex 16, 92084 Paris La Defense, France
Dorbyl Ltd., Military Road, 1 Industrial Sites, West Bank, 5201 East London Republic of South Africa
Dravo Steelship Corp., R.4, Box 167, Pine Bluff, Ark. 71602
Equitable Shipyards, Inc., P.O. Box 8001, New Orleans, La. 70122
FMC Corp., Marine & Rail Equipment Div., 4700 N.W. Front Ave., Portland, Oregon 97208
Galveston Shipbuilding Co., P.O. Drawer 2660, Galveston, TX 77553
HBC Barge, Inc., Grant Building, Pittsburgh, PA 15219
Halifax Industries Ltd., P.O. Box 1477, Halifax, Nova Scotia, Canada, B3K 5H7
Halter Marine, Inc., P.O. Box 29266, New Orleans, La. 70189
Havre de Grace, Havre de Grace, Md.
Hitachi Shipbuilding & Engrg. Co., Ltd., 47 Edobori 1-Chome, Nishi-Ku, Osaka, Japan
Hong Kong United Dockyards Ltd., P.O. Box 534, Kowloon Central Post Office, Kowloon, Hong Kong
Hudson Shipbuilders, Inc., P.O. Box Q, Pascagoula, MS 39567
Jackson/Engineering Company, Inc., 2945 Richmond Terrace, Staten Island, NY 10303
Jeffboat, Inc., Jeffersonville, Ind. 47130
Keppel Shipyard Ltd., P.O. Box 2169, 325, Telak Blangah Road, Singapore 4
Levingston Shipbuilding, P.O. Box 968, Orange, TX 77630
Lockheed Shipbuilding and Construction Co., 2929 16th Avenue, S.W., Seattle, Wash. 98134
McDermott Incorporated, 1010 Common Street, New Orleans, LA 70160
MacGregor Land & Sea, Inc., 135 Dermody Street, Cranford, NJ 07016
Mangone Shipbuilding Co., 819 South 80th Street, P.O. Box 5446, Houston, TX 77012
Marine Fabricators, P.O. Box 246, Green Cove Springs, FL 32043
Matton Shipyard Co., Inc., P.O. Box 645, Cohoes, New York 12047
Midland Marine Corporation, One Pennsylvania Plaza, New York, NY 10001
Misener Industries, Inc., 5353 Tyson Avenue, P.O. Box 13625, Tampa, Fla. 33681
Mississippi Marine Towboat Corp., P.O. Box 539, Harbor Front Industrial Park, Greenville, MS 38701
Monark Boat Co., P.O. Box 210, Monticello, Ark. 71655
Nashville Bridge Company, P.O. Box 239, Nashville, TN 37202
National Steel & Shipbuilding Corp., San Diego, Calif. 92112
Newpark Shipbuilding & Repair, P.O. Box 5426, Houston, TX 77012
Newport News Shipbuilding & Dry Dock Co., 4101 Washington Ave., Newport News, Va. 23607
North American Hydraulics, P.O. Box 278, Brampton, Ontario Canada L6V 2L1
O.A.R.N. (Officine Allestimento-Riprazioni Navl), P.O. Box 1395, Genoa, Italy 16100
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
Port Allen Marine Service, Inc., P.O. Box 108, Port Allen, LA 70767
Port Houston Marine, Inc., 7220 J.W. Peavy Drive, Houston, TX 77012
Port of Portland, P.O. Box 3529, Portland, OR 97208
Promet (PTE) Ltd., 27 Pandam Rd., Jurong Industrial Estate, Singapore 22
S.E.B.N., Societa Esterclzio Bacini Napoletanl, Via Marlnella Varco N.6 (80133) Naples, Italy
St. Louis Shipbuilding—Federal Barge, Inc., 611 East Marceau, St. Louis, Mo. 63111
STE Marie Yard & Marine, Inc., 741 East Portage Ave., Sault Ste Marie, MI 49783
Savannah Shipyard Co., P.O. Box 787, Savannah, GA 31402
Sembawang Shipyard Ltd., Sembawang, P.O. Box 3, Singapore 9175
The Service Machine Group, Inc., P.O. Box 2664, Morgan City, LA 70308
Setenave-Estaleiros Navais De Setubal, P.O. Box 135, Setubal, Portugal
Southwest Marine, Inc., P.O. Box 13308, San Diego, Ca 92113
Sudoimport, 5 Kalyaevskaya, Moscow K-6, USSR
Sun Ship Inc., Chester, PA 19013
Swiftships Inc., P.O. Box 1908, Morgan City, LA 70380
Tacoma Boatbuilding Co., Inc., 1840 Marine View Drive, Tacoma, WA 98422
Tandanor (Piacentini), Antartida Argentina 555 Darsena Norte, (1104) Buenos Aires-Republica Argentina
Thomas Marine Inc., 37 Bransford Street, Patchogue, NY 11772
Todd Shipyards Corp., 1 State St. Plaza, New York, N.Y. 10004
Total Transportation Systems Inc., 813 Forest Dr., Newport News, VA 23606
Total Transportation Systems (International) A/S, Bjornegarden, P.O. Box 28, N5201 Oslo, Norway
Tracor Marine, P.O. Box 13107, Port Everglades, Fla. 33316
Tug Barge Systems, Inc., subsidiary of Ingram Corp., 4100 One Shell Square, New Orleans, La. 70139
Union Dry Dock & Repair Co., Foot of Pershing Road, Weehawken, N.J. 07087
Wiley Manufacturing, a unit of AMCA International Corp., P.O. Box 97, Port Deposit, MD 21904

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

SMOKE INDICATORS
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928

STUFFING BOXES
Johnson Rubber Co. (Marine Div.), 16025 Johnson St., Middlefield, Ohio 44062

SURVEYORS AND CONSULTANTS
Francis B. Crocco. Inc., P.O. Box 1411, San Juan, Puerto Rico 00903
Hull & Cargo Surveyors, Inc., 99 John St., New York, NY 10038

TANK CLEANING
Butterworth Systems Inc., 224 Park Ave., P.O. Box 352, Florham Park, N.J. 07932
Environmental Chemicals, Inc., 487 Division Street, Boonton, NJ 07005
Penco Division/Hudson Engineering Co., 1114 Clinton St., Hoboken, N.J. 07030
Salwico, Inc., 5 Marine View Plaza, Hoboken, NJ 07030

TANK LEVELING INDICATORS
Transamerica Delaval, Inc., Gems Sensors Division, Cowles Road, Plainville, CT 06062
Vu-Gage System, 150 E. 42nd St. (Room 910), New York, NY 10017
Zesco, Inc., 3131 Brian Park, Suite 1095, Houston, TX 77042

TERMINALS—Oil-Transfer
Caicos Petroleum Services Div., Federal Chicago Corp., 2222 North Elston Avenue, Chicago, IL 60614
Delong Corp., 29 Broadway, New York, N.Y. 10006
Transportation Concepts & Techniques Inc., 1020 West Main Street, Charlottsville, VA 22903

TOWING—Barges, Vessel Chartering, Lighterage, Salvage, etc.
Bay-Houston Towing Co., 805 World Trade Bldg., Houston, Texas 77002
Chotin Transportation, Inc., 580 Walnut St., Cincinnati, Ohio 45202
Curtis Bay Towing Co., Mercantile Bldg., Baltimore, Md. 21202
Henry Gillen's Sons Lighterage, 21 West Main St., Oyster Bay, N.Y. 11771
Great Lakes Towing Company, 1800 Terminal Tower, Cleveland, OH 44113
Gulf Fleet Marine Corporation, Canal Place One, Suite 2400, New Orleans, LA 70130
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
Ocean Salvors Company, One World Trade Center, New York, NY 10048
Smit International (Americas) Inc., 17 Battery Place, New York, NY 10004
Suderman & Young Co., Inc., 918 World Trade Bldg., Houston, Texas 77002
Turecamo Coastal & Harbor Towing Corp., One Edgewater St., Clifton, Staten Island, N.Y. 10305

TRAINING SERVICES—Simulator
Ship Analytics, Park Circle, Centerport, NY 11721

VALVES AND FITTINGS
American United Marine, 575 Madison Avenue, New York, NY 10022
Dover Corporation, Norris Division, P.O. Box 1739, Tulsa, OK 74101
Hayward Marine Products, 900 Fairmount Avenue, Elizabeth, NJ 07207
Marine Moisture Control Co., 449 Sheridan Blvd., Inwood, N.Y. 11696
Marland Environmental Systems Inc., N. Main St., Walworth, WI 53184
Parker-Hannifin Corporation, 17325 Euclid Avenue, Cleveland, OH 44112
Voss, Inc., Building J, 7029 Huntley Road, Columbus, Ohio 43229
Robert H. Wager Co., Inc., Passaic Avenue, Chatham, N.J. 07928
Waukesha Bearings Corp., P.O. Box 798, Waukesha, WI 53186
Winel, Inc., 34655 Mills Road, North Ridgeville, OH 44039

WATER PURIFIERS
Everpure, Inc., 660 N. Blackhawk Dr., Westmont, IL 60559
Halogenic Products Corporation, P.O. Box 27488, Salt Lake City, UT 84127

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Bloom Inc., Highway 20, West Four Miles, Independence, IA 50644
Clyde Iron, a unit of AMCA International Corp., Suite 102, 2300 West Loop South, Houston, TX 77027
Gearmatic Co. Ltd., 7400 132nd Street, Surrey, B.C., Canada
Markey Machinery Co., 79 South Horton St., Seattle, Washington 98134
Smith-Berger Manufacturing Corporation, 3236 16th Avenue S.W., Seattle, WA 98134

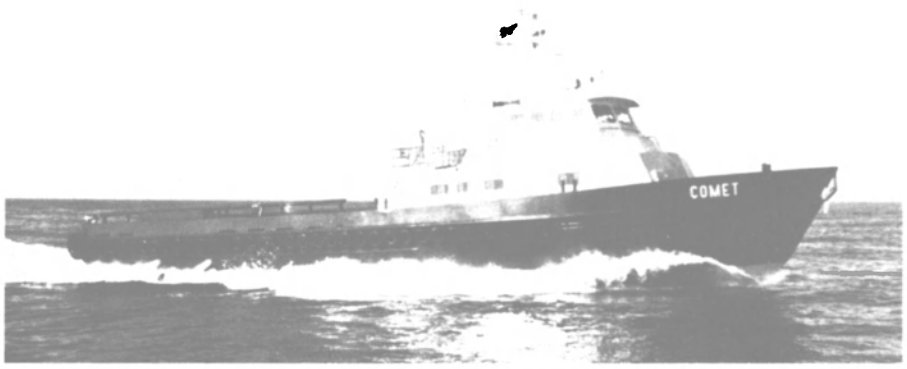
WINDOWS
Kearfott Marine Products, A Singer Co., 550 South Fulton Avenue, Mt. Vernon, N.Y. 10550

WIRE AND CABLE
Anixter Bros., Inc., 4711 Golf Road, One Concourse Plaza, Skokie, Illinois 60076
Seacoast Electric Supply Corp., 225 Passaic St., Passaic, NJ 07055
Seacoast Electric Supply Corp., 1505 Oliver St., Houston, TX 77007

WIRE ROPE—Slings
Armco Steel Corp., 703 Curtis St., Middletown, Ohio 45042
Bethlehem Steel Corp., One State Street Plaza, N.Y. 10004

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

This directory section is an editorial feature published in every issue for the convenience of the readers of MARITIME REPORTER/Engineering News. A quick-reference readers' guide, it includes the names and addresses of the world's leading manufacturers and suppliers of all types of marine machinery, equipment, supplies and services. A listing is provided, at no cost for one year in all 24 issues, only to companies with continuing advertising programs in this publication, whether an advertisement appears in every issue or not. Because it is an editorial service, unpaid and not part of the advertisers contract, MR/EN assumes no responsibility for errors.



Gulf Craft Inc. custom built the Comet to Shippen's specifications. The aluminum-hulled quad-screw is capable of 23 knots and is the first crewboat to be powered by four Cummins KTA-1150-Ms.

Cummins-Powered 110-Foot 'Comet' Delivered To Shippen Marine

Shippen Marine Inc. of Houston, Texas, has recently taken delivery of a new 110-foot crew/supply boat from Gulf Craft Inc. in Patterson, La. The Comet, an aluminum-hulled quad-screw capable of 23 knots, is the first crewboat to be powered by four Cummins KTA-1150-M diesel engines.

Gulf Craft Inc. custom built the Comet to Shippen's specifications. The term crew/supply is a recent term given to larger crewboats that have the deck space and capability to carry large cargo loads. The Comet can carry 30 long tons of deck cargo and 55 passengers in addition to its four-man crew. With a fuel capacity of 6,700 gallons and a fuel transfer pump, the Comet can service offshore fuel needs. In addition to the 700 gallons of water for vessel use, the Comet carries 6,700 gallons of cargo water that can be pumped to oil platforms through a 15-hp electric pump. The same pump supplies a cabin-mounted fire-fighting monitor. A deck-mounted 150-pound dry chemical fire extinguisher enables the Comet to transport helicopter fuel on deck.

Ed Shippen, president and owner of Shippen Marine Inc., went into business five years ago. The other boat in his two-vessel fleet is an 85-foot oilfield utility boat. "Oil companies look first for dependability in the boats they hire," explains Mr. **Shippen.** "Cargo capacity, versatility, and fuel efficiency are also important, and we've tried to incorporate all of these qualities in the Comet."

The Comet is under contract to Mobil Producing Texas & New Mexico Inc. and working out of Rockport, Texas. While Mr. **Shippen** expects Mobil will appreciate the fuel efficiency of the four-stroke cycle Cummins engines, he says his main reasons for choosing these engines was to reduce maintenance cost. Mr. **Shippen** points out that the KTA-1150-M engine does not use a blower and has a single turbocharger. It has half the cylinders to maintain as a 12-cylinder engine of equal horsepower and gives more space in the engine room. Turbocharged and aftercooled, the 6-cylinder inline KTA-1150-M engine is rated at 520 bhp. It has the most economical fuel consumption in its horsepower class according to manufacturers' published fuel consumption curves. Cummins Sales and Service, Houston, will provide parts and maintenance for the Comet's engines.

Ralph Steele, one of two captains employed by Shippen, checks the controls and instrumentation as he guides the Comet out of Galveston.

Coupled to each of the KTA-1150s is a Twin Disc MG 514C marine gear with a 2:1 reduction ratio. Three-bladed 34 by 32-inch Federal propellers are mounted on 3-inch stainless-steel shafts.

Two 40-kw generator sets powered by GM 3-71 diesel engines provide onboard electricity.

Navigation equipment includes Micrologic 320L Loran C, Decca 150 autopilot, Motorola SSB and VHF radios; Decca 916 and Furuno 711 radars; and Datamarine depth indicator. Mr. **Shippen** says having two radar units enables him to set one on close range and one on long range, and adds that it is always good to have a back-up radar in the frequently foggy Gulf waters.

Harry B. Bridges Elected To Board Of Directors Of Geosource Inc.

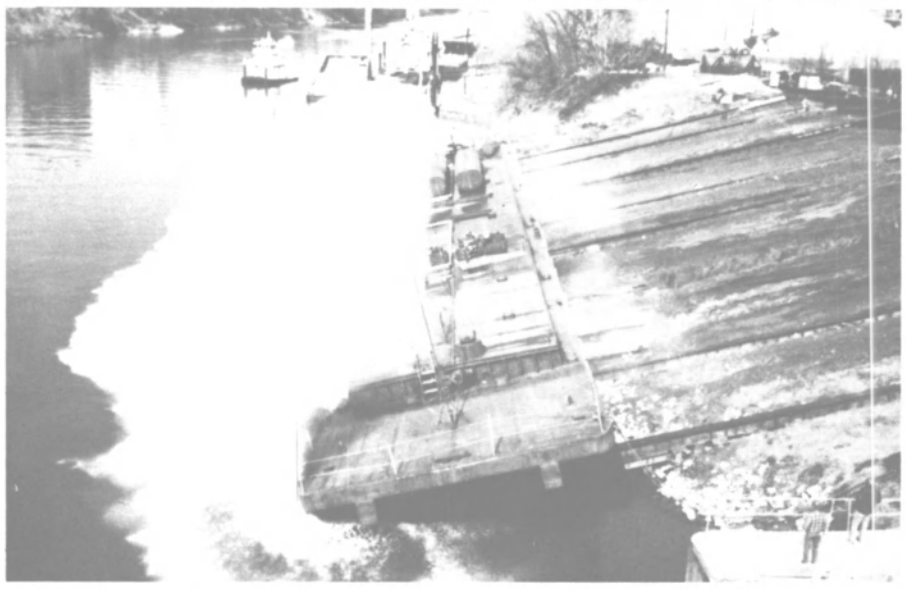
John D. Platt, president and chief executive officer of Geosource Inc., Houston, announced the company's board of directors has elected **Harry Bridges**, former president and chief executive officer of Shell Oil Company, to membership on the board. The action came after the Geosource board approved an increase in the number of directors from eight to nine.

Mr. **Bridges** served as president and CEO of Shell Oil from 1971, until his retirement in May of 1976. During his 39-year career with Shell, he rose from an exploration geophysicist to chief executive while serving in technical and managerial positions throughout the world in various Shell operating units and subsidiaries.

Bonito Offshore Seeks Title XI Guarantee On $39.5-Million Jackup Rig

Bonito Offshore, Inc., Houston, has applied to the Maritime Administration for a Title XI guarantee to aid in the construction of a jackup drilling rig to be operated in the Gulf of Mexico. Ingalls Shipbuilding, Pascagoula, Miss., was named as the proposed builder, with delivery in December 1982.

The requested guarantee is for $29,625,000, which is 75 percent of the rig's estimated cost of $39,500,000.



Side-launching of one of two NABRICO-built bunkering barges produced this big splash. Barges will be used by John W. Stone Oil Distributor, Inc. to refuel ships and towboats in the New Orleans area.

Two Double-Hull Bunkering Barges Delivered By Nashville Bridge

Two double-hull bunkering barges were completed recently by Nashville Bridge Company (NABRICO) of Nashville, Tenn. Built for John W. Stone Oil Distributor, Inc. of Harvey, La., they are 235 feet long with a beam of 35 feet and depth of 11 feet 11 inches.

Each of the barges is outfitted with six 500-gallon lube oil tanks and two 7,500-gallon potable water tanks. Total capacity for each is 12,100 barrels, or 508,200 gallons. They are fitted with separate pumping systems for No. 6 fuel oil, No. 2 diesel oil, lube oil, and potable water. In addition, each barge is fitted with a steam piping system for heating certain products.

The barges are certified by the U.S. Coast Guard for carriage of Grade A or lower petroleum products, and are classed A-1, Oil Barge, by the American Bureau of Shipping. They will be used to refuel ships and towboats in the New Orleans area.

NABRICO is a wholly owned subsidiary of The American Ship Building Company, Tampa, Fla. Headquartered in Nashville, the company has been in the marine field for more than 60 years, and is primarily concerned with the design, engineering, and construction of grain and coal barges, deck barges, liquid tank barges, cement barges, drydocks, and towboats. NABRICO is also a major supplier of marine deck hardware. The company, which has plants in Nashville and Ashland City, Tenn., pioneered in the design and building of much of the modern equipment used on rivers today.

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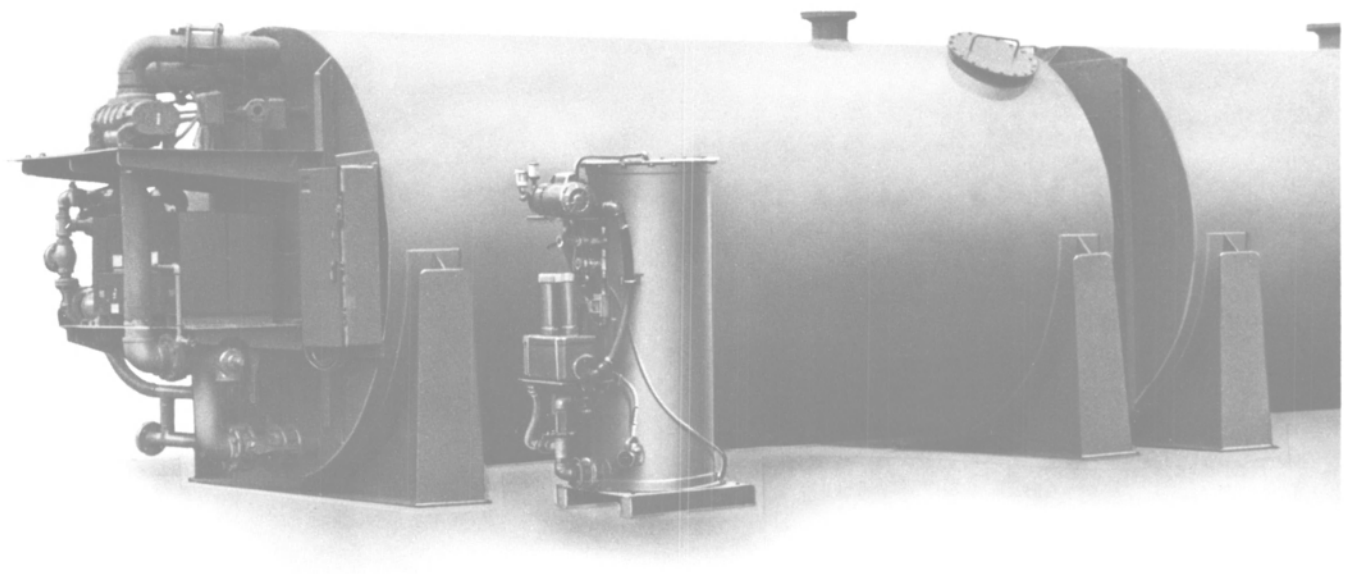

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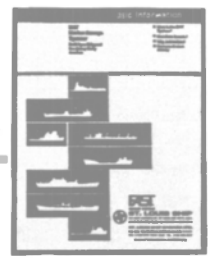

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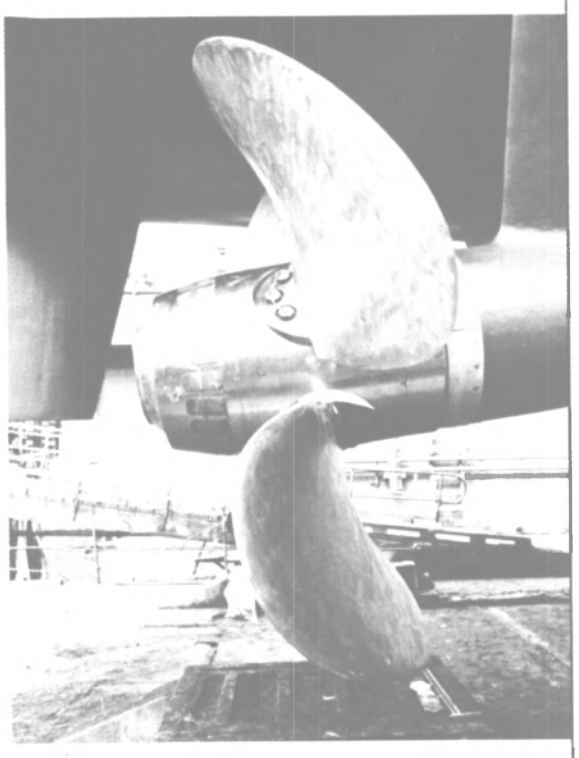

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